



THE WORLD BANK

# GOLDEN GROWTH

## Restoring the lustre of the European economic model

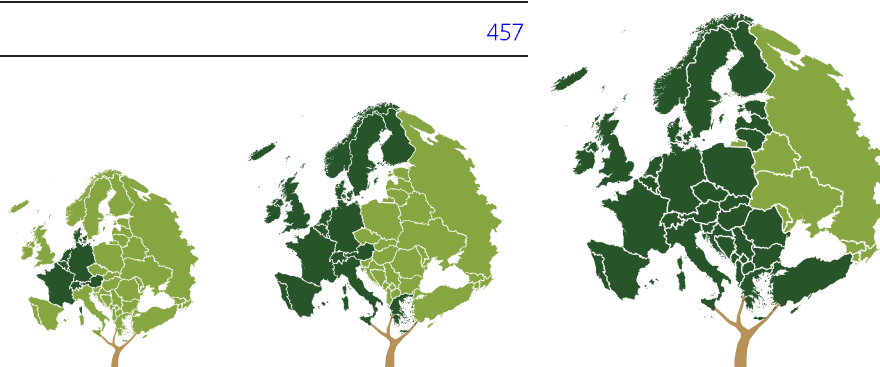
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GOVERNMENT  
LABOR  
INNOVATION  
ENTERPRISE  
FINANCE  
TRADE

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# Foreword

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“Now grows together what belongs together,” former West German Chancellor Willy Brandt famously remarked in Berlin in November 1989. He was talking about German reunification, but his statement might well apply to European integration. Over the past 20 years, the European Union has grown by 12 Central European members and has helped millions get to high incomes. The single market now stretches from Lisbon to Łódź and from the North Cap to Nikosia. Trade and capital flows unrivaled in economic history have fueled the European convergence machine. Shared aspirations of Europeans in the east and the west, the north and the south, for prosperity that is both sustainable and socially inclusive have brought the continent together.

This economic integration makes it difficult to view one part of the continent in isolation. So this report looks at Europe as a whole—from the Atlantic Ocean to the Azov Sea. It is unusual for a development institution like the World Bank to be writing about countries in Western Europe that reached high-income status many years ago. But the geographical scope of this report is appropriate, and not just because what happens in the west affects prospects in the east. It is appropriate because the European Union’s new member states in the east have undergone an unprecedented transformation over the past two decades—and their experiences have lessons for their western peers struggling with the structural exigencies of an integrated continent. It is also appropriate because the experience of Southern Europe with economic integration—and common monetary policy in particular—can help Central and Eastern Europe.

The Polish authorities, who inspired the work on this report in preparation for their presidency of the European Union in the second half of 2011, understood from the outset that a report on European growth had to be about European integration. But it was also clear that it had to be about the lessons that Europeans can learn from each other and from successful countries in other parts of the world, to adjust better to an integrated Europe and a changing world. The Polish Presidency’s report to the European Council in October 2011, “Towards a New Consensus on Economic Growth,” previews some of this report’s conclusions. These, in turn, are informed by the successes of countries in Europe and around the world in policy areas that are pertinent today. The subjects range from regulating banks to reducing public debt; the countries range from the Czech Republic to Canada, and from Turkey to New Zealand.

When work on this report started, the world was recovering from the global economic crisis. Growth had returned to Europe too, but it was fragile. As the report went to print, Europe was again in crisis. Poland is not a member of the eurozone, and this report is not about the euro. It is about the future of the European economic model. But as Radek Sikorski, the Polish foreign minister, said in Berlin in November 2011: “The biggest threat to the security and prosperity of Poland would be the collapse of the eurozone.”

Equally serious, trouble in the eurozone prompted questions about the achievements of European integration. It should not. The message of this report for Europe is this: in reacting to the debt crisis, do not abandon the attractive features of the European model. The report distinguishes three main attributes of the European economic and social model. The first is economic and political enlargement. The second is the combination of enterprise and social responsibility. The third is a focus on social inclusion and solidarity. These attributes have produced a prosperity that has been shared between people and countries in a manner not seen before or elsewhere. They should be nourished.

To be sure, though, some policies and institutions that have shaped Europe's progress need to be changed. The analysis in this report unveils a graduated reform agenda. Some parts of the European model require smaller adjustments: these include trade and finance, the two main drivers of the European convergence machine. Other parts require deep reform, such as labor and government. In between are enterprise and innovation, whose organization across the continent ranges from world class to mediocre.

Three objectives should guide policy makers. First, the single market should be strengthened to unleash new drivers of productivity growth. Second, enlargement should continue and fully integrate the 100 million people in Southeastern Europe, and help another 75 million in the eastern partnership benefit from the same European aspirations and institutions. Third, Europe's global economic influence, which has been enabled and shaped by the values of inclusion and enterprise, should be preserved.

But this report is not just for Europe. It is also for people and policy makers outside the continent who follow Europe's progress and are interested in its prospects. Its message for them is: don't count Europe out. There are countries—both advanced and emerging—where the European model has been made to work, and the results are gratifying. Europe's trials must not intimidate those working toward progressive goals; its successes should inspire them.

The report draws inspiration and its title from the golden rule of economic growth, which requires that today's decisions are viewed by later generations neither with regret nor resentment. The shared aspirations of Europeans for inclusive development have led to decades of success, and Europe's development has been distinct. If they can learn the right lessons from the reforms in and outside Europe, its development will be distinguished. This would be good not just for Europe, but for the world as well.

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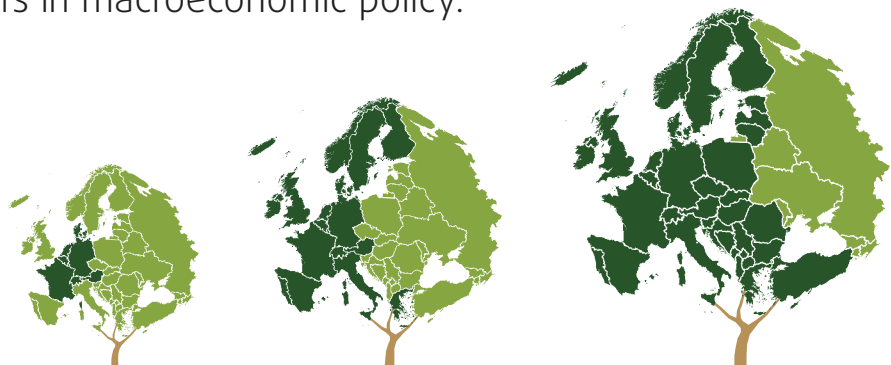
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# Overview

## Restoring Europe's lustre

Fifty years ago, the American Economic Review published a short article titled "The Golden Rule of Accumulation."<sup>1</sup> In it, Edmund Phelps, an American economist, proposed a simple rule for a nation's wealth to grow and provide the highest standard of living for its citizens—present and future. The rule essentially specified how much people had to work, save, and invest today so that future generations could be at least as well off as they were. The golden rule had European origins as well. The paper used the insights of economists from France, Hungary, the Netherlands, and the United Kingdom.<sup>2</sup> And just a few months before Phelps' article was published, a German economist, Christian von Weizsäcker had submitted a dissertation that proposed the same rule.<sup>3</sup> In 2006, the Nobel Committee awarded the prize to Phelps for "his analysis of intertemporal tradeoffs in macroeconomic policy."



Many economists still consider the golden rule the most basic proposition of optimum growth theory. It is the inspiration for the title of this report, and forms the roots of its policy prescriptions. Following the golden rule means that today's Europeans work and consume just so much that future generations do not resent them for consuming too much, nor pity them for consuming too little. Keeping to the rule is perhaps the most telling sign of a country's—or a continent's—economic maturity.

Europe's growth is already different from other economies' in two aspects, reflecting its cultural and demographic maturity. Perhaps more than others around the world, Europeans want economic growth to be smarter, kinder, and cleaner, and they are willing to accept less for "better" growth. The single word that summarizes these ideals might be "golden."

Europe's growth will have to be golden in yet another sense. Economic prosperity has brought to Europeans the gift of longer lives, and the continent's population has aged a lot over the last five decades. Over the next five, it will age even more: by 2060, almost a third of Europeans will be older than 65 years. Europe will have to rebuild its structures to make fuller use of the energies and experience of its more mature populations—people in their golden years.

These desires and developments already make the European growth model distinct. Keeping to the discipline of the golden rule would make it distinguished. This report shows how Europeans have organized the six principal economic activities—trade, finance, enterprise, innovation, labor, and government—in unique ways. But policies in parts of Europe do not recognize the imperatives of demographic maturity and clash with growth's golden rule. Conforming growth across the continent to Europe's ideals and the iron laws of economics will require difficult decisions. This report was written to inform them. Its findings: the changes needed to make trade and finance will not be as hard as those to improve enterprise and innovation; these in turn are not as arduous and urgent as the changes needed to restructure labor and government. Its message: the remedies are not out of reach for a part of the world that has proven itself both intrepid and inclusive.

## A distinctive model

It is common these days to hear Europeans calling for a "new growth model." The public debt crisis has shaken confidence not just in the euro but in Europe.<sup>4</sup> Aging Europeans are being squeezed between innovative Americans and efficient Asians, it is said. With debt and demographics weighing down European economies, the argument runs that they will not grow much unless they discover radically new ways.

The end of complacency among Europeans is good, because developments in and outside the continent have made changes necessary. But loss of confidence could be dangerous. The danger is that in rushing to restructure and restart growth, Europe may throw out the attractive attributes of its development model with the weak ones. In fact, the European growth model has many strong points and enviable accomplishments.



Between 1950 and 1973, Western European incomes converged quickly toward those in the United States. Then, until the early 1990s, the incomes of more than 100 million people in the poorer southern periphery—Greece, southern Italy, Portugal, and Spain—grew closer to those in advanced Europe. With the first association agreements with Hungary and Poland in 1994, another 100 million people in Central and Eastern Europe were absorbed into the European Union, and their incomes increased quickly. Another 100 million in the candidate countries in Southeastern Europe are already benefiting from the same aspirations and similar institutions that have helped almost half a billion people achieve the highest standards of living on the planet. If European integration continues, the 75 million people in the eastern partnership will profit in ways that are similar in scope and speed.

It is no exaggeration to say that Europe invented a “convergence machine,” taking in poor countries and helping them become high-income economies. Over the last four decades, the countries in Europe experienced a convergence in consumption levels that is unmatched (figure 1). Annual per capita consumption in the poorer parts of Europe grew by 4 percent while in the wealthier countries it increased at a still-impressive 2 percent. The rest of the world—except for East Asia—has seen little or no convergence. That is why the European model was so attractive. That is why European growth is unique.

Given Europe’s diversity, it is not easy to identify a single “European growth model.” There are big differences in how Italy and Ireland regulate work and enterprise, and how Greece and Germany balance fiscal policies and social objectives. There are big differences in what Spain and Sweden export, and how they regulate commerce. There are differences in how Portugal and Poland have regulated their banks, and not just because one of them shares a common currency while the other has one of its own. And there are differences in how Finland and France provide government services such as education and health.

But these differences in specifics do not rule out the existence of a common approach to economic growth and social progress. This approach consists of policies and institutions that govern trade and finance, enterprise and innovation, and labor and government that have common elements. Together, these elements define an economic and social model distinctly European (chapter 1).

These elements have been associated with Europe’s biggest successes since World War II: unprecedented regional integration, global economic power, and the attainment of the highest quality of life in human history.

- **Trade, finance, and unprecedented regional integration.** Europe’s rich and poorer economies are more integrated through trade in goods and services than in any other part of the world, resulting in quicker convergence in incomes and living standards. Private capital in all its forms—foreign direct investment (FDI), financial FDI, and portfolio funds—has flowed from richer to poorer countries, and from low- to high-growth economies. Trade and finance—facilitated by the single market instituted by the European Union and its forebears—have fueled convergence in incomes and living standards.

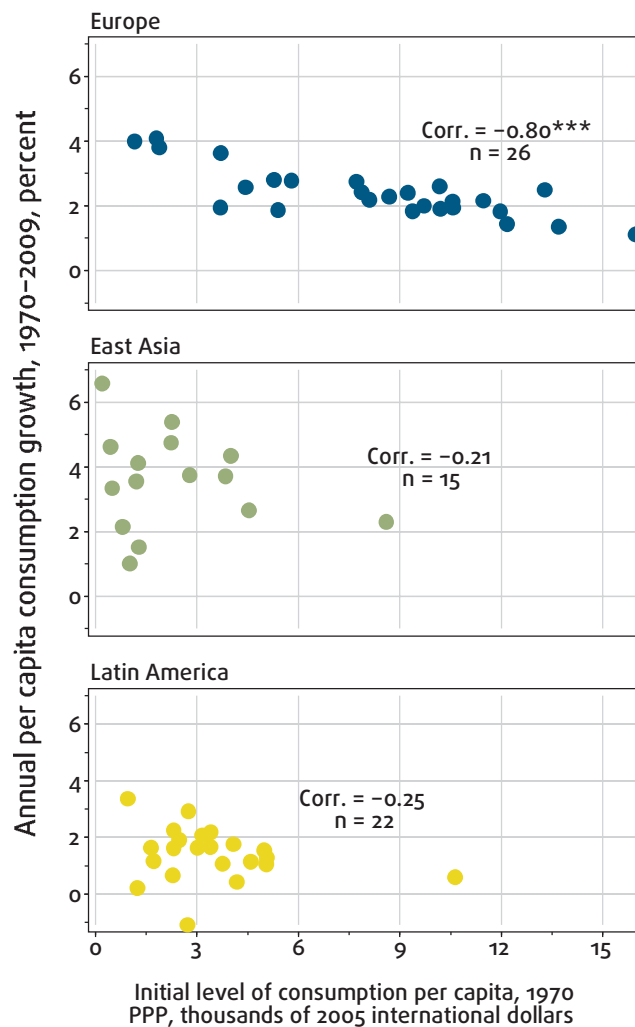
**Figure 1: In Europe, a rapid convergence in living standards—not much elsewhere**

(annual growth of consumption per capita between 1970 and 2009, by level of consumption in 1970)

\*\*\* Statistically significant at 1 percent.

Note: n = number of countries.

Source: World Bank staff calculations, based on Penn World Table 7.0 (Heston, Summers, and Aten 2011); see chapter 1.



- **Enterprise, innovation, and global economic influence.** Private enterprises are held accountable for profits by shareholders, but are also more socially and environmentally responsible than companies in most other parts of the world. Research and development and tertiary education, recognized around the globe for their economic spillovers, are seen as a responsibility not just of firms but also the state. Enterprise and innovation—aided by deep and comprehensive regional economic integration—enable Europe to account for about a third of world gross domestic product (GDP) with less than one-tenth of its population.
- **Labor, government, and high living standards.** Workers in Europe are accorded strong protection against abuse by employers, and have unprecedented income security after job loss and in old age. European governments are the most decentralized and representative of local interests,



and Europe has developed the most effective institutions for regional coordination in human history. Europe's model of labor and government—facilitated by the growing consensus for continental cohesion and made affordable by its economic heft—has made the European lifestyle admired and envied around the world.

What has Europe accomplished that other parts of the world could not? Which aspects of the model are no longer sustainable, either because of unanticipated changes in Europe and elsewhere or because some European countries have transformed themselves too fast? Which changes are needed now, and which can wait? These are the questions that this report asks.

The short answers: Europe has achieved economic growth and convergence that is unprecedented (table 1 and spotlight one). Most countries in Europe are doing well in trade and finance, many in enterprise and innovation, but far fewer are doing well in labor and government. So Europe needs many changes to make its governments and labor markets work better, fewer to foster innovation and productivity growth in enterprises, and fewer still to reform finance and trade. These deficiencies are rooted in how some activities are organized—and they will need to be reorganized. Stalled productivity, declining populations, and growing fiscal imbalances have made some changes urgent.

But in addressing these shortcomings, Europeans should not forget the singular successes of their growth model. By fostering a regional economic integration unique in both depth and scope, Europe has become a “convergence machine.” By engineering entrepreneurial dynamism in the countries that balanced market forces and social responsibility, it has made “brand Europe” globally recognized and valued. And by allowing a balance between life and work, it has made Europe the world's “lifestyle superpower.” To continue the progress of the last five decades, Europeans now have to do three progressively tougher tasks: restart the convergence machine, rebuild Europe's global brand, and recalibrate the balance between work and leisure to make their lifestyles affordable.

**Table 1: Relentless growth in the United States, revival in Asia, and a postwar miracle in Europe**

(average annual compound growth rates, GDP per capita, 1820–2008, US\$ 1990 Geary-Khamis PPP estimates)

Year	Western Europe	Southern Europe	Eastern Europe	Former Soviet Union	United States	Japan	East Asia	Latin America
1820–1870	1.0	0.6	0.6	0.6	1.3	0.2	–0.1	0.0
1870–1913	1.3	1.0	1.4	1.0	1.8	1.4	0.8	1.8
1913–1950	0.8	0.4	0.6	1.7	1.6	0.9	–0.2	1.4
1950–1973	3.8	4.5	3.6	3.2	2.3	7.7	2.3	2.5
1973–1994	1.7	1.9	–0.2	–1.6	1.7	2.5	0.3	0.9
1994–2008	1.6	2.7	4.0	4.2	1.7	1.0	3.9	1.6

Note: Regional aggregates are population-weighted; see spotlight one for details.

Source: Maddison 1996; Conference Board 2011.



## The convergence machine

An increasingly vigorous flow of goods, services, and finance over the last five decades has fueled European growth. Europe's economies are the most open in the world. Before the global crisis of 2008–09, half of the world's approximately \$15 trillion trade in goods involved Europe (figure 2). Two-thirds of it was among the 45 countries discussed in this report. Financial flows have been equally vigorous. In 2007, for example, annual FDI in Europe exceeded \$1 trillion. Big and growing trade and financial links facilitated by the single market form the core of the European convergence machine.

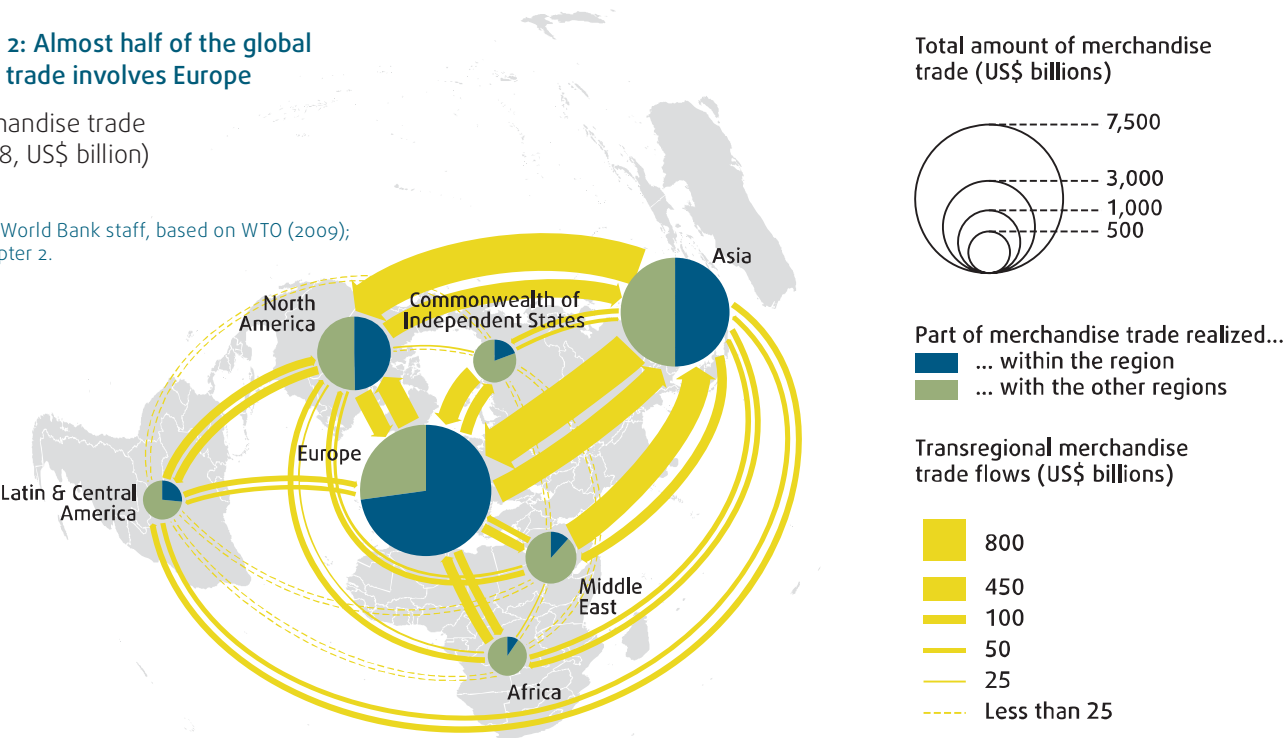
### Increasingly sophisticated trade

During the last two decades, the new member states of the European Union have done especially well at taking advantage of the opportunities offered to them, integrating westward by trading goods and modern business services. During the last decade, the candidate countries of Southeastern Europe have been doing it through trade in merchandise and more traditional services such as travel and transport. This has helped enterprises in Western Europe too. With FDI and offshoring, enterprises in Western Europe such as Fiat, Renault, and Volkswagen have made themselves and eastern enterprises like Yugo, Dacia, and Škoda more efficient and sophisticated. Simpler tasks are being given to countries outside Europe; advanced Europe is getting emerging Europe to do more difficult things, and both regions are benefiting (chapter 2).

**Figure 2: Almost half of the global goods trade involves Europe**

(merchandise trade in 2008, US\$ billion)

Source: World Bank staff, based on WTO (2009); see chapter 2.





The goods trade between advanced and emerging Europe has grown rapidly since the mid-1990s—when the European Union signed its first association agreements with Hungary and Poland—and this does not appear to be injuring trade with other parts of the world. Europe does a brisk goods trade with North America, Asia, the former Soviet Union, and Africa (figure 2). But trade within the region has grown much more sophisticated over the last decade, aiding quick convergence in productive capacity and living standards. It is helping to create a bigger and stronger economic union between the European Free Trade Association (EFTA), the EU15, the new member states, the EU candidate countries, and even the eastern partnership economies.

Factory Europe may not be expanding as fast as Factory Asia, but it has become smarter. And it could expand a lot too. With economic recovery and better trade facilities—especially information and communications infrastructure in the European Union’s new member states and the candidate countries—regional goods trade could double over the next decade.

The trade in modern services in Europe is increasing too, but not fast enough for many Europeans. The benchmark for merchandise trade is East Asia, a developing region, but the European Union gauges the Single Market for Services against the United States, a developed country. Trading services is not easy: it often requires movement of people across borders, ease in establishing a local presence, and harmonious home–host regulations. Given all this, Europe’s trade in services does not seem stunted (figure 3). But progress is mixed: travel and financial services have done well but transport and other business services—especially those involving new technologies and the Internet—have not. With reforms that make adopting newer technologies easier, better regulations, and greater mobility of workers, Europe’s trade in services could triple in size over the next decade. More important, productivity in the general services sector—which is about 70 percent of GDP in Europe—would increase.

The opportunity that Europe might really be missing involves regional trade in agriculture. The European Union pays for its agricultural trade policies not just with the roughly €50 billion a year the European Commission spends on agriculture and rural development and their large indirect efficiency costs, but also through missed opportunities for closer economic integration with eastern partnership countries. In Georgia and Ukraine, a third of all workers still depend on agriculture for a living. Allowing better access to European farm markets would aid their development, win friends, and influence policies in the countries of the eastern partnership.

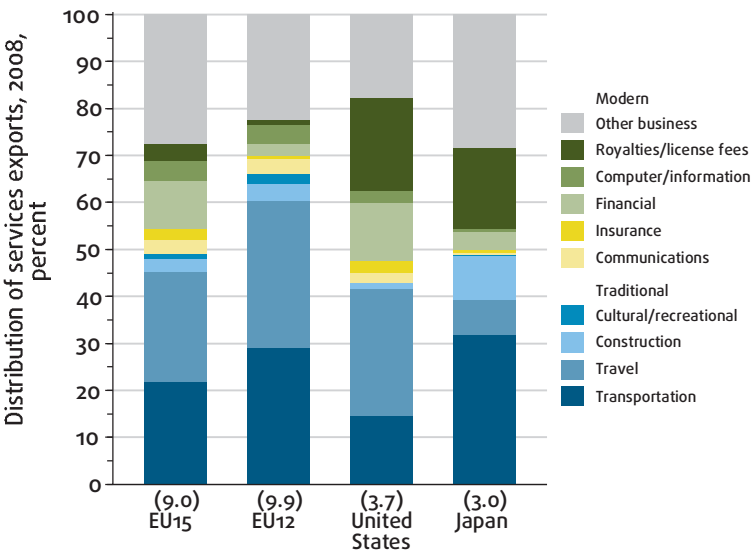
Despite these weaknesses, the overall assessment of European trade is positive. In 2009, Europe’s merchandise trade was worth about \$4.5 trillion, more than East Asia’s and North America’s combined. Its trade in services was worth \$2.25 trillion, more than that of the rest of the world combined. Trade is the mainstay of the European economic model and its most attractive attribute.

## Finance that flows downhill

Financial integration is the second part of the convergence machine. Finance has served Europe well. This may come as a surprise to those who blame the current crisis in the eurozone on banks that lent money to spendthrift

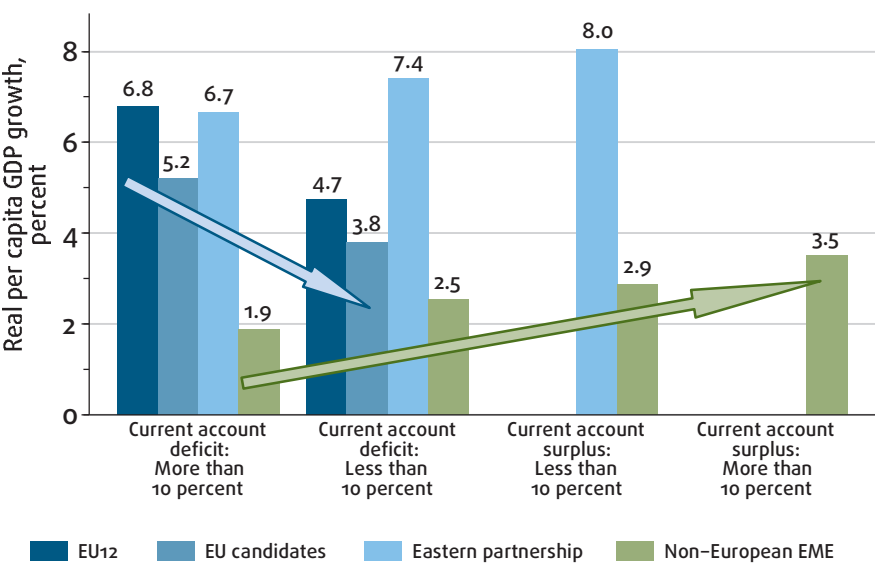
**Figure 3: More trade in services in Europe, but apparently in more traditional activities**  
(services exports in the European Union, United States, and Japan, 2008)

Note: The numbers in parentheses refer to the sum of traditional and modern service exports as a percentage of GDP.  
Source: World Bank staff calculations, based on IMF BOPS; see chapter 2.



**Figure 4: In Europe, foreign capital has boosted growth in emerging economies**  
(current account deficits and per capita growth, 1997-08, by groups of countries, percent)

Note: Average growth rates calculated using 3 four-year periods in 1997-2008.  
Source: World Bank staff calculations, based on IMF WEO; see chapter 3.



governments. But European finance has a desirable attribute: capital of all types flows from richer to poorer countries, from low- to high-growth countries. Financial FDI—big investments by Austrian, French, Italian, and Swedish banks in Central and Eastern Europe—is a unique feature of Europe. In the east, it has helped (chapter 3).

Figure 4 shows the relationship between economic growth and current account deficits in the new member states of the European Union, its candidates, the eastern partnership countries, and other emerging economies. An upward sloping arrow means that countries that ran smaller deficits or larger external account surpluses grew faster. In other words, a country grew faster if it lent



rather than borrowed abroad. And for emerging economies outside Europe, this is indeed what we see: capital flows from poorer, high-growth countries to richer, low-growth countries (green arrow). Call this the “China syndrome.”

In Europe, capital behaves the way it should: it flows from richer to poorer economies, and countries receiving more capital grow faster. The laws of economics have held in Europe. They hold more firmly the more institutionally integrated the economies have become with Western Europe—by membership in the European Union or by signaling the intention to join. Belarus and Ukraine, for example, have done neither, and they look a lot like emerging market economies outside Europe, growing faster when they have external account surpluses (capital outflows) or smaller current account deficits.

In 2008, when the financial crisis hit, people who were familiar with earlier crises in Asia and Latin America expected a massive pullout by western banks. It did not happen: foreign banks stayed, renewing 90 percent of the loans they had made, a much higher proportion than in previous crises. Of course, during the preceding boom some governments, enterprises, banks, and households abused the opportunities provided by this model of financial integration. And today, as western banks face pressures to offset losses in Southern Europe, they may have to sell their profitable businesses in Eastern Europe. But the benefits have been greater than the excesses, and some reforms can make the flows more stable and their benefits even greater: better management of public finance during booms in both advanced and emerging Europe, and more adept regulatory structures to crisis-proof private finance. To grow at high and steady rates, economies in emerging Europe have not had to “become Asian.” Nor should they have to now.

## Restarting the convergence machine

In the early 2000s, an important debate took place. For two decades, economists had been puzzled by the finding that a country was able to invest only as much as what it could itself save. In theory, capital flows should allow savers in wealthier, or low-growth, countries to finance investment in poorer, or high-growth, economies. They would get a higher return on their money, and these financial flows would allow the people in developing nations to save less and consume more, and invest more and grow faster. Unfortunately, it did not seem to happen; instead, there was a strong correlation between saving and investment across countries (Feldstein and Horioka 1980). But in the European Union between 1992 and 2001, especially the eurozone, research showed that something had changed. Greece and Portugal had run large current account deficits financed by foreign capital inflows; their savings had fallen, investment had increased, and their economies had grown (Blanchard and Giavazzi 2002). The question was whether policymakers—national governments, the European Union, and the European Central Bank—should welcome these growing imbalances, or worry about them.

With the benefit of hindsight the answer is, of course, both. The capital inflows were the result of trade and financial integration, and they were supposed to make Greece and Portugal more productive and richer economies. Until about 2001, they did, and their living standards converged to those of more advanced

European economies. But since 2002, labor productivity in Europe's southern countries has been falling. The sheer volume of flows meant that inflows replaced domestic saving. Increasingly, though, they did not fund productive investment. Obviously, the borrowed money had not always been used well. It had flowed in on the belief that Greek and Portuguese debts would be serviced or repaid. By 2009, it was clear that this was going to be difficult.

In the new member states, the same story was being played out, but with many more happy endings than sad. In countries such as the Czech Republic and Poland, foreign savings flowed into productive uses, and both Western European savers and Eastern European investors benefited. In some others, ever larger flows began to finance consumption, sometimes by the government but more often by households. In these countries, economic growth went into reverse during the global financial crisis.

Restarting the convergence machine will not be difficult. The Single Market for Services is becoming more efficient, and national governments can accelerate the process by fully implementing the European Union's Services Directive. For many services, measures to increase mobility of labor among countries will help greatly. For other more modern services that can be sold digitally, harmonious regulations may be much of what is needed. New member states of the European Union and the candidate countries in Southeastern Europe will have to continue easing the bottlenecks in transport and communication infrastructure and modern services, so that trade in manufactures can facilitate the production networks that have been growing in size and sophistication. The European Union can also help millions of people in the eastern partnership countries—whose combined GDP is less than \$0.5 trillion—by giving better access to its \$1 trillion market for food and other farm products.

A lot of this is happening. It is finance, the fuel for the machine, which needs more attention. Europe's convergence machine needs a better regulator of financial flows. Finance flows in the right direction in Europe—proof positive of the soundness of the system. But the flows are erratic, flooding Europe's less advanced economies when finance is plentiful, and starving them of finance when savers and investors in advanced countries become skittish. Financial flows could be made steadier through conservative fiscal policies and prudential regulations, so that they do not suddenly stop when growth slows. Canada, the Czech Republic, Croatia, and Poland showed what can be done during good times, and Sweden and the Republic of Korea have shown ways to quickly get firms and households out from under a debt overhang when boom-time finances fuel excesses and cause busts (Iwulska 2011).

## “Europe”—a global brand

As convergence has slowed and even gone into reverse in parts of Europe, the entire region is getting a bad press. Europe's best days are behind it, it is now said. High unemployment among young people, stagnant worker productivity, unsustainable public finances, and archaic social protection and innovation systems that are unsuited for a globalized economy are all presented as symptoms of economic decay. But the heart of an economy is neither labor nor



government—it is enterprise. Since the mid-1990s, during a period when Asia had a huge financial crisis and bigger recovery, and the United States had a spectacular technology boom and a massive financial crisis, European enterprise has quietly flourished.

This is no mean achievement, because Europe expects much from its enterprises. Their shareholders expect them to add value and turn a profit, workers expect them to create jobs, and governments want them to bring in export earnings. Remarkably, over the last decade and a half, European enterprises have delivered all three (figure 5). Between 1995 and 2009, job growth in advanced Europe outstripped that in the United States. The new member states of the European Union and the candidate countries engineered productivity increases that outstripped those in East Asia and Latin America. Exports of goods and services in advanced and emerging Europe rose faster than output, and exceeded the growth rates even of the heralded BRIC economies (chapter 4). German and Swedish manufactures, produce from France and the Netherlands, and British and Italian banks have global reach and reputation; Czech engineering, Estonian information technology, and Turkish construction companies are quickly acquiring them. These are not the signs of a region in decay.

With Asian enterprises becoming more active globally, the next few decades might well require European enterprises to make changes in how and where they do business. For now, the numbers show that in aggregate, European enterprise has been a reliable component of the economic model.

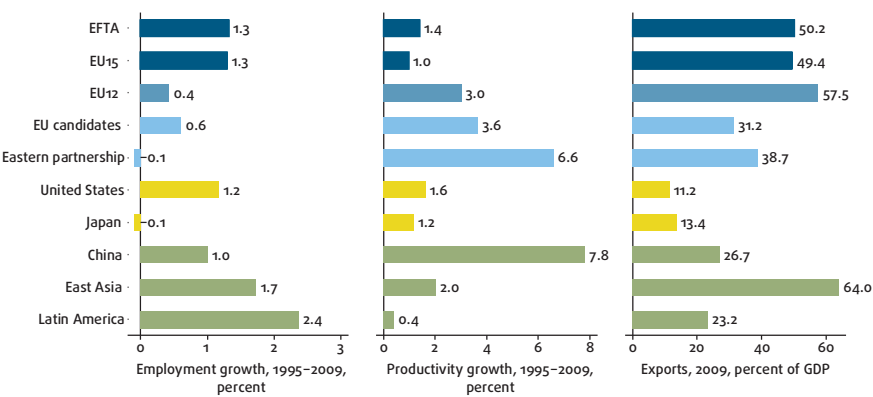
## Southern enterprise falters

But not all is well. Employment growth in the EU12 could have been quicker, productivity growth in the EU15 should have been faster, and EU candidate and eastern partnership countries should raise exports to levels seen in the rest of Europe (see top five bars in figure 5). Perhaps most worrisome are the productivity patterns since 2002, which show that parts of Europe have been faltering (figure 6). Northern countries such as Finland, Sweden, and the United Kingdom—and later the Baltic economies—have done well, and continental economies such as Austria, France, Luxembourg, and Germany—and later the Czech Republic, Poland, and others—have been doing well too. But countries in Southern Europe—Greece, Italy, Portugal, and Spain—have not. From 2002 to 2008, they created jobs, but mainly in cyclical activities like construction or in less productive enterprises (like micro and family firms). And the productivity of their workers has been falling.

A premature adoption of the euro by southern economies is sometimes blamed for this reversal of fortune. Others say that letting the formerly communist countries into the European Union so soon did not give the south enough time to become competitive. But perhaps the most likely explanation is that of all the economies in Europe, the entrepreneurial structures of Greece, Italy, Portugal, and Spain were least suited for the wider European economy. For one thing, a sizable part of net output in southern economies is generated in small firms—almost a third of it in tiny enterprises (with fewer than 10 workers; figure 7).

Figure 5: European enterprises have delivered jobs, productivity, and exports

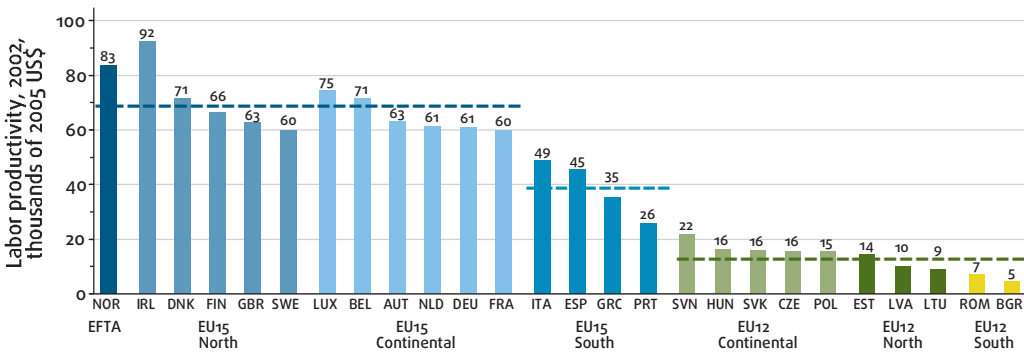
(performance of European subregions and benchmark countries, 1995–2009)



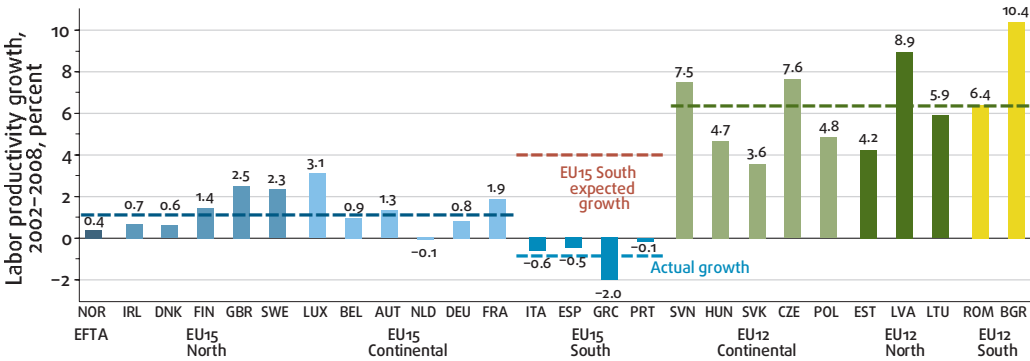
Note: Growth rates in employment and productivity are compound annual growth rates. Average values by group are shown. China and Japan are also included in the calculation of East Asia's regional average.  
Source: World Bank staff calculations, based on WDI and ILO (2010); see chapter 4.

Figure 6: Much of Europe is becoming more productive, but the south has fallen behind

(labor productivity levels in 2002, thousands of 2005 US\$)



(labor productivity growth, 2002–08, annual percentage increase)



Note: For Belgium, Greece, and Norway, productivity levels refer to 2003 (top panel). In the bottom panel, the period considered varies: Belgium and Norway (2003–08); Greece (2003–07); and the Czech Republic, France, Latvia, Romania, and the United Kingdom (2002–07). The three lines in each panel show average values for countries covered by each line. Expected growth for EU15 South is obtained by computing gaps in productivity levels between EU15 South and each of the other two groups and then applying these shares to the difference in growth between the first (that is, EFTA, EU15 North, and EU15 Continental) and the third (EU12) groups.  
Source: World Bank staff calculations, based on Eurostat; see chapter 4.



This is not an entrepreneurial profile suited for a big market. Unsurprisingly, with the expansion of the single market in the 2000s, foreign capital from the richer economies of Continental Europe quickly changed direction, going east instead of south as it had done in the 1990s (figure 8).

Did the south need more time to adjust, or did it squander opportunities? The latter seems more plausible. Ireland has shown that EU institutions and resources can be translated quickly into competitiveness. The Baltic economies are now doing the same. The chief culprits for the south's poor performance were high taxes and too many regulations, often poorly administered. While these mattered less when its eastern neighbors were communist and China and India suffered the least business-friendly systems in the world, they are now crippling southern enterprise (figure 9).

But there are reasons to be optimistic. The sovereign debt crisis has led to a resumption of regulatory reform in these countries, and the experience of countries such as Latvia and Lithuania shows that the necessary improvements can be done over years, not decades. And they need to be done quickly. From 2003 to 2006, Europeans who felt that globalization was an opportunity for their enterprises fell from 56 to 37 percent (Morley and Ward 2008). By 2006, the share of people who felt it was a threat to European enterprises and employment was almost half. The Danes, Swedes, Dutch, and Estonians were the most positively disposed to globalization; the French, Greeks, Belgians, and Cypriots the least. It is not a coincidence that the countries where people are wary of competition have the worst business climate in Europe.

Europe would get even more from its enterprises if it made doing business easier. Southern Europe must start doing this now, and Central and Eastern Europe should continue improving the investment climate. Otherwise, enterprises will remain small and unproductive—increasingly unable to attract foreign investors, incapable of taking advantage of a pan-European market that will only get bigger and more competitive, and progressively uncompetitive in global markets, where they have to contend with enterprises from East Asia and North America. A better business climate will help to stem the growth of imbalances within Europe, restart the convergence machine, and make European enterprises globally competitive. Countries such as Denmark, Germany, Finland, Ireland, Sweden, and the United Kingdom show how it can be done (Iwulska 2011).

## The north innovates

But making it easier to do business will not be enough on its own. When productivity gaps were growing within Europe, the gap between the advanced economies of Europe and the United States started to widen after almost disappearing in the mid-1990s. Indeed, the 2000s were a decade of declining productivity in the EU15 relative to both the United States and Japan, the world's next two largest economies after the European Union during that time (figure 10). Between 1995 and 2009, labor productivity in the United States grew at 1.6 percent annually, in Japan at 1.2 percent, and in the EU15 at just 1 percent (figure 5).

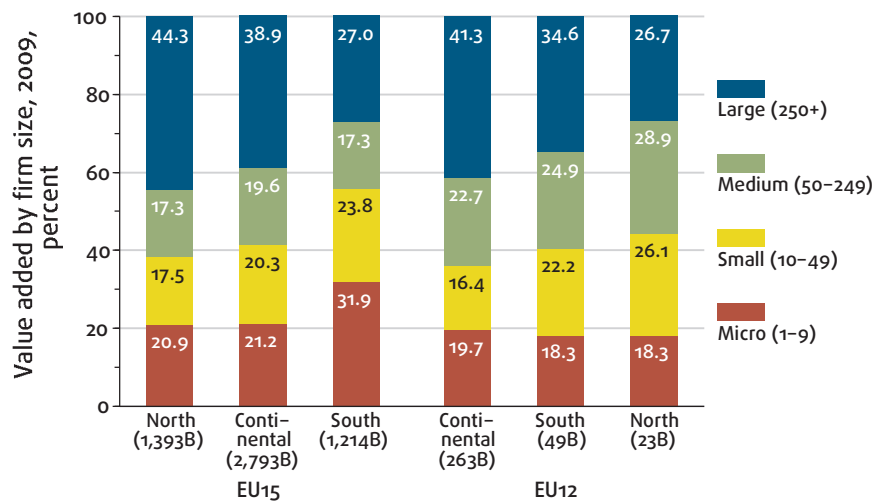


**Figure 7: Smaller firms contribute half of value added in the EU15 South, but just a third elsewhere**

(contributions to value added by size of enterprises, 2009)

Note: The numbers in parentheses are the total value added expressed in billions of constant 2005 U.S. dollars. The EU15 comprises Denmark, Finland, Sweden, and the United Kingdom (North); Austria, Belgium, France, Germany, and the Netherlands (Continental); and Greece, Italy, Portugal, and Spain (South). The EU12 comprises Estonia, Latvia, and Lithuania (North); the Czech Republic, Hungary, Poland, the Slovak Republic, and Slovenia (Continental); and Bulgaria and Romania (South).

Source: World Bank staff calculations, based on Eurostat; see chapter 4.

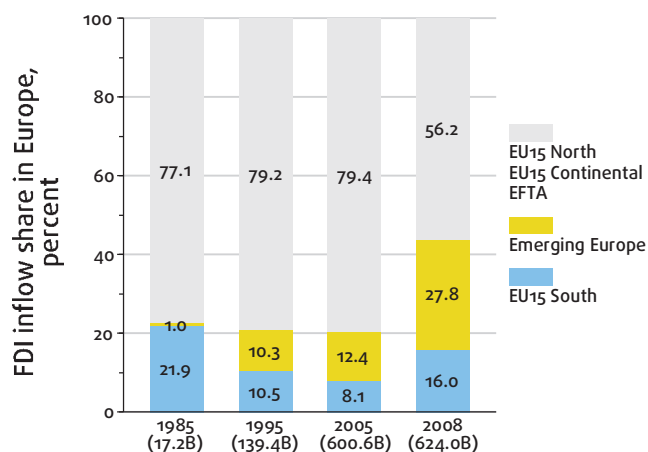


**Figure 8: Western European investors have been looking east, not south**

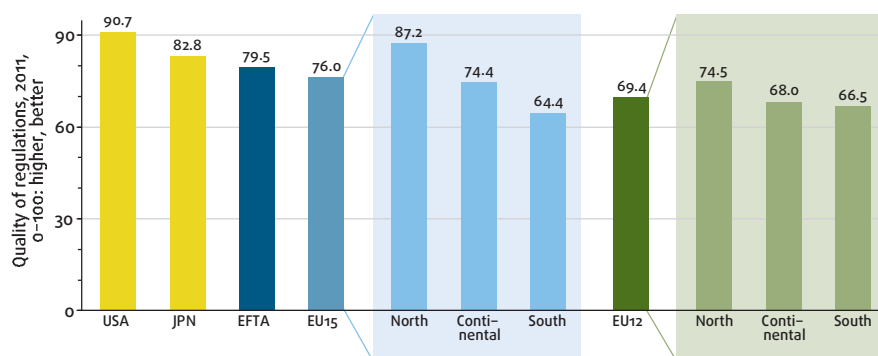
(foreign direct investment inflows in Europe, percent, 1985, 1995, 2005, and 2008)

Note: The numbers in parentheses are the amount of inflows expressed in billions of U.S. dollars.

Source: World Bank staff calculations, based on UNCTAD (2010); see chapter 4.



Reassuringly, productivity in Northern Europe grew at 1.7 percent per year during the same period. What has the north done to encourage enterprise and innovation? Much of its success has come from creating a good climate for doing business. All the northern economies are in the top 15 countries of 183 in the World Bank's Doing Business rankings; at 14th, Sweden is the lowest-ranked among them. They have given their enterprises considerable economic freedom. Their governments are doing a lot more. They have speeded up innovation by downloading the "killer applications" that have made the United States the global leader in technology: better incentives for enterprise-sponsored research and development (R&D), public funding mechanisms and intellectual property regimes to foster profitable relations between universities and firms, and a steady supply of workers with tertiary education. Tellingly, Europe's innovation leaders perform especially well in areas where Europe as a whole lags the United States the most. These features make them global

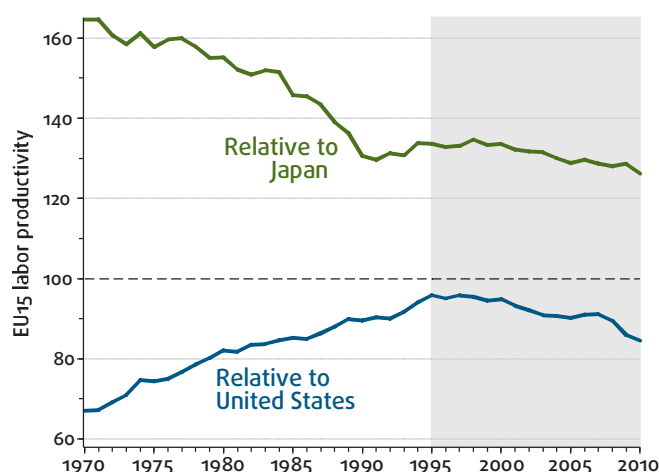


**Figure 9: Southern and Eastern Europe must make it easier to do business**

(principal components index of the ease of doing business in 2011, scaled from 0 [poor] to 100 [excellent])

Note: Averages are computed using principal component analysis. EFTA here comprises Iceland, Norway, and Switzerland. The EU15 comprises Denmark, Finland, Ireland, Sweden, and the United Kingdom (North); Austria, Belgium, France, Germany, Luxembourg, and the Netherlands (Continental); and Greece, Italy, Portugal, and Spain (South). The EU12 comprises Estonia, Latvia, and Lithuania (North); the Czech Republic, Hungary, Poland, the Slovak Republic, and Slovenia (Continental); and Bulgaria, Cyprus, and Romania (South).

Source: World Bank staff calculations, based on Doing Business; see chapter 4.



**Figure 10: Productivity growth in Europe's larger economies has slowed down since the mid-1990s**

(EU15 labor productivity, indexed to the United States and Japan)

Source: World Bank staff calculations, based on the OECD Productivity database; see chapter 5.

leaders; combining them with generous government spending on R&D and public education systems makes their innovation systems distinctively European (chapter 5).

For Europe's larger continental economies that have reached or exceeded U.S. standards in physical, financial, and human capital, R&D and other innovation deficits are likely to be growth inhibitors. In dynamic Eastern Europe, countries need not invest much more in R&D and the production of knowledge. But they must still innovate through osmosis: they have considerable scope for the quick adoption of existing technologies, using FDI and trade links as conduits. The south is becoming slower in importing new technologies: FDI inflows and outflows have been falling since the economies in emerging Europe integrated with Continental and Northern Europe. For these increasingly service-oriented economies, reform of domestic regulations—not more R&D spending—may be the best way to speed up innovation.

What has been more perplexing is Europe's generally poor performance in the most technology-intensive sectors—the Internet, biotechnology, computer software, health care equipment, and semiconductors. Put another way, Korea; Taiwan, China; and the United States have been doing well in sectors that are huge now but barely existed in 1975. Europe has been doing better in the more established sectors, especially industrial machinery, electrical equipment, telecommunications, aerospace, automobiles, and personal goods. The United States has young firms like Amazon, Amgen, Apple, Google, Intel, and Microsoft; Europe has the older like Airbus, Mercedes, Nokia, and Volkswagen.

Europe's young leading innovators (called “Yollies” for short) are as R&D-intensive as those in the United States. Europe just has a lot fewer Yollies. As a result, while more than a third of U.S. R&D spending is by Yollies, it is less than one-fifteenth in Europe. The United States focuses its R&D efforts on innovation-based growth sectors (figure 11). Europe specializes in sectors with medium R&D intensity. Japan is showing other East Asian countries how productivity growth can be maintained in established industries such as automobiles and electronics, and Germany may be doing the same. With the size and diversity of the European economy, productivity growth will likely come both from doing what Japan has done and adopting parts of the American innovation system. But to do either, the common market will have to become more of a single economy.

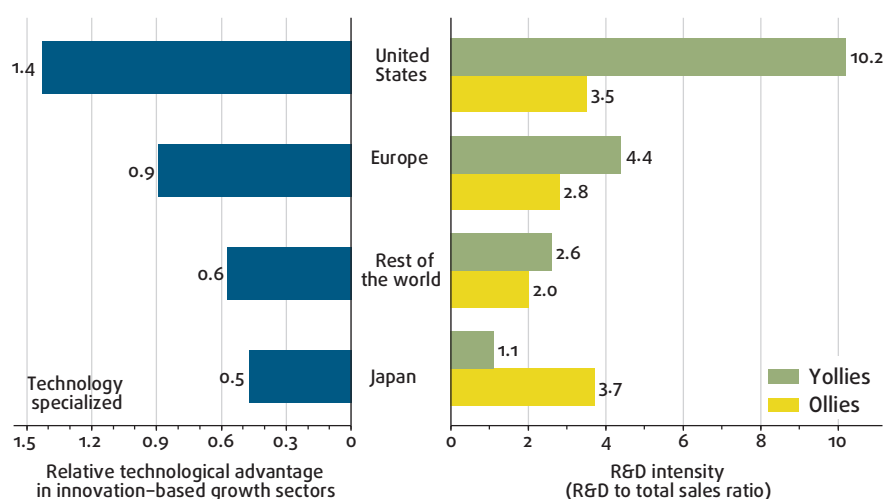
All European countries should have the friendly business climate that Denmark, Ireland, and Norway have. It is not a coincidence that the only large European economies that rival the United States and Japan in innovation are Germany and the United Kingdom, which were both ranked in the top 20 countries for ease of doing business in 2011. Many more European countries should have the universities like those in the United States and Japan, where more than one

**Figure 11: The United States specializes in younger, more R&D-intensive products**

(relative technological advantage and R&D efforts by young and old innovation leaders in the United States, Europe, and the rest of the world)

Note: R&D intensity is measured as the ratio of R&D spending to total sales, for firms established after 1975 (young leading innovators or “Yollies”) or before 1975 (“Ollies”). The relative technological advantage is calculated as the share of each region or country (say, Europe) in the R&D of a particular sector (say, the Internet) relative to the share of Europe in world R&D; values greater than one indicate the region is technology-specialized in the sector.

Source: Bruegel and World Bank staff calculations, based on the European Commission's Institute for Prospective Technological Studies R&D Scoreboard; see chapter 5.





out of two people ages 30–34 have completed college; in Europe, only Ireland, Denmark, Norway, Luxembourg, and Finland exceed 45 percent. More countries will have to improve their business–science links to rival those in the United States and Japan; currently, only Switzerland and Scandinavia do as well.

## Burnishing the brand

Perhaps the simplest and most reliable way to assess the innovation performance of a country is to see how much more productive its enterprises become every year—that is, how much better they are in buying, producing, and selling. During the last decade, two things have happened that should worry Europeans. The first is that since the mid-1990s, labor productivity in Europe’s advanced economies has been falling relative to that of the United States (and Japan). The second is that productivity in Southern Europe has been falling compared with that in both the advanced countries in Western Europe and the less well-off countries in emerging Europe. How can these gaps be closed?

It depends on the gap. For reducing that between the south and the north, the most important steps involve improving business regulations. Countries in the EU12 South—notably Bulgaria—and Georgia have been showing that this can be done even in the poorest parts of Europe. For closing the transatlantic productivity gap, more is necessary. Leading European economies such as Switzerland, Sweden, Finland, Denmark, and Germany are showing what works. Following their example would mean giving up the fixation on public R&D spending targets, and focusing instead on improving competition among enterprises, increasing the private funding of universities, changing the way research is funded so that business–university linkages become stronger, and making the single market work for services so that Europe’s entrepreneurs view the entire continent as their domestic economy.

There are reasons to be optimistic. During the last two decades, countries in the EFTA—Iceland, Norway, and Switzerland principally—have actually done better in improving productivity than the United States. Northern parts of the EU15—especially Denmark, Finland, Ireland, and Sweden—have also been doing well. The trouble is that their economies add up to less than \$1.5 trillion in purchasing power terms, roughly the GDP of Spain or Texas and just a tenth of the European Union’s economy (see the Selected Indicators tables). If the rest of Europe could benefit from the dynamism of northern economies—by learning from them or leaning on them—Europe’s innovation goals might quickly be reached.

Chapters 4 and 5 make it clear that preserving Europe’s global brand will be more difficult than restarting convergence. To stay competitive on world markets, Europe will have to make trade even more vigorous and finance more durable so that the region eventually becomes a single economy. To help redress the continent’s growing productivity gaps, governments in Southern Europe will have to quickly improve the climate for doing business. The more dynamic countries in Eastern Europe will have to do all this as well as invest in infrastructure. To close the growing transatlantic productivity divide, continental countries must give their enterprises more economic freedom. Enterprises in the northern and EFTA economies—already among the world’s most innovative—will

need fuller access to markets in the rest of Europe. Europe will have to become the top destination for those seeking higher education and the opportunity to become entrepreneurs. Only then can European enterprises stay globally competitive, and Europe become the place of choice of entrepreneurs from around the world.

### The lifestyle superpower

In 2008, Europe was already the place of choice for tourists: of the busiest 20 international tourist destinations, more than half were in Europe. The United States had the might and China the momentum, but Europeans had the highest standard of living. Millions of people from around the world visited Europe to see and experience it firsthand. In the 1990s, Japan’s Prime Minister Kiichi Miyazawa had promised he would make his country the “lifestyle superpower.” With average incomes still a quarter short of those in the United States, Europe had become one.

Superpowers tend to spend a lot to protect their interests and project influence. To remain the political superpower, the United States spends almost as much on defense as the next 15 countries do together. To keep its status as the lifestyle superpower, Europe spends more on social protection than the rest of the world combined (figure 12).

### The decline of work

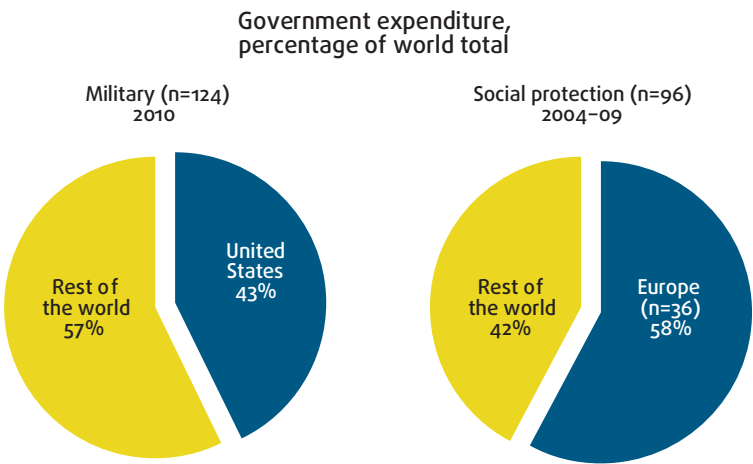
The hallmark of the European economic model is perhaps the balance between work and life. With prosperity, Americans buy more goods and services, Europeans more leisure. In the 1950s, Western Europeans worked the equivalent of almost a month more than Americans. By the 1970s, they worked about the same amount. Today, Americans work a month a year more than Dutch, French, Germans, and Swedes, and work notably longer than the less well-off Greeks, Hungarians, Poles, and Spaniards (chapter 6).

**Figure 12: Outspending the rest of the world**

(general government spending on defense [United States] and social protection [Europe], 2004–09, share of total world spending)

Note: For social protection spending, due to the data availability, averages over 2004–09 by country are used. Data cover general government only. n = the number of countries included in the calculations.

Source: World Bank staff calculations, based on Stockholm International Peace Research Institute (2011); IMF GFS; WDI; World Bank ECA Social Protection Database; and Weigand and Grosh (2008).





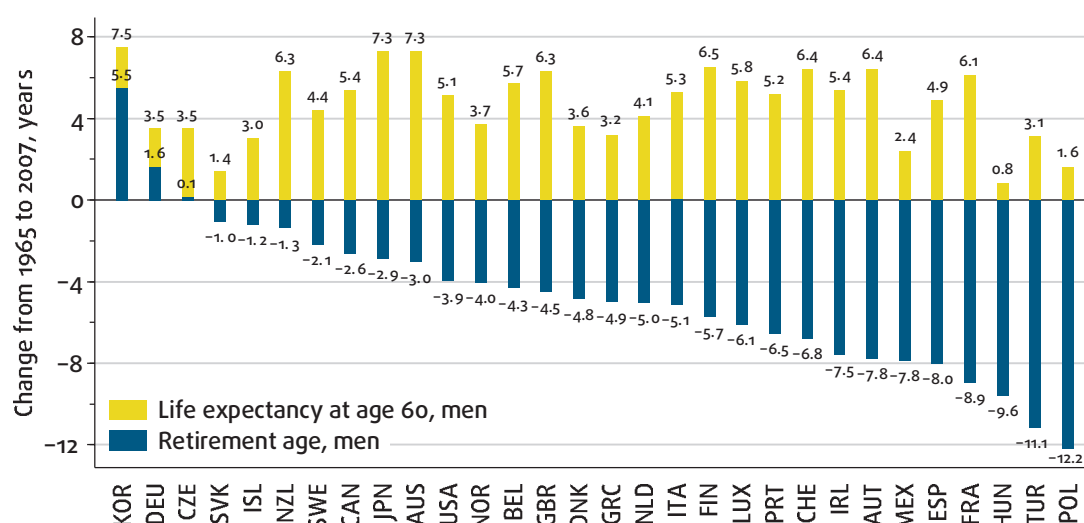
Europeans have also cut the years they work during their (ever-lengthening) lives. Today, men in France, Hungary, Poland, and Turkey effectively retire more than eight years earlier than in the mid-1960s. The average European can also expect to live four years longer. By 2007, Frenchmen expected to draw pensions for 15 more years than in 1965, and Austrian, Polish, Spanish, Swiss, and Turkish men for more than a dozen. In Organisation for Economic Co-operation and Development countries, only Korean, German, and Czech men work more years today than they did 50 years ago (figure 13).

American, Australian, and Canadian men also retire about four years earlier than they used to. But their countries have more favorable demographics than the typical European country (figure 14). On current immigration and work participation trends, the 45 countries covered by this report will lose about 50 million workers over the next five decades, and have a workforce of about 275 million by 2060. In the 2030s alone, the labor force will fall by 15 million people. The decline will be most severe for the European Union (countries such as France, which have high fertility rates today, do better), but candidate and neighborhood countries will also lose workers. The exception is Turkey, where the labor force is projected to increase until 2060.

Only with radical changes can Europe counteract the shrinking of its labor force. If participation rates in all countries were to converge with those seen in Northern Europe, or if the retirement age were to increase by 10 years across the board, the European labor force would increase marginally over the next 50 years. If female labor force participation converged with men's, the labor force

**Figure 13: Europe's pension systems have to support people for many more years**

(changes in life expectancy at 60 and effective retirement age, 1965–2007)

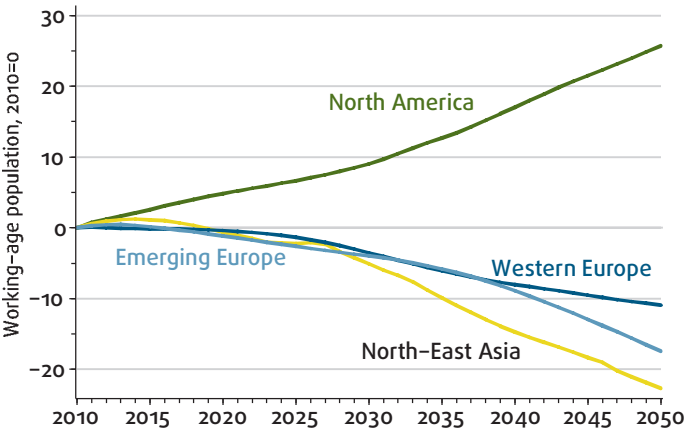


Source: OECD (2011); updated data from OECD (2006).

**Figure 14: Europe’s labor force will shrink, while North America’s will grow by a quarter**

(projected cumulative change in working-age population, 2010–50, percent)

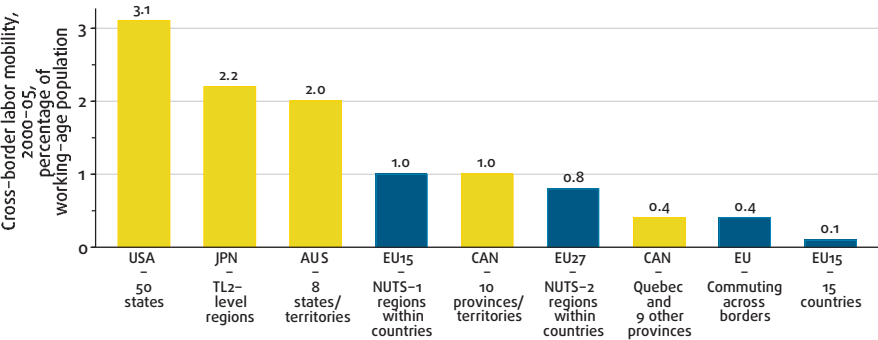
Note: North America is Canada and the United States and North-East Asia includes China; Hong Kong SAR, China; Japan; Macao SAR, China; the Republic of Korea; and Taiwan, China.  
Source: U.S. Census Bureau, International Data Base; see chapter 6.



**Figure 15: Europeans are less mobile, even within their own countries**

(labor mobility, share of working age population that has moved, 2000-05)

Source: Bonin and others (2008); OECD (2005 and 2007); see chapter 6.



would still decrease by 5 percent. But none of these changes would completely offset the loss of young workers. For that, Europe will need to integrate Turks into the European labor market and attract talented young workers from around the world. In one plausible scenario, Turkey could contribute 40 percent of the gains in the European labor force, and almost all of the increase in young workers.

Fixing the European labor market will require a lot: increasing the competition for jobs, improving labor mobility within Europe, fixing how work and welfare interact, and rethinking immigration policies. These changes will not happen without a new social consensus, which has yet to be built.

Perhaps the best way to start is to accelerate internal labor mobility in Europe. Mobility in the European Union is the lowest in the developed world (figure 15). There are natural barriers to greater labor mobility associated with language and cultural differences, but there are also policy-induced obstacles. In most of the older EU member states, there are restrictions on the movement of workers from the new member states. Housing markets in many European countries can be inefficient and make moving expensive: the transaction costs of buying or selling a house can be high. Despite measures to ensure the portability of social benefits across the European Union, including pensions and unemployment



insurance, in practice it is limited because of cumbersome rules. Generous unemployment benefits discourage workers from seeking jobs. Labor market signals can be muted by collective bargaining agreements that limit territorial wage differentiation. To make the single market work better, making labor more mobile should be a priority. For the countries that share the common currency, it is a prerequisite (box 1).

Then, Europe has to make changes in how work is regulated and social security provided. Many countries in Western Europe had started to reverse the decline in work participation during the late 1990s and early 2000s; many in Central, Eastern, and Southern Europe now must do the same. The main attribute of the European economic model that needs to be reassessed is employment protection legislation, which is lowering participation and reducing employment in many countries. In countries such as Spain, it may be responsible for youth unemployment rates as high as 40 percent. Paradoxically, Europe has impending shortages of young workers and high joblessness among its youth.

Denmark and Germany have shown how this can be remedied (Iwulska 2011). Other countries like Croatia, Moldova, Poland, Romania, and Turkey may have to learn quickly and carefully implement the lessons. The countries in emerging Europe will also have to decide—based on their cultural and political antecedents—whether to move toward greater job security and join countries such as Belgium and France, or toward greater flexibility and become more like the North Americans and East Asians. To have both as in Denmark, they will have to consider the greater fiscal costs of “flexicurity.” At the moment, most countries have neither.

While all this is being done, Europe’s policymakers could get people to appreciate the need for a new approach to immigration. Europe needs an immigration policy that is more driven by economic need. Today the debate is about how to best manage migration from North Africa. Tomorrow’s debate should be about the policies and practices that will make Europe a global magnet for talent. Countries like Sweden and the United Kingdom have been doing this, but not quite as effectively as Canada and the United States (Iwulska 2011).

## The precipitate promise of social protection

Europe will have to make big changes in how it organizes labor and government. The reasons are becoming ever more obvious: the labor force is shrinking, societies are aging, social security is already a large part of government spending, and fiscal deficits and public debt are often already onerous.

In dealing with government spending, deficits, and debt, it is sensible to start by asking whether European governments are too big; that is, whether they spend too much. They are obviously bigger than their peers. In the EU15, governments spent 50 percent of GDP in 2009; in much of the rest of Europe, this share was about 45 percent—versus less than 40 percent in the United States and Japan, 33 percent in Latin America, and about 25 percent in emerging East Asia. A map of the world resized to reflect government spending instead of land area shows how Europe might look to outsiders (figure 16).

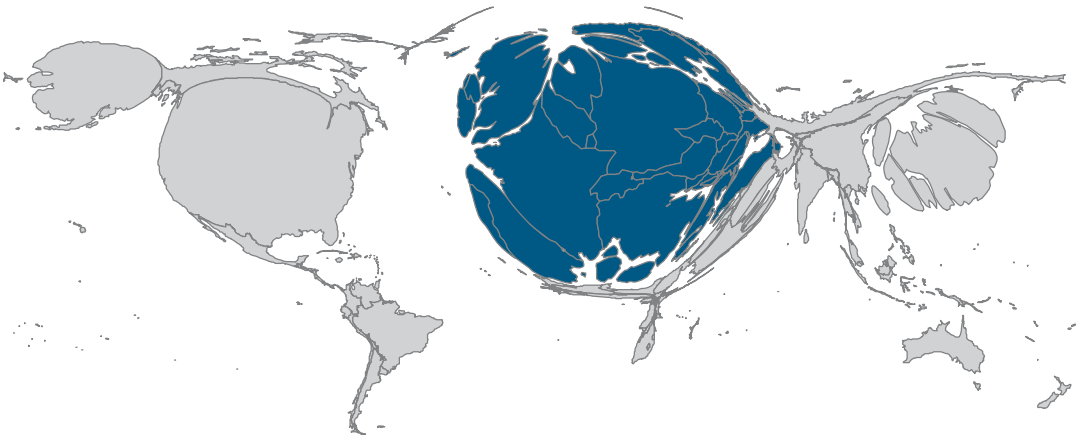


Governments in Europe spend between 7 and 10 percent of GDP more than their peers elsewhere—that is, countries at similar levels of per capita income. The difference is mostly the spending on social protection. For example, Western European governments spend about 10 percent of GDP more than the United States, Canada, Australia, and Japan. The difference in social protection spending is 9 percent of GDP (figure 17).

**Figure 16: Governments in Europe are big**

(the world resized by government spending in dollars, 2009)

Source: World Bank staff, using IMF WEO.



There can be good reasons for having bigger governments. If governments are good at supplying essential social services, and if European society wants to redistribute more to protect the welfare of the elderly, infirm, or unfortunate, they should provide these amenities. If European populations are older and social security systems have to be bigger, that may be another good reason for high-spending governments. European societies have been more redistributive and to good effect—look at the impressive declines in poverty in Western Europe since World War II and in Eastern Europe since the end of the Cold War.

But social services, social welfare, and social security have to be financed by taxes, and tax rates in Europe are the highest in the world. For example, the tax wedge in Korea—the amount that Korean employers pay besides wages when hiring workers—is about a third of what Belgian enterprises pay and half of the taxes paid by businesses in Greece and Turkey. The question that such numbers provoke: is big government a drag on growth in Europe? It appears it is. Over the last 15 years, a 10 percentage point increase in initial government spending in Europe has lowered annual growth by 0.6–0.9 percentage points. Countries with government spending-to-GDP ratios above 40 percent grow by 2 percentage points of GDP less than those with lower ratios (chapter 7).

Of course, size is not the only feature that matters. What government does and how it finances its activities is as important. European governments regulate the largest economic area in the world; encourage a vigorous exchange of goods, services, and capital; promote voice and accountability; provide or enable the provision of public goods; and redistribute wealth. Bigger governments are often better at doing these things, especially when social trust ensures that



everybody plays by the same rules. As countries like Sweden show, such big governments can go together with thriving, dynamic economies.

But it is not easy being like Sweden. What does it take? Make it so easy to register property, trade across borders, and pay taxes that the World Bank ranks the country one of the top 15 for doing business. Create the conditions that get four out of every five people of working age into jobs, and get almost everybody who works to pay taxes. Have an efficient government that provides high-quality social services, so taxpayers get their money's worth. Institute the pension rules that make it difficult to retire before 65 and impossible until you reach your 60s. Cultivate the social trust that allows both a generous social safety net and a transparency in government so that abuse is minimal. The list is long. If a country can do all this, big government will not hurt growth.

Europe's governments will have to become more efficient, or become smaller. Fortunately, governments that have grown prematurely big have done so for just one reason: social protection. Europe's states are not big spenders on either health or education. The variation among countries stems from a difference in spending on pensions and social assistance. Europe's countries also differ in how they tax these benefits; Northern European countries tax the social security benefits of people with high incomes more than others in Europe do. After taxes are considered, the southern periphery is the biggest social spender in Western Europe. But the reason why Europe spends more than its peers on public pensions is the same in the north, center, and south. This is not because Europe has the oldest population (Japan's is much older) nor because of higher pension benefits (annual subsidies per pensioner are about the same in Greece as in Japan). It spends more because of easier and earlier eligibility for pensions (figure 18).

Fiscal consolidation should be a top priority in Europe during the next decade, and controlling the public expenses related to aging will remain the policy imperative over the next 20 years. Calculations done for this report suggest that Western Europe has to improve its primary balance—adjusted for the business cycle—by about 6 percent of GDP during this decade to reduce public debt to 60 percent of GDP by 2030 (figure 19). Among the countries of Western Europe, the need for consolidating public spending is greatest in the south and lowest in the north. Among Europe's emerging economies, with a lower public debt target of 40 percent of GDP, the adjustment needs are about 5 percent of GDP. They are lowest in the European Union's new member states. Bigger adjustments will be needed in candidate countries and the economies of the eastern partnership, because many of them have not begun seriously reforming their social protection systems—pensions, unemployment insurance, and social assistance.

Public spending related to aging includes the ever-increasing costs of providing health care for the elderly. Without comprehensive reforms to pensions and long-term health care, these costs could add more than 3 percent of GDP to the governments' fiscal imbalance during the next two decades. Governments in Europe that spend more than 10 percent of GDP on such benefits may be risking underinvestment in activities that help economic growth—education, infrastructure, and innovation. Countries such as Serbia and Ukraine that already spend 15 percent or more on social security alone may be jeopardizing the welfare of generations.

Recalibrating the work-life balance

The European model of work provides income security more than any other, and some countries such as Austria, Denmark, Ireland, and Switzerland have adapted it to combine security with flexibility in hiring and firing to foster both efficiency and equity in labor market outcomes. But for much of Europe, the imbalances between work and life need to be mitigated, as do the fiscal imbalances that have emerged as a result of public spending to protect societies from the rougher facets of private enterprise.

Figure 17: Social protection explains the difference in government size between Europe and its peers  
(government spending, percentage of GDP, 2007–08)

Note: “Social protection” includes benefits related to sickness and disability, old age, survivors, family and children, unemployment, and housing. Western Europe comprises Denmark, Finland, Iceland, Norway, and Sweden (North); Austria, Belgium, France, Germany, Ireland, Luxembourg, the Netherlands, Switzerland, and the United Kingdom (Center); Greece, Italy, Portugal, and Spain (South). Source: World Bank staff calculations, based on IMF GFS and IMF WEO.

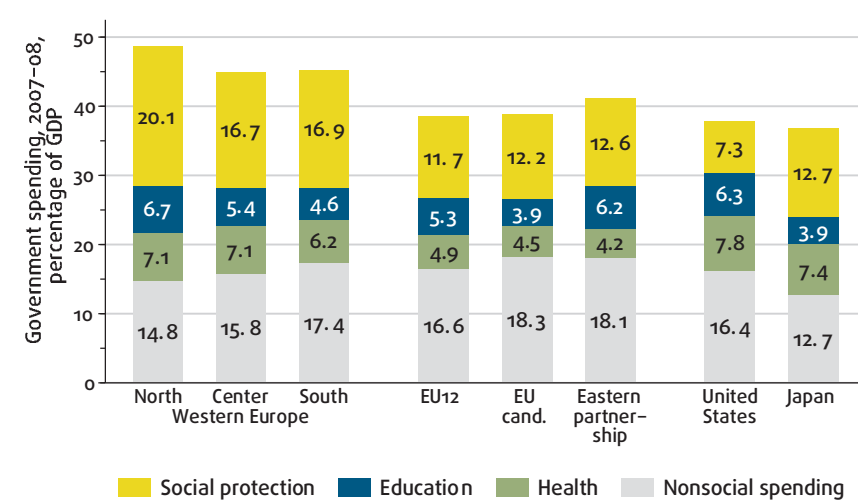
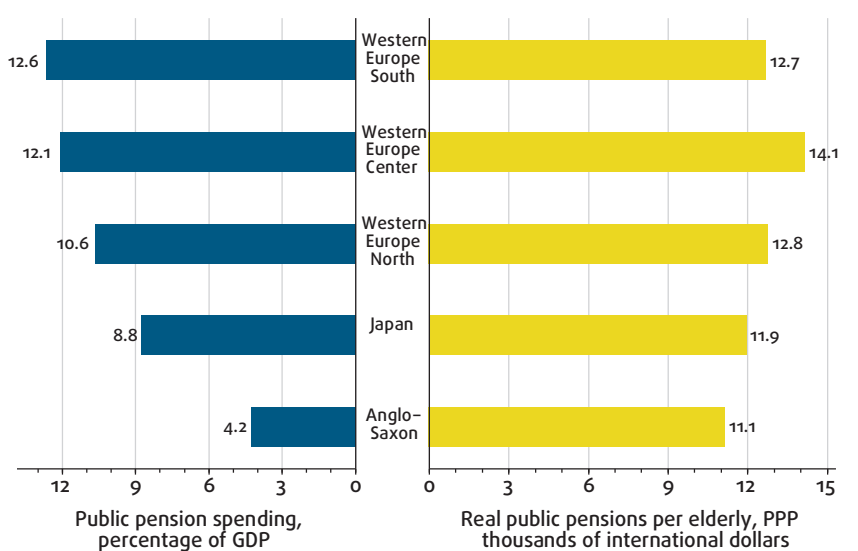


Figure 18: Small differences in annual pensions per beneficiary, big in overall public pension spending  
(public pension spending in 2007)

Note: Median values by group are shown. Western Europe comprises Denmark, Finland, Iceland, Norway, and Sweden (North); Austria, Belgium, France, Germany, Ireland, Luxembourg, the Netherlands, Switzerland, and the United Kingdom (Center); Greece, Italy, Portugal, and Spain (South). Anglo-Saxon comprises Australia, Canada, New Zealand, and the United States. Source: World Bank staff calculations, based on Eurostat and the OECD Pensions Statistics; see chapter 7.





Since the mid-1980s, a billion Asian workers have entered the global marketplace. Over the same period, Europeans have been working fewer hours per week, fewer weeks per year, and fewer years over their lifetimes. It is worrisome that their productivity is not increasing as quickly as it should. In the European Union's southern states, for example, productivity during the last decade fell by 1 percent each year, when—given productivity levels relative to those in Continental and Northern Europe—it should have increased by about 4 percent annually. It is also worrisome that in many parts of Europe, taxes bring in less than what governments spend. France and Germany, for example, have not had a fiscal surplus since the 1970s; Greece expected a budget deficit of about 10 percent of GDP in 2011; and Hungary, Serbia, Ukraine, and many others have been struggling to contain budgetary imbalances.

This will have to change. The reform of pensions and disability allowances will have to be the highest priority now, with costs of long-term health care soon becoming a pressing problem. Europe already spends twice as much on social security as Japan and the United States. There are some countries in Europe that are showing how to address these problems. Some such as Sweden are well known; others like Iceland could be studied more (Iwulska 2011). European societies will also have to modernize social welfare systems so that the disincentives to work are minimized. Denmark, Germany, and Ireland may inspire others how this can be done. But what needs to be done is not hard to see: Europeans will have to work for more years.

## From distinct to distinguished

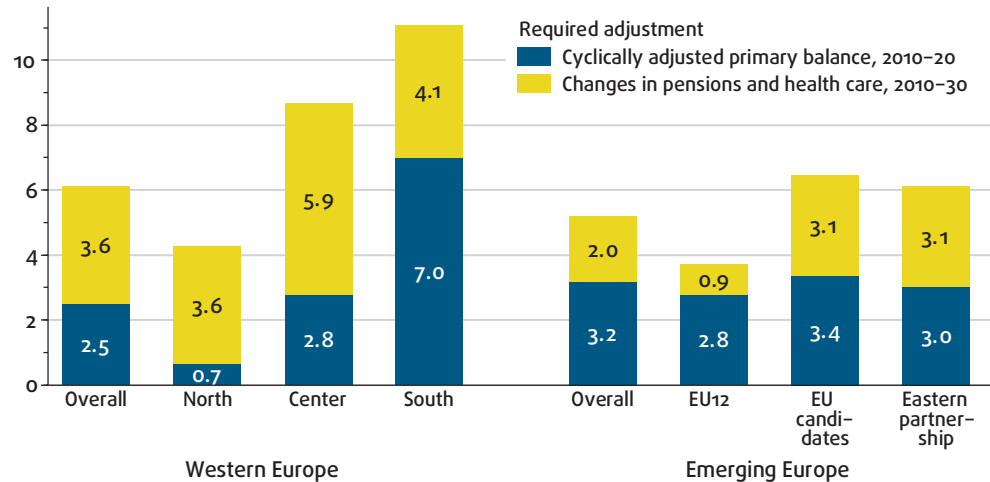
In 2007 *An East Asian Renaissance*, a report by the World Bank, introduced the notion of the “middle-income trap” (Gill and Kharas 2007). It was about why countries seem to easily grow from low per capita income levels to middle income, but find it difficult to become and remain high-income economies. Later research identified about two dozen countries that have grown from middle income to high income since 1987. Some had discovered oil, like Oman and Trinidad and Tobago. But this can hardly be a development model for others to emulate, because it is a matter more of providence than policy. Some, like Hong Kong SAR, China; Singapore; and Republic of Korea, had translated peace into prosperity through export-led strategies that involved working and saving a lot and sometimes postponing political liberties for later. They had to be aggressive, like tigers, looking out only for themselves.

But of the countries that have grown quickly from middle-income to high-income, half—Croatia, Cyprus, the Czech Republic, Estonia, Greece, Hungary, Latvia, Malta, Poland, Portugal, the Slovak Republic, and Slovenia—are in Europe. If you can be a part of the formidable European convergence machine, you do not need to be extraordinarily fortunate to become prosperous nor—like the East Asian Tigers—do you have to be ferocious. You just have to be disciplined.

The inability of this convergence machine to continue to deliver rapid growth and an improved quality of life in the advanced economies of Western Europe has been recognized for some time. Europe's policymakers have put together protocols and commitments to encourage innovation and dynamism. Policies that were a core component of Europe's postwar growth model—or those that evolved from

**Figure 19: Western Europe has to reduce fiscal deficits by 6 percent of GDP, emerging Europe by less**

(illustrative fiscal adjustment needs, 2010–30, percentage of GDP)



Note: The fiscal impacts of aging on pensions and health care systems are missing for EU candidate and eastern partnership countries. For this exercise, the sum of adjustment in health care spending is assumed to be the same as for the new member states. The adjustment in pension related spending is assumed to be the same as that for Southern Europe. Western Europe comprises Denmark, Finland, Iceland, Norway, and Sweden (North); Austria, Belgium, France, Germany, Ireland, Luxembourg, the Netherlands, Switzerland, and the United Kingdom (Center); Greece, Italy, Portugal, and Spain (South). Overall Western Europe contains all the countries belonging to these three groups. Overall emerging Europe includes all countries from EU12, EU candidates, and eastern partnership.

Source: Calculations by staff of the Institute for Structural Research in Poland and the World Bank, based on IMF WEO; see chapter 7.

it—are not giving European economies enough flexibility to take advantage of new technologies that have led to high productivity growth in Asia and North America during the last 15 years. It is not that European product market regulation and employment protection became more stringent over time; they just became more costly.

The Western European model that so effectively enabled catch-up has created “afterglow” institutions that are hindering growth in a different age—an era of greater competition abroad and big demographic shifts at home. These institutions now need updating. In the states aspiring to become part of the machine, notably the candidates, potential candidates, and the Eastern Neighborhood, the afterglow structures will probably not preclude the benefits that come from greater economic union. In the new member states too, these institutions may not yet prevent productivity gains if their ties with advanced Europe become stronger and sophisticated. In the western economies, the structures must quickly be made more flexible. Convergence to a rigid core may soon become unappealing.

The European Union has a growth strategy, Europe 2020, which recognizes this imperative. Not all of the 45 countries covered by this report are in the European Union, but most share the aspirations of Europe 2020: economic development that is smart, sustainable, and inclusive. Europe’s way of life—and its growth ambitions—put a premium on combining economic dynamism with environmental sustainability and social cohesion.

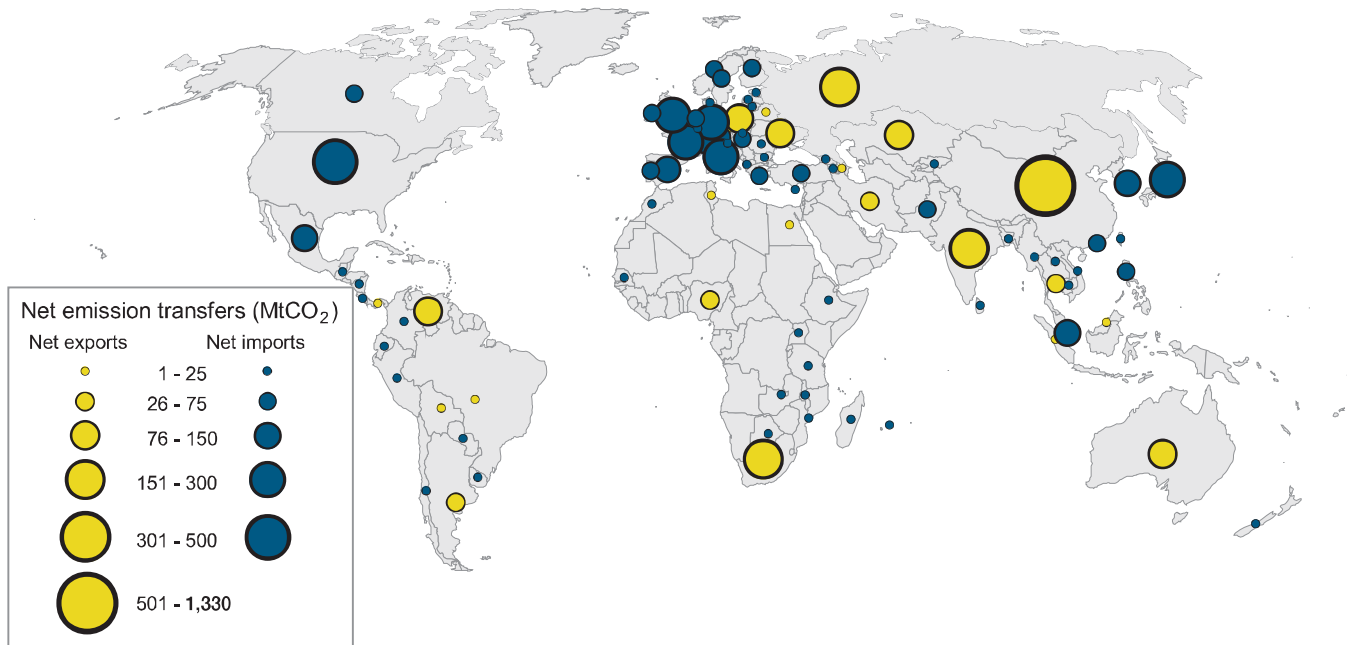


Europe's economic model is already more environment-friendly than most. It has made production cleaner than any other part of the world except Japan, and will become the lowest per capita emitter of carbon dioxide by 2020. But it is still the largest importer of emissions (embedded in imported products—figure 20), polluting not as much through production as by proxy. Europeans will need to do more on the consumption side to be considered truly green. It is a testament to European ideals that Europe is willing to pay the most to avert global warming while it is likely to be damaged least. There is reason to believe that Europe's economic model can become greener without unduly sacrificing growth: Germany, France, and Sweden may already be showing the way.

Social cohesion is the cornerstone of Europe's economic model, but this aspiration must be realized in ways consistent with sound economic principles. It can be, because Europe has three priceless assets: the European Union's single market, a momentum for regional integration, and the global influence that comes from being the generator of one-third of the world's annual output. Inclusive development will be a natural outcome of measures to deepen the single market, expand the scope of regional economic integration, and preserve Europe's global influence (chapter 8).

This will require adjustments in all of the European economic model's six components. The rules to guide policymakers—adapted from Phelps (1966)—might look something like the following:

- Extend the benefits of freer trade to those outside the European Union. Enlargement has made Europe stronger, and economic integration should be continued toward the east. The single market can be made deeper and wider at the same time.
- Borrow from abroad only for investment. In Europe, where foreign finance has been used for private investment, it has fueled growth and convergence. But relying on foreign capital to finance consumption makes economies everywhere more vulnerable than dynamic.
- Provide enterprises with the freedom to start up, grow, and shut down. Efficient regulation of enterprise trusts but verifies, makes compliance easy but punishes violation, and assesses risks and concentrates resources where risks are highest.
- Use public money to catalyze private innovation, not substitute for it. Effective innovation policy sets the table for innovators to thrive by supporting inventions, mobilizing finance, and bringing the power of choice and the resources of business into Europe's universities.
- Design labor laws to treat insiders and outsiders more equally. Regulations should not favor either those with jobs or those without. Seeing labor as a fixed lump to be divided among workers leads to poor rules for regulating work.
- Consider government debt mainly as a way to finance public investment. With high debt levels and modest growth prospects, public finance should be premised on the expectation that future generations will not be much wealthier than today's. Social protection, social services, and public administration should be financed with taxes and contributions, not sovereign debt.



**Figure 20: Greening production but not consumption**

(net CO<sub>2</sub> emission transfers [territorial minus consumption emissions], 2008)

Note: MtCO<sub>2</sub> = million tons of carbon dioxide.

Source: World Bank staff, using data from Peters and others (2011); see spotlight 2.

European economies do not have to become North American or East Asian to keep to these rules. But Europe might learn a few lessons from them. From North Americans, Europe could learn that economic liberty and social security have to be balanced with care: nations that sacrifice too much economic freedom for social security can end up with neither, impairing both enterprise and government. To get this balance wrong could mean giving up Europe's way of life and its place in the world. From the Japanese, the Koreans, and the Chinese, Europe might learn that while the gifts of prosperity and longevity arrive together, they have to be unbundled: being wealthier means that Europeans do not have to work as hard as before, but living longer means having to work more years, not fewer. To do otherwise unjustly burdens future generations, and violates growth's golden rule.

Europeans can of course learn the easiest and most from each other. The countries in Europe that have instituted policies manifesting both cultural maturity and economic discipline have shown how a distinct growth model can be made distinguished (table 2).





### Box 1: The unmet precondition of the common currency—labor mobility

The September 1961 volume of the *American Economic Review* might well be the most influential issue of an economic journal ever. A dozen or so pages after the article on optimum growth paths by Phelps is a short communication from Robert Mundell that outlines a theory of “optimum currency areas.” It states the conditions that the countries in a monetary union had to have—or quickly institute—to share a single currency profitably. In practical terms, it meant ensuring that the single currency should not lead to persistently high unemployment rates in some parts of the monetary union, nor to unacceptably high rates of inflation in others. In 1999, Mundell was awarded the Nobel Prize for “his analysis of monetary and fiscal policy under different exchange rate regimes and his analysis of optimum currency areas.”

The conditions for a successful monetary union identified in the 1961 article can be distilled to mobility of labor and capital among the member states. To understand why, imagine a fall in economic activity in one part of the union (say the south) and a rise in another (say the north). This would cause unemployment to rise in the south, and inflationary pressures and balance-of-payments surpluses to increase in the north. If the central bank increases the money supply, it might help the south but would aggravate inflation in the north. If it does not, high unemployment in the south would cause suffering. But if capital and

labor were quick to move within the monetary union, the dilemma would disappear.

For a practical application of his ideas, Mundell chose Western Europe, presaging today’s debates about the euro. “In Western Europe the creation of the Common Market is regarded by many as an important step toward eventual political union, and the subject of a common currency ... has been much discussed. One can cite the well-known position of J. E. Meade, who argues that the conditions for a common currency in Western Europe do not exist, and that, especially because of the lack of labor mobility, a system of flexible exchange rates would be more effective in promoting balance-of-payments equilibrium and internal stability; and the apparently opposite view of Tibor Scitovsky who favors a common currency because he believes that it would induce a greater degree of capital mobility, but further adds that steps must be taken to make labor more mobile and to facilitate supranational employment policies.”

The introduction of the euro undoubtedly increased capital mobility in the eurozone; one can reasonably expect a single currency to greatly facilitate financial integration. The single currency undoubtedly also facilitated the exchange of goods. But a single currency cannot by itself increase people’s mobility. This requires states to harmonize labor regulations, education and training arrangements, and social security and welfare systems. Growing

goods trade in the eurozone may reduce the need for labor mobility, but trade in services—now three-quarters of Western Europe’s output—itself often requires movement of people. So does keeping manageable unemployment differences among countries.

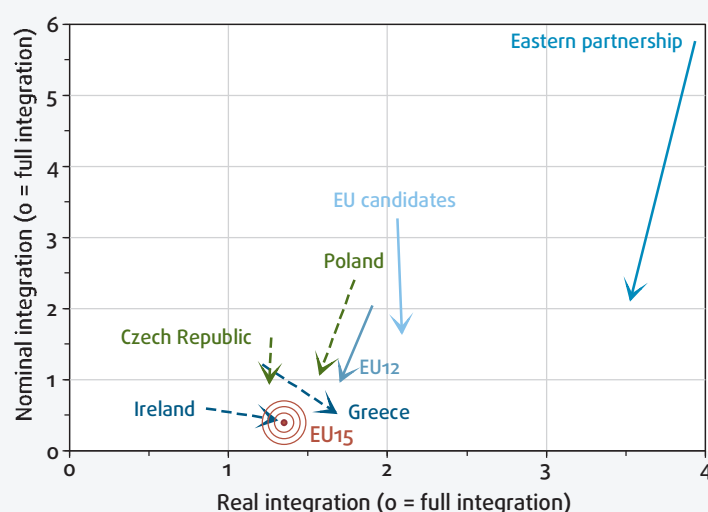
In the decade before the global financial crisis, European economic integration showed impressive progress. But for many countries, the progress was unbalanced (box figure 1)—more rapid in financial areas (interest rates and inflation) than in real sectors (trade and incomes). It was more balanced for the new member states. Poland, for example, became more integrated in financial and real terms. The EU candidate countries (represented here by Croatia and Turkey) experienced just financial integration. But while integrating in monetary and financial aspects, Greece became less integrated within the EU15 in real terms.

Labor mobility in Europe is the lowest in the developed world. Mundell’s communication 50 years ago suggests that this will be a serious problem for the eurozone. Increasing labor mobility may be a privilege in Europe, but it is a prerequisite in the eurozone. Countries that integrate their labor markets will be able to share a single currency profitably. Others will have to deal with stressful tradeoffs between inflation and unemployment.

Source: Mundell 1961; Sugawara and Zaldueño 2010.

### Box figure 1: More monetary and financial than real integration in Europe during the last decade

(arrows begin in 1997 and end in 2008; the origin indicates complete nominal and real integration)



Note: The figure shows the extent of economic integration, using the theory of optimum currency areas (Mundell 1961). The vertical axis combines in one index of dissimilarity three indicators of nominal integration—volatility of exchange rates, convergence in inflation rates, and convergence in interest rates. The horizontal axis does the same with three indicators of real integration—extent of synchronization in business cycles measured by indices of industrial production, trade integration, and per capita income. The origin in the figure represents perfect economic integration, and the arrows show the integration path of each country or group of countries in 1997–2008. EU candidates are represented by Croatia and Turkey; the eastern partnership countries by Armenia, Azerbaijan, Belarus, Georgia, Moldova, and Ukraine; and the EU’s new member states by Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, the Slovak Republic, and Slovenia.

Source: Sugawara and Zaldueño 2010.



## Notes

- 1 Phelps, Edmund. 1961. "The Golden Rule of Accumulation: A Fable for Growthmen," *The American Economic Review*, Vol. 51, No. 4. (September, 1961), pp. 638-643.
- 2 Among the economists were Maurice Allais, Tjalling Koopmans, Joan Robinson, John von Neumann, Robert Solow, and Trevor Swan.
- 3 von Weizsäcker, Carl Christian. 1962. *Wachstum, Zins und optimale Investitionsquote*, Tübingen (Mohr-Siebeck), 96 pages.
- 4 The report covers 45 countries: the 27 member states of the European Union, 4 countries in the European Free Trade Association (Iceland, Liechtenstein, Norway, and Switzerland), 8 candidate and potential candidate countries (Albania, Bosnia and Herzegovina, Croatia, Kosovo, the former Yugoslav Republic of Macedonia, Montenegro, Serbia, and Turkey), and 6 eastern partnership countries (Armenia, Azerbaijan, Belarus, Georgia, Moldova, and Ukraine).

### Table 2: 30 questions, 30 answers

## Chapter 1: The European growth model

### What makes the European economic model unique?

- The principal components of Europe's growth model—trade, finance, enterprise, innovation, labor, and government—are organized in unique ways.

### Have changes in Europe and the rest of the world made a new economic model necessary?

- Sluggish productivity growth, a declining workforce, and growing fiscal imbalances have revealed weaknesses of the European economic model, and the entry of a billion Asian workers into the global market is adding to the stress.

### Which parts of the European model should be preserved, and which changed?

- Many changes are needed in how governments and labor markets are organized. Fewer changes are needed to foster innovation, productivity growth, and job creation by enterprises, and fewer still to improve finance and trade in Europe.

## Chapter 2: Trade

### Is "Factory Europe" as dynamic as "Factory Asia"?

- Factory Asia is growing faster, but goods trade in Europe is more sophisticated.

### Is the Single Market for Services underachieving compared with the United States?

- The single market is working quite well for traditional services such as travel and transport, but it is underperforming in modern services such as insurance, information technology, and other business services.

### Is the Common Agricultural Policy compromising Europe's global leadership?

- The European Union's agricultural policies hobble the extension of the single market to its neighbors, and Europe is missing an opportunity to improve the lives of 75 million people in the eastern partnership countries.



## Chapter 3: Finance

**Why is finance in emerging Europe different from other regions?**

- The prospect of membership in the European Union exerts a powerful policy and institutional pull, making Europe unique and strengthening the link between foreign savings and economic growth.

**How did some European economies benefit more from international financial flows than others?**

- European economies that managed to “boom-proof” public finances and “crisis-proof” private financing without resorting to the costly self-insurance seen in Asia benefited from foreign financial flows.

**Is there evidence of a “debt overhang” in emerging Europe that reduces growth and justifies government intervention?**

- In emerging Europe, treasuries, enterprises, and households do not face a debt overhang, but in the eurozone’s periphery this problem is acute, posing a danger for banks everywhere.

## Chapter 4: Enterprise

**What does Europe expect from its enterprises?**

- Workers expect enterprises in Europe to create jobs, shareholders to generate value added, and governments to bring in sizable export earnings.

**How have European firms done in an enlarged Europe?**

- In most parts of Europe, firms have taken advantage of greater regional integration to decentralize production, attract foreign investment, and expand the markets for their products.

**Why did some parts of Europe do better than others?**

- In Western and Eastern Europe, industrial structures were better suited for a single market; Southern European enterprises have been slower to offshore activities and to attract foreign investors.

**Which government policies help enterprises do better?**

- In advanced European economies, many governments have to streamline regulations to make doing business easier; in emerging Europe, most have to improve infrastructure and credit as well.

## Chapter 5: Innovation

**How much does Europe’s innovation deficit matter?**

- Europe’s innovation deficit matters most for the EU15, and so it also matters for the economies of emerging Europe because they are closely integrated.

**Why does Europe do less R&D than the United States, Japan, and the Republic of Korea?**

- European enterprises do less R&D than American firms because they tend to be in sectors that are not as innovation-oriented.

**What are the special attributes of a successful European innovation system?**

- The most innovative European economies such as Switzerland spend a lot on R&D, but also share key attributes with the United States—tight business–university links, good management skills, and top universities.

**What should European governments do to increase innovation?**

- Measures to fully integrate the Single Market for Services will provide the scale, more privately funded universities will supply the skills, and regulations that foster competition will create the incentives for European enterprises to innovate.

## Chapter 6: Labor

### Is there a European work model?

- European economies generally have more stringent employment protection and more generous social benefits than their peers in North America and East Asia.

### Given demographic changes, how can Europe achieve a stable and more productive workforce?

- Increased participation can help stem the decline of the workforce, but more competition for jobs, greater mobility within Europe, and measures to attract global talent will still be necessary.

### Are employment and social protection practices inhibiting labor participation and efficiency?

- Employment protection gives too much power to those with jobs while banishing others to the fringes of the labor market, and generous social benefits weaken the incentives to work.

### Is Europe taking full advantage of the benefits associated with internal labor mobility?

- Migration among and within countries in Europe is still low, and even intra-EU migration falls short of the European Union's aspiration of a fully integrated labor market.

### How can Europe become a global magnet for talent?

- Europe needs an approach to global talent with policies that link immigration to labor markets, and a business climate that rewards skills and entrepreneurship.

## Chapter 7: Government

### Are governments in Europe bigger than elsewhere?

- Governments in Europe spend about 10 percent of GDP more than their peers, and this is almost entirely because they spend more on social protection.

### Is big government a drag on growth in Europe?

- Controlling for other differences, European economies with government spending greater than 40 percent of GDP have had much lower growth rates during the last 15 years.

### If big government impedes growth, how do countries such as Sweden do so well?

- Countries like Sweden have big governments, but they deliver high-quality social services, make it easy for citizens and enterprises to comply with taxes and regulations, and have high levels of social trust.

### How can governments be made more efficient?

- Countries where government works have made their bureaucracies leaner, fiscal institutions more reliable, public services competitive, tax administration effective, and citizens more empowered.

### Should fiscal consolidation be a top policy priority in Europe?

- To respond to market pressures and aging populations, almost every country in Europe must make big fiscal adjustments to reduce public debt to precrisis levels.

## Chapter 8: Golden growth

### How can Europe make the single market more efficient?

- Greater labor mobility and more uniform national regulations for modern business services are making the single market more efficient.

### How can Europe maintain the momentum for regional economic integration?

- Sustaining economic integration requires making the single market efficient, crisis-proofing financial flows, and facilitating production networks through improved public services in emerging Europe.

### What is needed to maintain Europe's global leadership?

- To remain a global economic leader, Europe has to sustain regional integration, reduce public debt, reform social security, revamp employment protection laws, and institute policies to attract talent from around the world.

Source: Chapters 1–8.

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# Chapter 1

## The European growth model

When this report was being finalized in late 2011, Europe was in crisis. The nations of Europe that had given up the most prized symbol of sovereignty—their currency—in exchange for the euro had the most troubled economies in the world. The countries that had ostensibly integrated the most were the ones deepest in trouble—surely a sign of a deeply flawed growth model.

But if Aristotle were writing about the good life today, he could still consider Europe. Europeans live long and largely healthy lives. They work less than workers in other prosperous societies. European incomes are not as high as American incomes, but most European countries have high-income economies. They have built these economies with democratic and representative societies, sacrificing neither civil liberties nor basic needs. And along the way, they have looked after the unfortunate among them and helped poorer nations in the neighborhood.

During the “Golden Age of European Growth,” the early 1950s to the mid-1970s, Western European incomes converged toward those in the United States. From the mid-1970s to the early 1990s, the incomes of more than 100 million people in the poorer southern periphery—Greece, southern Italy, Portugal, and Spain—rapidly converged on those of advanced Europe. After the fall of the Berlin Wall, the European Union absorbed another 100 million people in Central and Eastern Europe. Incomes in these countries have converged quickly. As another 100 million people in the Balkan states and Turkey wait to enter the world’s most powerful association of nations, they are already benefiting from the aspirations and institutions that helped almost half a billion people achieve the highest standard of living in the world.



- What makes the European economic model unique?
- Have changes in Europe and the rest of the world made a new economic model necessary?
- Which parts of the European model should be preserved, and which should be changed?

One could say without exaggeration that Europe had invented a “convergence machine,” taking in poor countries and helping them become high-income economies. In other parts of the world, middle-income countries had to be extraordinarily fortunate—finding oil, for example—or unusually ferocious, such as the East Asian Tigers, to become wealthy. In Europe, they did not need to be either.

European societies are not only among the wealthiest in the world but also among the most equal. Europeans benefit from near-universal access to social services, including universal health care and free primary, secondary, and in many countries, tertiary education. They are protected by an elaborate system of social insurance. Due to smaller wage differentials, higher and more progressive taxes, and more generous social transfers, income distribution in Europe is more equal than in the United States, Japan, and most emerging market economies. At the same time, Europe has become greener over the past two decades and—except for Japan—is more energy-efficient than other high-income countries.

Perhaps most important, after two continental wars in the first half of the twentieth century, Europe has found peace through economic and political integration. This unique achievement is at the heart of Europe’s remarkable economic success after 1945 and the peaceful transformation of the countries in Central and Eastern Europe after the fall of the Berlin Wall. As economist Paul Krugman notes, “The Europeans have shown us that peace and unity can be brought to a region with a history of violence, and in the process they have created perhaps the most decent societies in human history, combining democracy and human rights with a level of individual economic security that America comes nowhere close to matching” (Krugman 2011).

The citizens of Europe appear to appreciate these achievements. According to the Eurobarometer, a survey of EU citizens conducted twice a year, most Europeans are optimistic about the future. Other surveys find that Europeans lead not only long and healthy lives, but also happy ones (Veenhoven 2011).

All this was keenly appreciated before the latest crisis. Europe’s economic and social conditions in 2011 provide a stark contrast to its achievements over the past six decades. Since 2009, Europeans have had to accept cuts in incomes and social spending, sparking angry protests in some countries. Markets fret over high sovereign debt, and question the inconsistencies between a shared currency and widening differentials in fiscal discipline and entrepreneurial abilities among the members of the eurozone. Even more seriously, they question the ability of the worst-afflicted countries to grow their way out of the crisis.

These concerns are not new. In 2002, the Lisbon Agenda had recognized Europe’s disadvantage in innovation and productivity growth relative to the United States and Asia. The global economic and financial crisis of 2008–09 left scars in Europe, especially in its periphery, and strained European institutions. The European Commission has repeatedly pointed to long-standing competitiveness issues across the region. European leaders today face the hard task of selling tough adjustment to a reticent population, reassuring markets

and addressing deep-rooted competitiveness issues. There is little consensus on how to do this. But there is growing consensus that unless Europe learns to grow again, the European way of life and Europe's place in the world are under threat.

Recent developments can also be seen as a challenge to the integration at the center of Europe's unique success. An increase in North African refugees after the Arab Spring prompted calls by French and Italian leaders to restrict the free movement of people between countries that are members of the Schengen Agreement. The fear of competition from workers from new member states in Eastern Europe is widespread even in countries facing acute shortages of qualified labor, such as Germany. High rates of youth unemployment in several European countries and persistent pockets of social exclusion stand in contrast with the ideals of European solidarity. Even as Europe's new members in the east have rapidly caught up with their western neighbors, Europe's southern economies have started to fall behind, prompting concerns that Europe's latest enlargement may have been at the expense of the weaker among the EU's older members. Coordinated action by banks and supervisors during 2008–09 avoided rapid deleveraging by parent banks that had expanded into Eastern Europe. However, the same outcome is not guaranteed if national supervisors focus on shoring up the domestic capital base of their banks at the expense of faster deleveraging abroad.

Not surprisingly, support for further enlargement in the European Union is declining, though it runs higher among new members.<sup>1</sup> Citizens of the EU's neighboring countries, too, have started to doubt the EU's attractiveness. Support for EU membership is falling in Turkey.<sup>2</sup> Ukraine has reverted to a foreign policy that tries to balance commitment to integration with Europe and reintegration with the Russian Federation. In Serbia, polls indicate only a thin majority in favor of EU membership. The model of European integration and solidarity may not be coming apart at the seams, but it is fraying at the edges.

Europeans have become less confident that their development model can sustain improvements in living standards, and neighboring countries are cautious about joining an aging and ailing club. Although many people in the world admire Europe, some suspect the continent's best days are past. After the achievements of the last six decades, Europe's economy has lost some of its lustre.

## What makes Europe unique

Although the end of European complacency is good, a loss of confidence in the European model may be dangerous. In a rush to rejuvenate growth, the positive attributes of the European development model may be abandoned along with the negative. By identifying the European growth model's strengths and weaknesses, this report aims to reduce the risk of policymakers inadvertently discarding the best parts of Europe's economic approach.

It is fair to ask if it is possible to rigorously identify a growth model except in narrow technical terms defining the interaction of technology, capital, and labor.



This report takes a more practical approach by analyzing the six activities that are the principal components of an economic model: enterprise, labor, trade, finance, innovation, and government. This approach is motivated by a broad concept of economic and social advancement (box 1.1).

It is also fair to ask whether it is appropriate to assume a “European model.” There are differences in how Ireland and Italy regulate enterprise and labor, or how Germany and Greece balance fiscal and social policies. There are differences in what Spain and Sweden export, and how they regulate trade in services. There are differences in how Poland and Portugal regulate their banks, and not just because one shares a common currency while the other has its own. There are differences in how Finland and France provide essential government services, and each approach has merits. Because of these differences, various subgroups of countries within Europe are analyzed and contrasted in subsequent chapters of this report.<sup>3</sup> This chapter emphasizes what is common across different parts of Europe; the next six chapters identify what is different and why.

But these differences in specifics do not rule out common principles that together constitute a unique approach to economic growth and social progress. This common approach consists of policies and institutions that govern trade and finance, enterprise and innovation, and labor and government. Together they define an economic and social model that is uniquely European. This report is premised on the belief that all parts of Europe—EU member states, candidates and potential candidates, and nations in the EU eastern partnership countries—share the aspirations that motivate a common European model, sometimes summarized as “the social market economy” (box 1.2). This report identifies features of this model that should be preserved and those that must be changed, analyzes how change can occur, and presents examples from Europe and around the world that illustrate how countries have successfully made some of these changes.

### Box 1.1: Europe’s economic model and its standard of living

Jones and Klenow (2010) propose a broad notion of the standard of living that captures not just the level of national income, but also its distribution, how much of it is available for consumption, how much leisure people need to trade to achieve their level of consumption, and how long they can be expected to live. Calibrating such a broad, consumption-based concept of welfare to existing data reveals that many European countries approach levels of welfare in the United States, despite considerably lower levels of national income. By contrast, the performance of emerging markets in Asia and Latin America looks less impressive than in Europe, because growth there has often been associated with a declining share for consumption and rising

income inequality.

The basic idea of Jones and Klenow can be related to the practical approach taken in this report to analyze Europe’s economic and social model. The activities of enterprises, their innovation and entrepreneurship, the trade links between them, and their access to finance and skills determine the productivity of an economy and its aggregate income level. The organization of labor determines how long people have to work to afford a particular level of consumption and whether such work is available for all. The activities of government determine how much income is redistributed, what skills are formed in the education system, and the access to and cost

of health care and social insurance that impact what risks people take and how long they can expect to live.

Jones and Klenow note that their measure of economic welfare does not capture possible tradeoffs between present and future generations. It captures only the expected welfare of consumers today and does not address environmental sustainability. Intertemporally optimal or “golden” growth paths have been analyzed by Phelps (1961), among others. Europeans today have to find ways to safeguard the high level of economic welfare achieved over the last six decades while ensuring that future generations do not have fewer opportunities.

### Box 1.2: Europe's postwar consensus: the social market economy

The idea of the social market economy is simple: combine the efficiency of markets with social fairness, and combine economic freedom with basic social security. The conceptual fathers of the social market economy, such as Walter Eucken (1940) and Alfred Müller-Armack (1947), were liberals in the European sense of the term. They emphasized the role of free markets in allocating resources and of private property and contract rights in organizing economic activity. Their positions ran counter to the pervasive skepticism of markets and private property in Europe during the Great Depression (Phelps 2007). But they also emphasized the need for government activism to safeguard markets through competition policy and to deal with externalities through regulatory interventions. Private businesses were expected to be responsible for the consequences of their activities—a kind of generalized “polluters pay” principle.

For Eucken, government intervention to achieve social objectives would be limited to progressive taxation, basic social security, and unemployment insurance. Müller-Armack saw a need for structural interventions to achieve distributional objectives in addition to measures to safeguard market competition. He explicitly referred to the reconciliatory role of the social market economy. Indeed, the need for social consensus after the ravages of the war and in the face of the communist alternative developing in Eastern Europe led to government interventions beyond those originally foreseen by the fathers of the social market economy. In the German labor market, centralized wage bargaining was introduced and large companies adopted codetermination in management. Across Europe, the 1950s saw a rapid increase in social insurance and transfers. Generous pay-as-you-go pension systems were put in place, benefiting from favorable postwar demographics and reflecting the need to provide for a generation

that often had lost private savings and assets as a result of war and economic turbulence. For Europeans, to make the market acceptable, the “animal spirits” of capitalism needed to be tamed.

The idea of the social market economy was the basis for policy mainly in Austria and Germany, and its corporatist application extended across Scandinavia and the Benelux states. France chose a more interventionist model with the nationalization of strategic industries such as mining, transport, and finance as well as large manufacturing companies such as Renault. Common to all continental economies was the emphasis on a social consensus between capital and labor. This was often organized by a state that supported high savings and investment rates, which in turn led to the easy adoption of frontier technologies from the United States and resulted in quick income convergence (DeLong 1997; Eichengreen 1996; see spotlight one in this report).

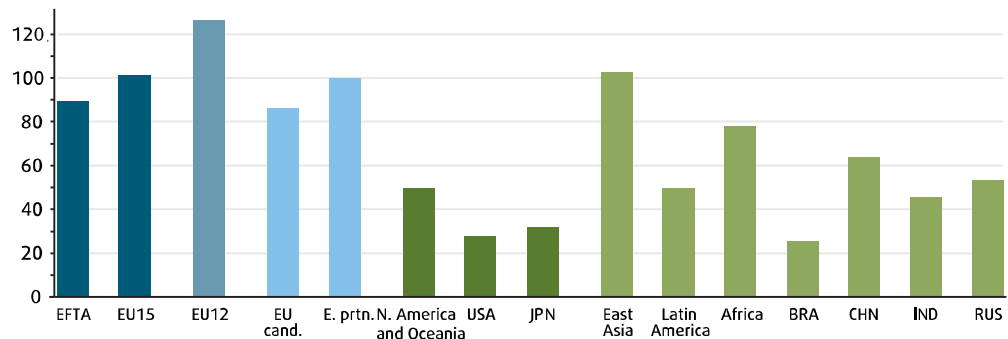
## The principal components of the European growth model

The organization of Europe's main economic activities demonstrates what is unique about the European development model.

- **Trade.** Richer and poorer economies are more integrated than in any other part of the world, resulting in quicker convergence in living standards than in incomes, which in turn is quicker than convergence in institutional quality.
- **Finance.** Europe is the only region where private capital in all its forms—foreign direct investment (FDI), nonfinancial and financial FDI, and portfolio funds—flows downhill from richer to poorer countries and from low-growth to high-growth economies.
- **Enterprise.** Private enterprise is accountable to shareholders for profit, but it is also held more responsible for the social and environmental consequences of its actions than in other parts of the world.
- **Innovation.** Research and development (R&D) and tertiary education, recognized around the globe for their economic spillovers, are viewed in Europe as primarily the responsibility of the state.
- **Labor.** Workers in Europe enjoy the most effective protection against abuse by employers and the most generous wage, job security, and nonwage benefits—such as unemployment insurance, paid leave, and pensions—of any workers in the world.
- **Government.** National governments are more redistributive, and supranational coordination in Europe is the world's most advanced.

**Figure 1.1: Europe is the most open region in the world**

(trade, exports plus imports, as percentage of GDP, average of 2005–09)



Note: "EU cand." refers to EU candidate countries and "E. prtn." refers to EU eastern partnership countries.

Source: WDI.

One can—and should—ask whether these achievements are sustainable in today's world, or whether some countries have applied some of these principles poorly. Before answering that question, though, it is useful to note that the European growth model has resulted in a deeper integration and quicker convergence between advanced and developing economies than in any other part of the world. European enterprises balance corporate mandates and social responsibility, and governments mobilize taxpayers to aid innovation. Despite considerable economic uncertainty, European workers still benefit from a high level of security, and no societies achieve better egalitarian outcomes in market economies.

### Trade and Finance: deeper integration and quicker convergence

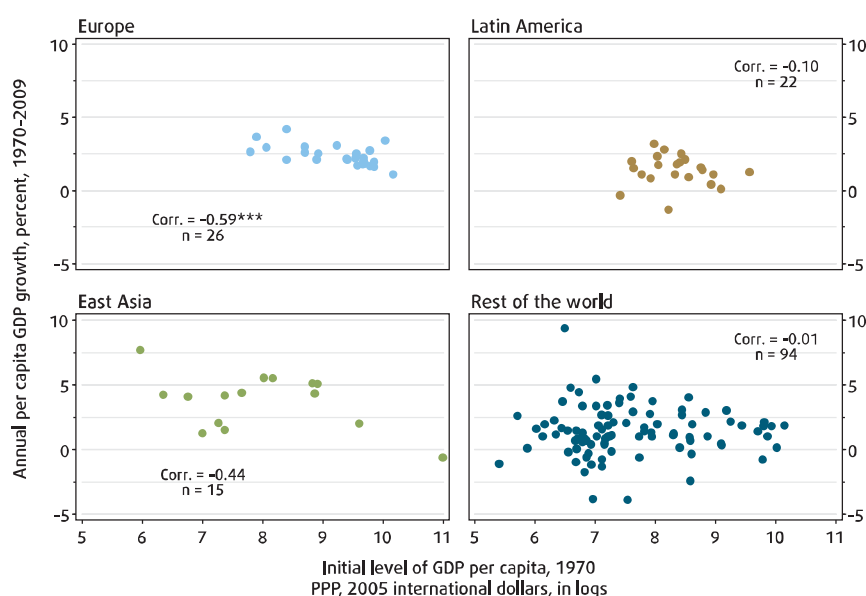
European economies are more integrated than any others in the world. Trade flows relative to gross domestic product (GDP) are much higher in European countries, especially in the new EU member states (EU12), than in other parts of the world (figure 1.1).<sup>4</sup> Among the 27 EU member states (EU27), trade openness is higher than in any other region, including East Asia. In the EU candidates and EU eastern partnership countries, openness is higher than in most other emerging market regions, though it is somewhat lower than in East Asia.

The large share of trade in total GDP results from low barriers to the goods trade in the single market and falling trade barriers for both goods and services in the region, as well as the relatively small size of economies in the region, similar to the developments in East Asia. But the integration of richer and poorer countries facilitates a frenetic flow of goods and makes "Factory Europe" different from the much-heralded "Factory Asia." Europe's most developed economies have been outsourcing more and more sophisticated tasks to their eastern neighbors, benefiting both sides in the process. The success in unifying national markets into a single European market has made Europe ambitious enough to consider many services as tradable within the region. But the Single Market for Services can be made a more efficient, potent source of growth in Europe (Monti 2010).

Capital flows in Europe have been the largest—as a share of economic output—in the history of humankind.<sup>5</sup> Labor mobility, while low, is picking up. This economic integration has resulted in quicker convergence in incomes than in other parts of the world (figure 1.2). Outside Europe and East Asia, there is no relation between GDP per capita in 1970 and its growth rate between 1970 and 2009.<sup>6</sup> European countries that were poorer in 1970 experienced higher growth than countries with higher GDP per capita in 1970. East Asia is the other region in the world where convergence in incomes has been observed, but the link between initial income per capita and subsequent growth is much less robust.<sup>7</sup>

Capital flows are fundamental to income convergence in Europe. In Europe, capital flows “downhill,” as predicted in economic theory (Lucas 1990). Outside Europe, capital flows “uphill”—from poorer countries such as China to richer ones like the United States—a puzzling but well-established pattern (Prasad, Rajan, and Subramanian 2007). Outside Europe, many forms of capital go to low-growth countries (figure 1.3).<sup>8</sup> In other words, among many emerging markets outside Europe, high growth in incomes only happens when current account surpluses grow. This “allocation puzzle” is not a problem in Europe.<sup>9</sup> In Europe, consistent with the fundamental tenets of economic theory, capital flows to high-growth countries, principally those in Central, Eastern, and Southeastern Europe.<sup>10</sup> This pattern is most noticeable in the European Union and those aspiring to join it. The EU eastern partnership countries (Belarus, Moldova, Ukraine, and others) look similar to other emerging markets.

In sum, European integration has led to both a higher share of trade in output and to much larger financial flows from richer to poorer countries. Quicker convergence in living standards is the unsurprising outcome. This does not imply that living standards everywhere in Europe have converged. Some



**Figure 1.2: Convergence in incomes was faster in Europe than elsewhere**

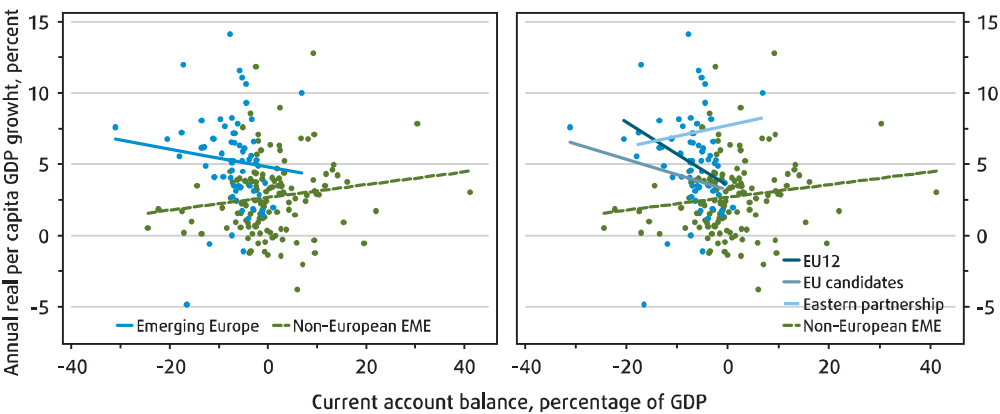
(GDP per capita levels in 1970 and growth from 1970 to 2009)

Source: World Bank staff calculations, based on Penn World Table 7.0 (Heston, Summers, and Aten 2011).

regions, such as Italy’s Mezzogiorno, have persistently lagged. Europe’s Cohesion Funds are designed to help lagging regions catch up. This has not worked well everywhere, partly because national policies have differed with respect to using these funds. Where the focus has been on integrating leading and lagging regions through connective infrastructure, such as in Ireland, regional convergence has resulted. Where instead, funds have been spent on spreading out economic activity and bringing jobs to people in lagging regions through spatially targeted interventions, success has been rare (World Bank 2009). Convergence in Europe appears to have come from market-based integration, not from nonmarket mechanisms driven by solidarity.

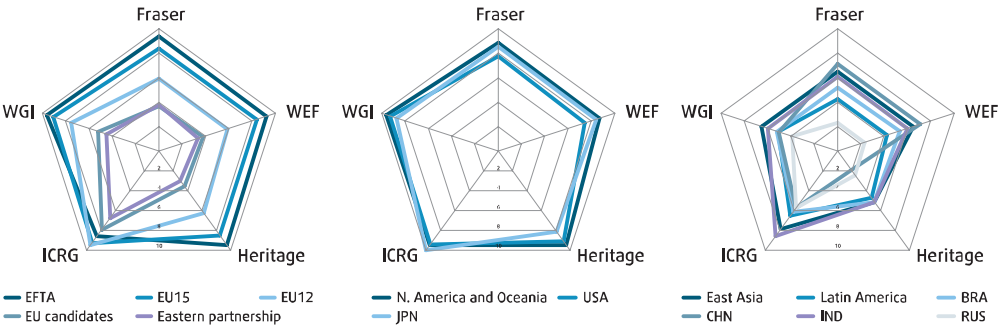
European integration has not, however, led to a similarly rapid convergence in the quality of institutions. There is considerable variance in institutional quality across Europe (figure 1.4). A larger “pancake” in figure 1.4 indicates better quality. The size of the pancake in the EU candidate countries or the EU eastern partnership countries is comparable with that in Latin America and smaller than in East Asia.

**Figure 1.3: In much of Europe, capital flows to high-growth countries**  
(capital inflows (current account deficits) and per capita GDP growth, 1997–2008)

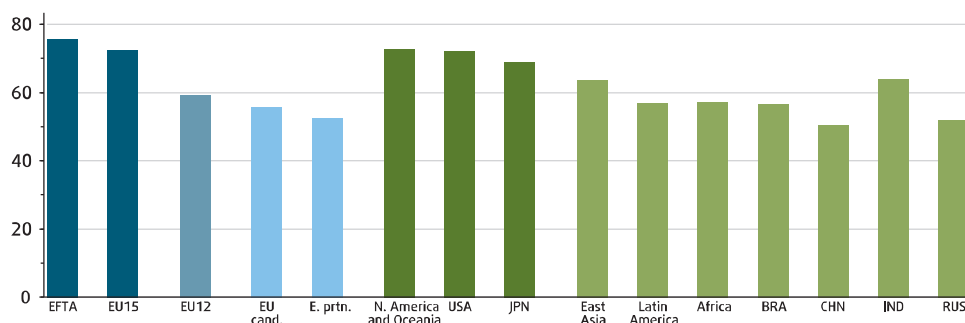


Note: Each dot represents a four-year average during the period covered: 1997–2000, 2001–04, and 2005–08.  
Source: World Bank staff calculations, based on IMF WEO.

**Figure 1.4: Institutional quality varies a lot within Europe**  
(indicators of property rights and contract enforcement, 2008–09)



Note: Indicators used are: protection of intellectual property (Fraser), property rights (WGI), property rights (Heritage), contract viability (ICRG), and rule of law (WGI). Each indicator is rescaled and then ranges from 0 to 10 showing the higher, the better quality.  
Source: World Bank staff calculations, based on data from The Fraser Institute (Gwartney, Hall, and Lawson 2010), WEF (Schwab 2009 and 2010), The Heritage Foundation (Miller and Holmes 2011), ICRG, and WGI (Kaufmann, Kraay, and Mastruzzi 2010).



**Figure 1.5: Business is expected to be socially responsible in Europe, especially in the EU**

(Responsible Competitiveness Index 2007, business action component)

Note: "EU cand." refers to EU candidate countries and "E. prtn." refers to EU eastern partnership countries.

Source: MacGillivray, Begley, and Zadek 2007.

International macroeconomics texts argue that the risks investors face in poorer countries depress risk-adjusted returns and discourage investment, preventing convergence. These risks may result from the lower quality of poor countries' institutions (Acemoglu, Johnson, and Robinson 2001). The risks seem not to prevent convergence in Europe because EU membership—actual or prospective—may be an assurance of future institutional improvements. So far, this reassurance has worked to Europe's advantage.

The European debt crisis of 2011 is a reminder, however, that investors can lose confidence when the promise of institutional improvements is not kept. Countries in Europe do not need to be ferocious to converge. But the more institutionally integrated a European economy becomes, the less it can afford not to converge. Indeed, for the economies of the eurozone that share a common currency and hence are more tightly integrated than others, economic convergence is as much a prerequisite as it is a perk.

## Enterprise and Innovation: more responsible competition

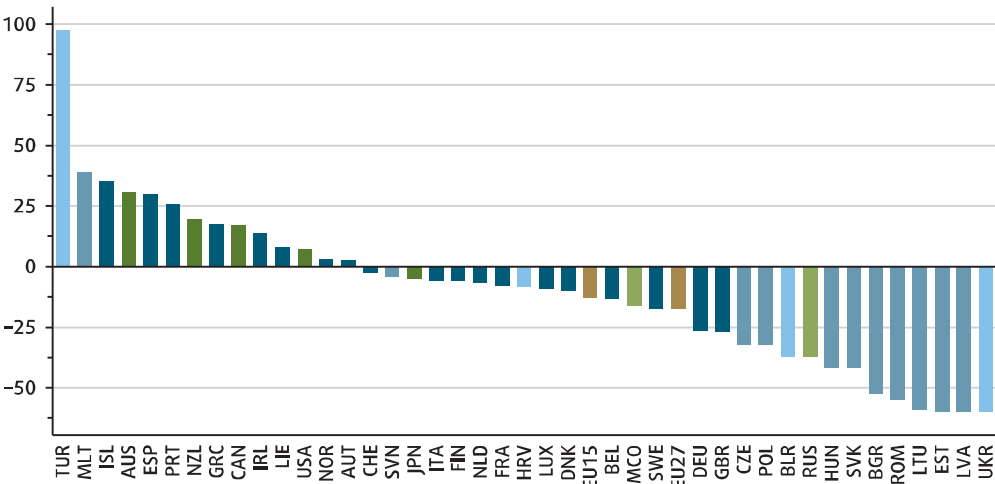
The social market economy model adopted in Europe after World War II relies upon business recognizing its social responsibilities. The extent to which this has happened varies across Europe. The business action component of the Responsible Competitiveness Index 2007 captures the efficacy of corporate bonds, the ethical behavior of firms, the wage equality of workers doing similar work, the strength of audit and accounting standards, the extent of staff training, and the occupational fatalities in regions around the world (figure 1.5).

The highest-ranked countries are all European: Sweden, Denmark, Finland, Norway, Iceland, Switzerland, the United Kingdom, the Netherlands, Ireland, and Germany are all ranked higher than the United States, Japan, and most other countries in the world. The average of Europe's advanced economies (EU15) is above that of Japan and East Asia. To the extent that the ranking reflects the preferences of investors and consumers, corporate responsibility is good for business in Europe. However, not all European countries are equal: Eastern and Southern Europe rank below East Asia and on a par with Latin America.

Greater regulation makes European producers cleaner and greener than American producers, though Japanese producers are even greener and Eastern

Figure 1.6: Emerging European countries are the best performers in emission reduction

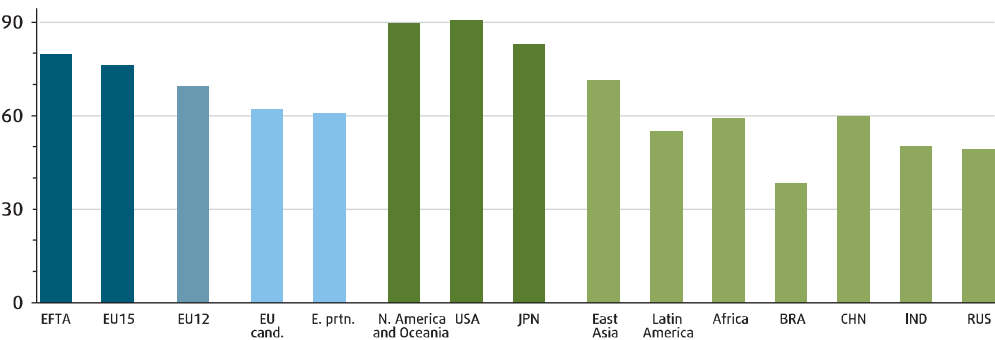
(change in greenhouse gas emissions from the base year to 2009, percent)



Note: Greenhouse gas excludes land use, land-use change, and forestry. The base year is, in most cases, 1990.  
Source: UN Framework Convention on Climate Change.

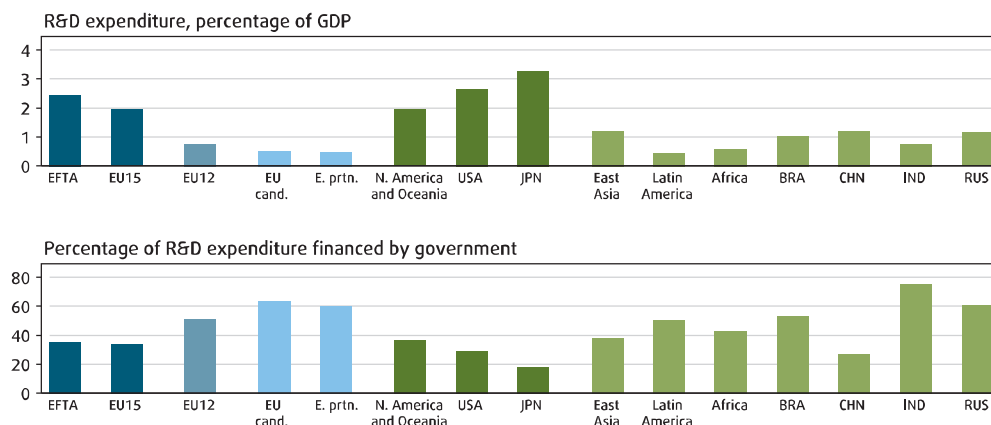
Figure 1.7: The business climate varies substantially across Europe

(principal component analysis index of *Doing Business* ratings, 2011)



Note: Averages computed using principal component analysis (see chapter 4). Liechtenstein, Kosovo, and Malta are not covered by *Doing Business*, and are not included.  
Source: World Bank staff calculations, based on *Doing Business*.

Europe lags behind the rest of Europe. European leaders embrace green growth as a driver of Europe’s future development model. According to the most recent data from the United Nations Framework Convention on Climate Change, European countries have made the largest reductions in greenhouse gas emissions (figure 1.6). For the former centrally planned economies, large reductions reflect their inefficient starting points. But Finland, Norway, Sweden, and Germany have achieved emission reductions as a result of investments in renewables and in energy-saving technologies, often spurred by strict emission controls or regulatory and tax measures designed to boost investment in alternative energy. Sweden is a leader in the use of biogas and Denmark in wind, while Germany and Spain have pioneered the use of subsidies to encourage renewable sources of energy. Spotlight two discusses the steps needed to make the European growth model even greener.



**Figure 1.8: Europe's governments spend more on R&D, the private sector spends less**

(R&D expenditure, 2000–09)

Note: "EU cand." refers to EU candidate countries and "E. prtn." refers to EU eastern partnership countries.  
Source: UNESCO.

While addressing social and environmental objectives, Europe's approach to business regulation may make its enterprises uncompetitive. As described in greater detail in chapters 4 and 5, Europe's leading economies have struggled to close the productivity gap with the United States, and enterprises in Southern Europe particularly seem to suffer from excessive and cumbersome regulation. A composite index of the quality of the investment climate, based on the *Doing Business* indicators developed by the World Bank Group, shows that Europe lags the United States and Japan (figure 1.7). This has motivated calls for ambitious regulatory reform, such as in the EU's Lisbon Agenda of 2002.

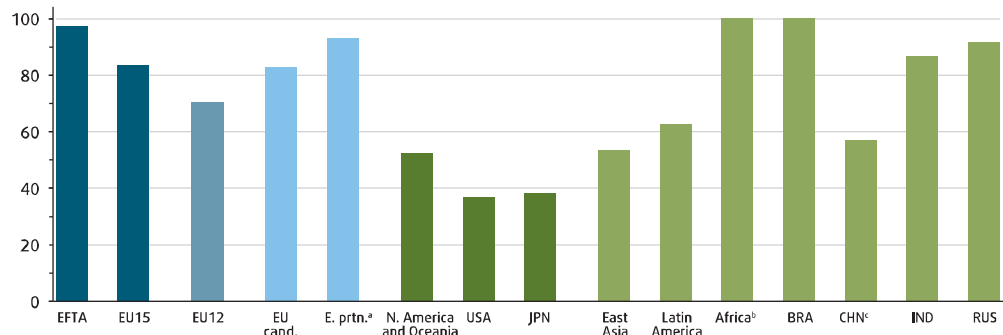
Another concern is that Europe lags the United States in innovation – and this explains the persistent productivity gap – as Europe's leading economies no longer benefit from the technological catch-up that drove growth during the first three postwar decades (Aghion and Howitt 2006). Europe's approach to innovation assigns a bigger role to government for promoting scientific research and tertiary education. Worries about Europe's innovation shortfall have led to Europe-wide targets for R&D spending. This approach does not seem to be working (figure 1.8). The bulk of the world's R&D takes place in the United States, Western Europe, and Northeast Asia, but Europe is falling behind—due to the smaller role of the private sector in R&D spending. EU15 governments spend the same share of GDP on R&D as Japan and the United States, but European enterprises spend only about a third of what their U.S. and Japanese counterparts spend. The result is the same when the new member states are compared with emerging East Asia.

Likewise, governments in Europe bear almost all of the expense of university education (figure 1.9). Universities in many European countries are free, though the United Kingdom and several German states recently introduced or raised tuition fees. Universities are predominantly public in Europe, in contrast with the leading universities in the United States and, increasingly, Asia. Lower private financing of tertiary education in Europe may hinder the flow of new ideas from academics to business and contribute to lower private sector R&D investment. Much of the rest of the world (Brazil, India, and Russia, for example) has largely followed the European model of state-dominated university education, but



**Figure 1.9: European governments account for the bulk of tertiary education spending**

(tertiary education expenditure, public sources, 2000–09, percentage of total expenditure on tertiary education)



a. The group is represented by Moldova only.

b. Data are available for Tunisia only.

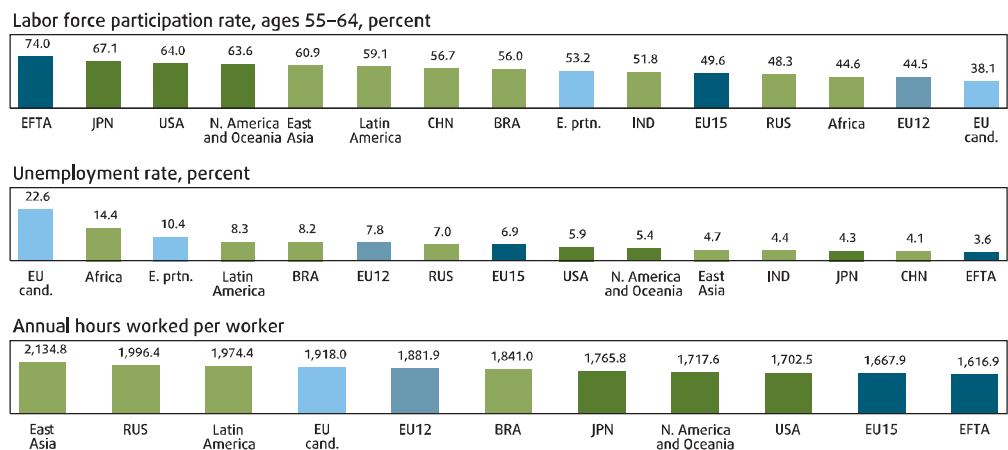
c. Data for China are from 1999.

Note: "EU cand." refers to EU candidate countries and "E. prtn." refers to EU eastern partnership countries.

Source: World Bank Education Statistics (EdStats); and OECD Education Statistics.

**Figure 1.10: Europeans work less and retire earlier**

(labor use in Europe and other countries, average of 2005–09)



Note: "EU cand." refers to EU candidate countries and "E. prtn." refers to EU eastern partnership countries.

Source: ILO 2010b; and Conference Board 2011.

fast-growing East Asia is moving toward the U.S. blend of private and state universities.

Europe must consider whether greater regulation and government participation in R&D will help or hurt enterprise and innovation, and widen or shrink the productivity gaps between the United States and the EU15, and between East Asia and the EU12.

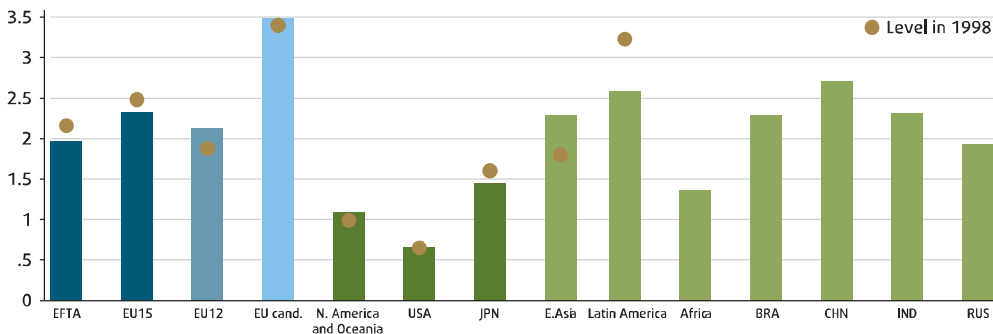
### Labor and Government: greater security and equality

Work conditions in Europe are better than in other parts of the world. Europeans work fewer hours a week, fewer weeks a year, and fewer years during their lifetime than workers in other regions.

Roxburgh and Mischke (2011) estimate that the annual hours worked per capita in the EU15 is 733, about a month less than in the United States. The fewer work

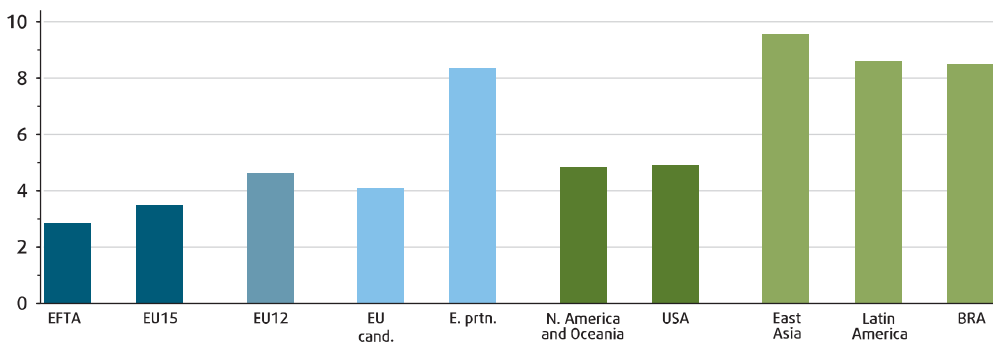
weeks a year account for half of this difference. The remaining half is due to the lower incidence of women working part-time (around 20 percent); a lower participation rate among 55–64-year-olds as a result of early retirement (15 percent); higher unemployment in Europe (6 percent); and other factors (around 10 percent). In a broader regional comparison, the EU15 stands out for low participation rates among 55–64-year-olds (both male and female) and a low number of hours worked during the year (figure 1.10). The EU12 has particularly low participation rates in the 55–64-year-old age bracket, but longer annual average working hours. This pattern is repeated in the EU candidate countries, which also suffer from higher unemployment among youth.

Economists believe that people prefer leisure to work if they can afford it. Europeans can afford time off to spend with their families, pursue hobbies, exercise, or simply rest, and most Europeans welcome this.<sup>11</sup> But for some, less than full participation in the labor market may be involuntary. Young people and ethnic minorities such as the Roma are often excluded from the labor market, even when they are prepared to work. It is worrisome that several European economies, particularly those in the east and south, feature large informal



**Figure 1.11: Employment protection is higher in Europe**  
(OECD employment protection index, 2008, and change since 1998)

Note: The index is based on version 2 of the indicator. "EU cand." refers to EU candidate countries and "E. Asia" refers to East Asia.  
Source: OECD Employment Database.

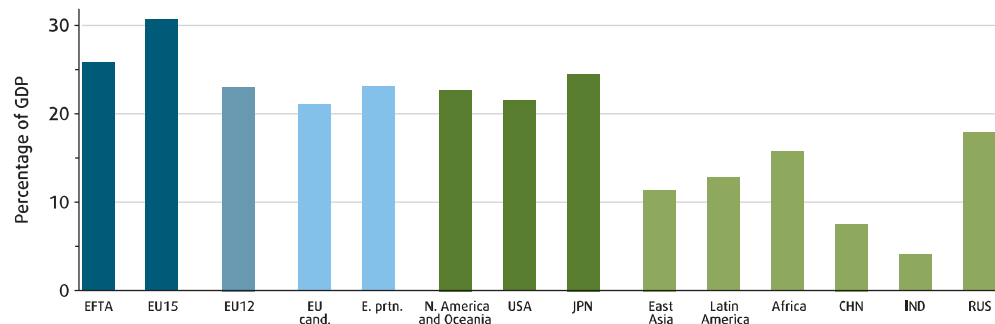


**Figure 1.12: Wages in Europe are less differentiated than in other regions**  
(earnings ratio between top and bottom deciles, 2007–09)

Note: The differential is measured by decile ratios ( $D_9/D_1$  = wage level of the top 10 percent of workers divided by the level of the bottom 10 percent). "EU cand." refers to EU candidate countries and "E. prtn." refers to EU eastern partnership countries. EU candidates are represented by Albania only. The data for 2001–2006 are used for France, Luxembourg, the Netherlands, and Sweden (EU15), Hungary (EU12), and the Philippines (East Asia). For Albania, the period covered is 1995–2000.  
Source: ILO 2010a.

**Figure 1.13: Social spending is higher in Europe**

(government expenditures on education, health, and social protection, 2005–09)



Note: Social spending is a sum of education (707), health (709), and social protection (710) expenditures, as classified in the IMF GFS.

Source: IMF GFS; and IMF WEO.

sectors. Large shadow economies mirror inefficiencies in labor markets—for example, due to high marginal tax rates or rigidities due to labor regulations.<sup>12</sup>

The Organisation for Economic Co-operation and Development (OECD) calculates an employment protection legislation index that includes three dimensions: the protection of individuals against unjustified dismissal, the burden of requirements to justify collective dismissal, and regulations on temporary employment, which is less secure than permanent employment (OECD 1999 and 2004, and Venn 2009). Turkey ranked the highest for employee protection in 2008, while workers in the United States were least protected. Non-EU industrial countries, including Japan, generally have weaker employment protections than EU countries (figure 1.11). Within Europe, there is significant variation in employment protection. In Continental Europe and the south, employment protection legislation is more restrictive than in the north and the east. Although labor market reforms across Europe have narrowed differences in employment protection over the past decade, regional differences are still large and contribute to greater labor market segmentation in the south and the east.<sup>13</sup>

Europeans worry that measures to increase labor force participation will lead to a class of working poor. In fact, according to the OECD, the incidence of low pay in many European countries is much lower than in the United States—the EU15 average is around 15 percent compared with 25 percent in the United States (Japan is closer to the EU15).<sup>14</sup> By the same token, wage incomes in the European Union are considerably more equal than those in the United States (figure 1.12). The ratio of earnings in the ninth to the first decile is less than 2.5 in Scandinavia and below 3.5 in much of Continental Europe, but almost 5 in the United States. The greater flexibility of labor markets is not necessarily inconsistent with maintaining greater wage equality, as the Scandinavian countries show. An assessment of what others can learn from this experience is given in chapters 6 and 7.

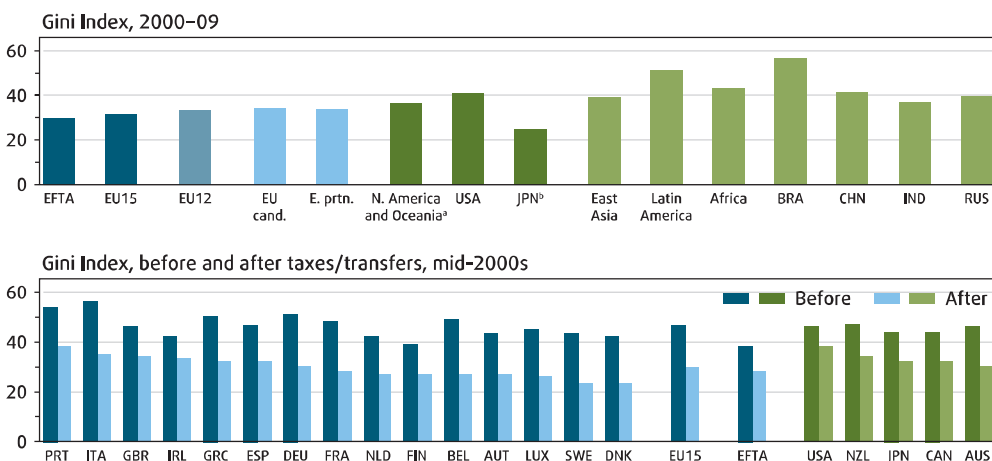
Europeans not only enjoy relatively high levels of employment protection, they also benefit from generous health services and support in their old age. Social spending on pensions, health, and education is relatively high in Europe (figure 1.13). In most European countries, pension and health systems are managed by government and financed through mandatory payroll contributions or general

taxes. The rise in pension spending explains the bulk of the increase in the size of governments in Europe, with health-related spending accounting for the remainder.

Several European countries are implementing pension reforms, including increasing the retirement age, reducing early retirement benefits, and reducing replacement rates. In many cases the EU's new members and Eastern European neighbors spearheaded these reforms as they faced the challenge of rapid aging with far lower average incomes and productivity. Nonetheless, replacement rates in Europe tend to be considerably more generous than in other high-income countries, most notably Canada, Japan, and the United States. The comparison with Japan is particularly instructive because Japan is the one high-income country that shares Europe's predicament of a labor force that is rapidly declining in size. In most European countries, pension reform remains unfinished business.

The large role of government in providing basic public services and the generosity of the social security system comes with a higher tax burden. Corporate tax rates decreased over the past two decades, leading to more uniform effective rates in Europe and among all developed countries. Personal income tax rates still vary from other parts of the world and even within Europe, especially when the new EU member states are included. Europe's high payroll taxes and marginal income taxes lead to the largest difference in the world between gross and net wages. One implication of this gap is that the post-tax distribution of earnings is more equal in Europe (figure 1.14). Another implication is that work incentives are weaker.

As a share of their GDP, European countries do not have higher expenditures for health or education than other high-income countries. The role of the government in providing and financing these services, however, tends to be greater in Europe. On average, governments finance three-quarters of all health



**Figure 1.14: Redistribution through the tax and transfer system is more pronounced in Europe**

(Gini indices, 2000s)

a. For Australia and New Zealand, the latest available data are from 1994 and 1997, respectively.

b. Japan's data are from 1993.

Note: "EU cand." refers to EU candidate countries and "E. prtn." refers to EU eastern partnership countries.

Source: WDI; and OECD Income Distribution and Poverty Database.

spending in the EU27, but only 60 percent in high-income countries, and as little as 45 percent in the United States. Japan also has a high share of government expenditures in total health spending (81 percent). In education spending, Europe stands apart from the rest of the world. Governments in Europe finance more than four-fifths of total education spending, compared with up to three-quarters in a few and half in most OECD countries. In most European countries, primary, secondary, and tertiary education is free, which explains the much larger government role in financing education.

Given the substantial role of government in providing services and social security, government accountability is pivotal. But there is a delicate balance between the accountability desired by most European societies and the moral hazard from the aspirations of a common European project. Europe is a unique experiment in shifting from national to international redistribution and to a deeper political integration than anywhere else in the world.

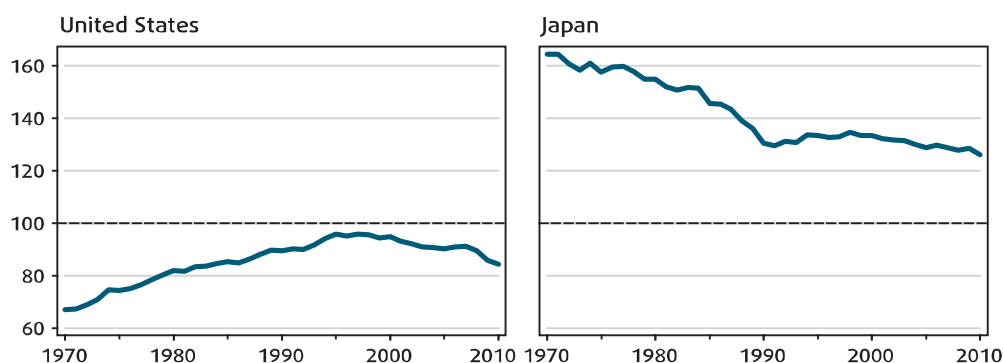
While it is difficult to discern a clear set of characteristics shared by every European country, a consistent pattern distinguishes Europe's development model.<sup>15</sup> Even if there were no such thing as a common European growth model, Europe would face common challenges that set it apart. There are variations in the severity of these challenges among European countries, but they are small relative to the differences with the Americas and Asia. It is these common challenges that motivate a study on restoring the lustre of the European growth model.

## The need for change

External and internal developments are putting pressures on Europe—as exhibited in stalling productivity, shrinking workforces, and widening fiscal imbalances. But the remedies lie in three interrelated challenges: making the most of modern services, both financial and nonfinancial; closing productivity gaps, such as the one between the EU15 and the United States, and the growing divergence in productivity growth between Southern Europe and the rest; and dealing with an increasingly serious demographic drag, caused by a combination of aging and shrinking populations in many parts of Europe, including its emerging markets.

### Unexploited potential in modern services

In developed economies, about three-quarters of national income is generated in the services sector. Europe's internal trade in services is the largest worldwide at around US\$4 trillion. And yet the Single Market for Services remains fragmented. The most integrated in Europe is the market for financial services, and this has brought ample benefits (chapter 3). But even here, coordination among national regulators to oversee the activities of financial institutions operating across national borders may have been exposed as deficient during the recent crisis. The uncoordinated deleveraging of bank balance sheets in Europe's emerging markets as a result of capital calls by national regulators could impose significant collateral damage on host countries' economies. This would exacerbate downward economic pressures across



**Figure 1.15: Europe's productivity leaders are lagging behind the United States**

(EU15 labor productivity, indexed to the United States and Japan)

Note: The chart shows productivity levels in the core EU15 rather than the wider EU27. The EU's new members (EU12) have been converging to the United States but are too small to fundamentally affect the picture for Europe as a whole. Note also the declining gap with Japan even during the recent decades, when Japan grew slowly. Once demographic "drag" is subtracted, labor productivity growth in Japan compares well with Europe and is on a par with the United States between 1995 and 2005. Source: World Bank staff calculations, based on the OECD Productivity Database.

the continent. To avoid costly disintegration, further regulatory integration is called for.

In other services, regulatory barriers prevent the benefits of trade and integration from being fully realized (chapter 2). Digital services, such as Internet sales and IT support, are far less developed in Europe. For example, the United States accounts for around 80 percent of global e-book sales, but Europe for only 10 percent, mostly in the United Kingdom. The online music storage and sharing service Spotify is available in only 7 European countries, and iTunes is accessible in only 15 states. National regulations make it difficult for companies to operate Europe-wide, preventing efficiency and cost gains from being realized. After years of negotiations, Europe still does not have a single European patent, which increases the cost to innovators. Telecom services, biotechnologies, and pharmaceuticals are nationally regulated, leading to significant price divergence across Europe and reduced incentives for business to invest in R&D. In professional services, the mutual recognition of qualifications remains incomplete, while contract law and professional liability and insurance requirements differ and create risks for cross-border sales, particularly by small and medium enterprises.

The regulatory barriers hampering the development of services trade across Europe are economically significant. Some estimates put the gains from strengthening the Single Market for Services at 4 percent of the EU's aggregate GDP (Monti 2010). About 70 percent of the productivity gap with the United States in the "old" members of the European Union is in the productivity of services (Roxburgh and others 2010). Lower productivity growth in distribution (retail, wholesale, transport, and logistics) accounts for a large share of Europe's divergence in productivity from the United States and Japan since the mid-1990s (Jorgenson and Timmer 2011). Europe lags the United States in highly innovative industries such as biotech, the Internet, and medical services (chapter 5). Europe

has gotten less out of the information technology revolution and risks missing out on biotech, the next important wave of business opportunities in the “New Economy.”

Widening productivity gaps

Growth in labor productivity in Europe’s advanced economies has fallen behind that in the United States (figure 1.15). This growing gap with the world’s technology leader is in sharp contrast with the rapid convergence in labor productivity Europe experienced in the five decades after World War II. It prompted several European policy initiatives, starting with the Lisbon

Figure 1.16: Southern Europe lags the EU15 North, and Eastern Europe is catching up to it

(EU15 South labor productivity, indexed to EU15 North and EU12)

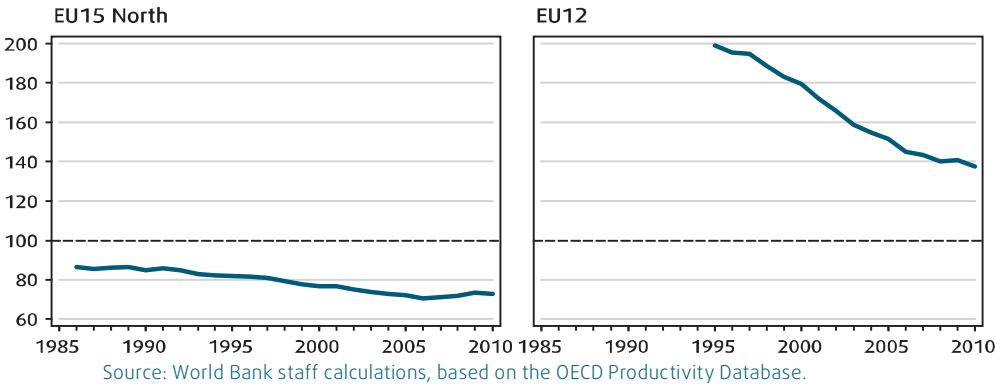
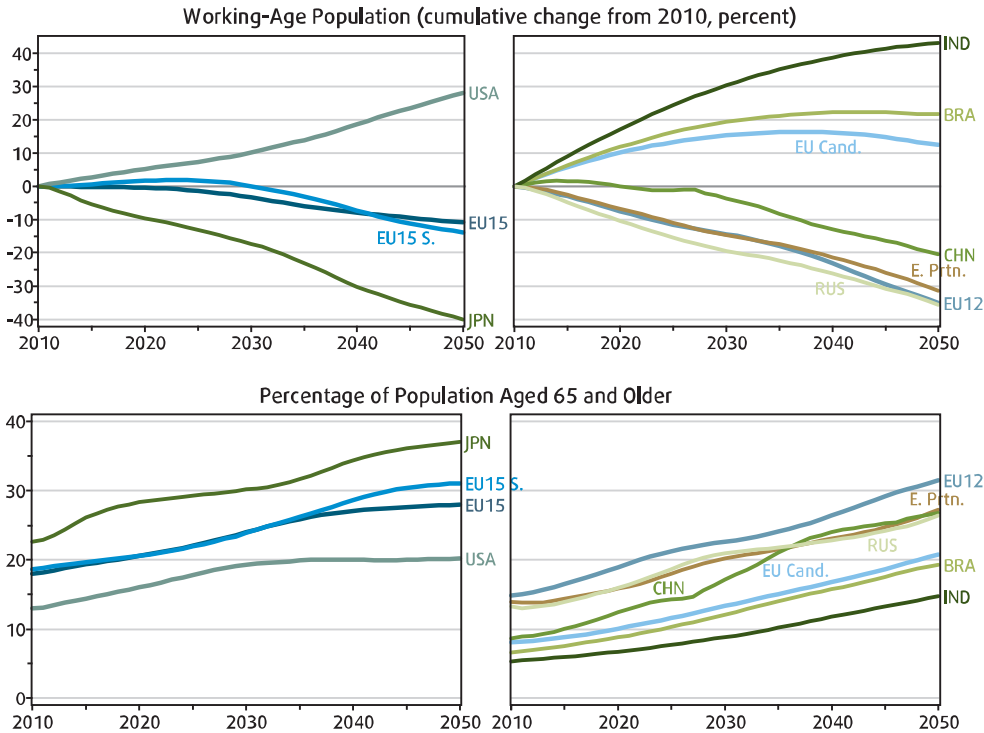


Figure 1.17: Europe’s population could shrink by a third over the next 40 years

(population projections, 2010–50)

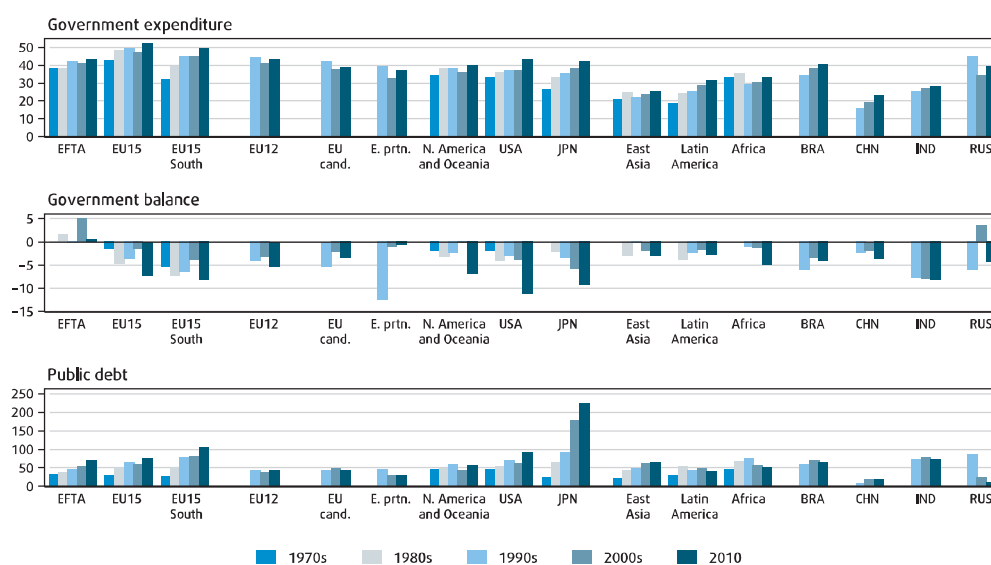


Agenda of 2002 and reinforced in Europe's 2020 Agenda of 2010, all aimed at strengthening Europe's competitiveness and productivity performance, while ensuring that economic growth in Europe remains socially inclusive and environmentally sustainable. The results of these efforts have been modest. Subsequent chapters in this report analyze what needs to be done.

The growing gap with the United States is not the only productivity gap Europe needs to worry about. Within Europe, labor productivity growth until the mid-1990s tended to be faster in the relatively poorer countries. But over the past decade, the pattern has become more complex. While the new member states of the European Union in Central and Eastern Europe have grown fast and made good progress in closing the large initial productivity gap with the EU15, among the "old" members of the EU, productivity has diverged since the end of the 1990s (figure 1.16). In particular, productivity growth in Europe's southern economies—Greece, Italy, Portugal, and Spain—has been slower than in Europe's north. These trends worsened in the five years leading up to the economic and financial crisis of 2007–08. But incomes have not matched labor productivity. The result has been a sharp divergence in unit labor costs within the eurozone and a corresponding increase in internal imbalances among its member states.

## Growing "Demographic Drag"

Over the next 50 years, with current policies, Europe's labor force will decline by 50 million, with the largest part of the decrease happening between 2020 and 2040. The numbers are quite daunting, because there will be changes at both ends of the population pyramid. Due to low fertility rates, the labor force will decline by around 15 percent in the EU15 and by more than 30 percent in the EU12 and the EU eastern partnership countries, but it is likely to increase by 15 percent in the potential candidate countries. At the same time, the share of



**Figure 1.18: European governments are the biggest in the world, and often heavily indebted**

(government balance, government spending and public debt, percentage of GDP, 1970–2010)

Note: "EU cand." refers to EU candidate countries and "E. prtn." refers to EU eastern partnership countries.

Source: IMF WEO; European Commission's annual macro-economic database (AMECO); and Abbas and others 2011.



European ages 65 and older is projected to increase from less than 20 percent today to around 30 percent by 2050 (figure 1.17).

This contrasts markedly with predicted developments in the United States, India, and emerging markets in Latin America and North Africa. Although China and Japan also face a declining labor force, there are vast opportunities in China for productivity gains from capital deepening and from the structural transformation of the economy. Japan is most comparable with Europe in its demographic patterns, but it has managed the fiscal implications of aging more prudently and has sustained higher rates of productivity growth than Europe. Europe will need to boost labor force participation and adjust its institutions to cope with the need for greater immigration if it is to achieve sustainable GDP growth (chapter 6).

Demographic changes are straining Europe's welfare systems. European countries have larger governments than countries in other regions, regardless of per capita income level (figure 1.18). The differential is about 10 percent of GDP, and the main reason is that European governments spend more on social security, mostly on pensions (chapter 7). This is not because European societies are already much older than others at similar income levels. Rather, Europe has more pensioners because workers retire earlier. Europe's social spending is large, though the continent is still relatively young. As Europeans live longer and populations age, this will need to change.

The burden of implicit pension liabilities has been recognized for some time. Until recently, however, the large size of Europe's governments and the increasing levels of public debt did not attract much attention. This has changed in the wake of the crisis, as European governments struggle to convince investors that they can and will redeem their debts. The need for fiscal adjustments and debt reduction is now widely acknowledged. How to do this in a socially balanced way is perhaps the key challenge facing European policymakers over the coming decade. How to sequence and coordinate the adjustment in the context of large internal imbalances within Europe and the looming risk of a renewed recession is a key challenge over the coming months.<sup>16</sup>

An underdeveloped services market, a persistent gap to the world's productivity frontier, an aging society, and the immediate need for fiscal adjustment—together these conditions make economic growth the greatest imperative for Europe. The issue is not just higher material output. Intergenerational equity, sustainability, and global relevance are also at issue. Only a growing Europe will be able to maintain its attractive blend of ever-better living standards, individual rights and social security, and regional solidarity.

## Mending the model

It is understandable that given half a century of success, many Europeans are inclined to preserve and defend their economic model rather than change and adapt. But it is clear that changes are necessary. Changes are needed for the European single market to deepen, for Europe to become an even bigger economic union, and for Europe to retain or regain its global economic leadership.

The rest of this chapter introduces the key policy debates that frame the case for changing the various components of the growth model. The policy debates concern all of Europe, but the implications are often quite different across countries. Some parts of the model will require less adjustment than others. The structure of this report reflects these differences. A few salient points:

- The structure of this report mirrors its main messages. Trade and finance come first: they are the parts of the economic model that are the strongest and—except for the single market for some services—require the least change. Enterprise and innovation come second: they work well in some parts of Europe and poorly in others. Some countries need to change their policies just a little, others a lot. Labor and government come next: they require the most change in many countries.
- The organization of the chapters also reflects their geographic focus. The debates about enlargement are best informed by discussing the experience of emerging Europe—the new member states of the European Union, the EU candidate countries in the Balkans, and the EU eastern partnership countries. The discussions of trade and finance emphasize the economic relations between emerging Europe and the advanced EU15 economies. The debates about European competitiveness are centered on the European Union, with growing concerns about the competitiveness of enterprise in the southern states and weaknesses in the innovation fundamentals of the European Union. The discussion of enterprise and innovation is focused on the 31 countries in the European Union and European Free Trade Association. The debates about labor and government span all 45 countries in Europe: the European Free Trade Association, the European Union, the EU candidate states, and the EU eastern partnership countries.
- This report tries to provide answers to the questions that are most pertinent for policymakers. The number of questions in each chapter increases as the report progresses from the strong points of the European economic model to its weaker aspects. But the debates addressed in chapters 2–7 span questions related to three of Europe’s biggest assets: the single market, the consensus for economic enlargement, and Europe’s global economic importance. Highlighting the priorities, chapter 8 notes countries in and outside Europe whose performance can be used as a benchmark by others.

## Trade: taking advantage of enlargement

There are many who question whether enlarging the European Union to the east has benefited Europe’s “old” member states, especially the ones in the south; there is not much debate about whether the new members have benefited—they clearly have. A corollary of this concern is skepticism about the benefits to current members of the European Union from further enlargement to include the western Balkans, Turkey, and Europe’s eastern neighbors, especially Belarus, Moldova, and Ukraine.

The fears about trade integration with the east are centered on the relocation of production facilities to benefit from a qualified but cheaper labor force. The argument is often made that this leads to a loss of jobs in the west—that competition has harmed economies in “old” Europe. This report documents

the spread of industrial networks as a result of EU enlargement and shows how the EU's old members have indeed been increasingly offshoring activities to the newer ones. This has helped companies in Western Europe—in Austria, Germany, and others—become or stay competitive. Western Europe's most successful economies have increasingly relied on suppliers in the east. And the new member states have been given increasingly sophisticated tasks in the process, which has turned them into global exporters in their own right.

The same phenomena can be observed with a lag in the western Balkans and Turkey, where trade in industrial intermediates is catalyzing changes in the structure of exports. The conclusion of deep and comprehensive free trade agreements with the eastern neighbors would likely bring many of the benefits that the customs union, concluded in 1995 between the European Union and Turkey, has brought to Europe's second most populous country.

But while enlargement has been a success for most, Europe's southern economies have missed out on the benefits of deepening integration. FDI that used to go southward has increasingly headed east. Neither has the south substantially increased its trade linkages with the new member states or the accession countries, with the notable exception of Greek and Italian banks expanding into the western Balkans. Enterprises in Greece, Italy, Portugal, and—to less extent—Spain tend to be too small to internationalize. The family business model needs updating as the European family grows ever bigger.

If trade in manufacturing has been a motor of European integration, trade in services is less developed and more regulated in Europe, even inside the European Union. Services trade has grown significantly, as has the sophistication of services exports of both old and new EU member states. But services trade in the European Union is estimated to be only about half what it could be if the Single Market for Services were fully developed. Moreover, services trade in non-EU members is less impressive and remains primarily for traditional services, pointing to sizable gains from further liberalization of trade in services with non-EU members. Tapping this potential requires strengthening the capacity of EU candidate countries to adhere to European regulations in areas such as intellectual property rights and financial services. It will also require the European Union to accept the greater labor mobility required for trade in traditional services such as construction, transportation, and tourism.

Europe's global trade relations are characterized by the increasing proliferation of bilateral trade deals, custom-made for the particular sensitivities involved. For Europe, agriculture remains a policy area dominated more by politics than economics. The weakest part of Europe's approach to trade is the high protection afforded by the Common Agricultural Policy, which distorts farming decisions and—unlike the rest of the components of the European economic model—helps neither poorer farmers nor poorer countries. (See chapter 2 for an argument that Europe would do well to reconsider its agricultural trade policies toward the economies of the EU eastern partnership, where many people are still farmers.)

Trade is one of Europe's strong points. European integration is a unique political and economic achievement, and enlargement represents opportunities for both

old and new member states of the European Union. Making fuller use of these opportunities requires strengthening as well as extending the single market.

## Finance: managing quick capital flows

Banks and financiers are not popular these days. There are questions about whether financial integration in Europe has gone too far. This report argues that financial integration has been at the core of one of Europe's biggest achievements—the rapid convergence of incomes and living standards across the continent. These flows should not be slowed; Europe should just get better at managing them.

Critics of financial integration in Europe point to the risk that excessive debt levels may slow down growth in the future, because new credit is not available while banks reduce exposure to repair their balance sheets. Easy finance may have obscured structural weaknesses of economies and enterprises and led to a misallocation and waste of capital at the cost of European taxpayers, who now have to bail out the banks. And critics point to the shortcomings of Europe's financial and regulatory architecture, with financial institutions that operate freely across borders while remaining under the supervision of national authorities.

The criticism points to areas that need fixing. But this report argues that on the whole, finance has been a boon to Europe despite some excesses. In supporting this conclusion, the report distinguishes between the emerging markets in Eastern Europe and the countries that joined the European Union during the 1970s and 1980s—the erstwhile “cohesion countries”—Ireland, Greece, Portugal, and Spain. The private sector credit boom in emerging Europe has not created a debt overhang. Corporate and household balance sheets are not excessively leveraged, and credit has gone to stronger companies and wealthier households. By and large, finance has helped real convergence in Eastern Europe. Going forward, while commercial banks struggle with a large share of nonperforming loans, and credit growth may be subdued for some time, exchange rate flexibility in countries such as the Czech Republic or Poland and the political will to carry through an internal devaluation in places like the three Baltic states should mitigate the risks of a credit-less recovery.<sup>17</sup> By contrast, debt levels in the cohesion countries are near or above the thresholds of sustainability and growth-friendliness. The debt overhang compounds the challenge of restoring competitiveness and growth, without which in turn debt sustainability is questionable. External borrowing in Europe's south has typically gone hand in hand with a decline in domestic private savings. Except Ireland, where productivity growth was high throughout the boom, finance in the cohesion countries has not promoted real convergence but instead has fueled the convergence of nominal incomes. Europe's underlying productivity gap between north and south, more than its financial system, needs fixing.

A peculiar feature of financial integration in Europe (both within the European Union and in some EU eastern partnership countries, such as Ukraine) is the predominance of financial FDI, most obviously manifest as foreign banks in emerging Europe. This has made financial flows more durable during the crisis, with rollover rates close to 100 percent compared with 60–65 percent during the East Asia crisis of 1997–98. This success was in part achieved thanks to

spontaneous coordination among home and host regulators, banks themselves, and international financial institutions under the so-called “Vienna Initiative.” As the sovereign debt crisis in Europe has put renewed pressure on European banks, however, Europe needs to consider moving beyond coordination toward building a Europe-wide regulatory architecture that provides enforcement powers to supranational institutions such as the European Banking Authority. Managing quick capital flows successfully is likely to require national regulators to transfer some authority to the European level.

At the national level, countercyclical fiscal policy and macroprudential financial sector regulations would have helped economies in emerging Europe get the best out of western finance. A lesson of the crisis is the need for European policymakers to act more forcefully to cool excessive domestic demand. There is a moral in the coincidence of the success of financial integration and an improved investment climate: where domestic competition was weak, finance flowed into real estate and retail lending in the absence of a sufficient supply of creditworthy corporate borrowers. Financial integration can catalyze real economic integration when the right structural policies are in place—but it cannot substitute for them. In the meantime, the macroprudential architecture in Europe has also been strengthened in the course of the crisis, with the creation of the European Systemic Risk Board. Whether this is sufficient to prevent future excesses can be debated. Market signals in the course of 2011 were clear: yields came down for sovereigns in countries like Ireland and Latvia where macroeconomic policies have sharply unwound the excesses of the past; they did not where measures remained halfhearted or where political commitment to stay the course of adjustment was in doubt.

The comparison of south and east provides lessons in how financial integration can foster convergence when managed well, and how it can destabilize all of Europe when the capital flows into unproductive activities. But this report concludes that closer financial integration between wealthier and less advanced economies in Europe is unique, and a strength of the European economic model.

### **Enterprise: making structures better suited for an enlarged Europe**

Advocates of free, unregulated markets point to Europe’s modest growth performance over the past two decades, compared with those of the United States and East Asia, as an example of the stifling effects of excessive regulation. While the attempted regulatory harmonization in the 120,000 pages of the *Acquis Communautaire* is an admirable ambition, Europe is not considered an easy place to do business. Unless this changes, it is argued, Europe’s growth prospects look dim.

In reality, there is considerable variation in the extent of government regulation of private enterprise across Europe. Regulation remains pervasive despite a decade-long process of gradual liberalization in the south and some Continental European countries, but is now lighter in the north and in some new EU members in the east. This report examines how these differences lead to differences in the health of Europe’s economies, taking a microeconomic

approach to the assessment of enterprise performance. In particular, it examines how enterprises have done in achieving three objectives: adding value, creating jobs, and increasing exports.

European enterprises do not do worse than their competitors in the United States and East Asia in these three dimensions. There are, however, big differences across Europe that result from how countries regulate enterprise. In the European Union, the north exceeds the performance of the United States in all three dimensions, Continental Europe does well in exports but less so in value added and employment growth, and the south has added jobs, but not value and exports. Productivity growth within the EU15 has begun to diverge in recent years. By contrast with the south, the EU's eastern members and neighbors have done well in increasing productivity and exports, but less in creating jobs.

The differences in the business environment and the performance of enterprises are linked. Cumbersome regulations, high tax rates, compliance costs, and weaknesses in contract enforcement keep enterprises small in the south. Smaller firms often stay below the radar screen of inspectors or benefit from simplified requirements. Staying small often means staying nimble and limiting risks. But smaller firms are also less attractive for foreign investors and face significant risks themselves in trading and investing internationally. And smaller firms can ill afford the wages demanded by a highly educated workforce. These are all reasons why the south has experienced slower productivity and export growth than other regions in Europe, and they explain how fast job creation has coexisted with significant youth unemployment, often of university graduates.

By contrast, enterprises in the north and in Europe's continental economies have faced fewer obstacles in growing bigger. They have internationalized and have been able to attract and retain skilled labor. They have done so although regulations and taxes in Northern and Continental Europe remain more burdensome than in other high-income OECD countries. But compliance costs have been reduced, and predictability and evenhanded enforcement have helped firms adjust. The recent success of enterprises in countries such as Finland, Germany, and Sweden indicates that the European economic and social model is not incompatible with competitive enterprise.

In the east, deregulation and simplified tax systems have helped attract FDI from Estonia to Georgia. Good infrastructure, as in the Czech Republic, and a large domestic market, such as in Poland, have also helped. By internationalizing and becoming part of Austrian, German, and Swedish multinational production chains, Eastern European enterprises have benefited from enlargement and have been rewarded with gains in productivity and world record export performance.

## **Innovation: improving the structures that bring ideas to market**

Researchers who are worried that European enterprises are becoming less competitive relative to North American and East Asian firms point to Europe's

weaker innovation fundamentals: competition, universities, and R&D funding. Policymakers in Europe have been focused on innovation for several years as reflected, for instance, in the Lisbon Strategy of 2002. This set a target for Europe to reach a level of R&D spending of at least 3 percent of GDP. Today, Europe as a whole remains quite distant from this objective and also lags the United States, the world's innovation leader, in a number of aspects related to innovation. This report assesses what the main components of a European "innovation ecosystem" might be.

A composite indicator developed by the European Union covers public and private R&D investments, the quality of universities, linkages between research and business, access to finance, protection of intellectual property rights, and access to a large market. The measure highlights the innovation gap between Europe and the United States. Among Europe's major competitors (the United States, Japan, Brazil, Russia, India, and China), only Russia is falling behind in relative terms. The United States and Japan score better than the European Union and are widening the gap.

Close up, the picture looks different. Switzerland, Sweden, Denmark, Finland, and Germany perform close to U.S. levels, but much of Southern and Eastern Europe lags well behind. The poor performance of some advanced European countries such as Italy, Spain, and—to less extent—France in various dimensions of innovation is of particular concern. Poorer economies can often grow fast even without much innovation by adopting frontier technologies. Europe's own history up to the mid-1970s, and East Asia's "flying geese" pattern of structural change and technological advance, are examples of catch-up growth. But closer to the technological frontier, institutions have to change to promote innovation. Studies suggest that competition, the quality of tertiary education, and the availability of venture capital finance are the main ingredients of success at the frontier (for example, Aghion and Howitt 2006). Europe as a whole lags the United States in these dimensions, and Europe's low-innovation economies lag behind its leaders in every one of them.

One sign of Europe's innovation gap is that it has too few young, leading innovators—firms that have grown quickly to become large. Young firms form the majority of leading innovators in the United States, and a substantial share of R&D in leading sectors. Europe does not specialize in R&D-intensive sectors such as aerospace, biotech, information technology, health care, pharmaceuticals, and telecommunications. Even in countries with strong national innovation systems such as Germany or Sweden, there are few young, fast-growing companies, and innovation-based sectors are poorly represented. Europe, like Japan, carries out the bulk of its R&D in traditional, old firms. While this works for some—such as the well-known "export champions" like ABB, Erikson, BMW, Mercedes Benz, BASF, or Siemens—Europe has few companies that match the dynamism of Apple, Amazon, Google, Facebook, or Microsoft. This report links this back to the fragmentation in the single market for digital services, which makes it more difficult for young innovators in Europe to grow to global scale.

Europe did not get the same productivity kick as the United States out of the wave of improvements in information communications and technology over the

last decade and a half. It will have to harness the power of the single market to do better when the next technological revolution comes along.

## Labor: getting more from work

Europeans sometimes fear that Europe is running out of work. But it is workers that Europe is running out of. Addressing this misconception may be one of the most important tasks for European policymakers.

Labor markets have long been recognized as one of Europe's weaker points. Persistent unemployment during the 1980s and 1990s was perhaps the most widely discussed aspect of what some called "Eurosclerosis"—the inability of Europe's postwar institutions to adjust to a changing global economy (Giersch 1985). Motivated in part by the view that work in Europe was a pie of fixed size, policymakers made it easier for Europeans to retire earlier and to work fewer hours. Workers in Europe have responded to these incentives, not least because they enjoy social security. The generosity of social welfare and the high degree of protection afforded to workers in Europe are a distinguishing characteristic of the European economic and social model, setting the continent apart from other high-income economies.

This report assesses the costs of this generosity, highlighting inconsistencies in the way work and welfare are organized in Europe. As part of financing generous social benefits, the burden of payroll taxes has grown while the workforce that pays these taxes has declined. The laws make workers, once hired, feel secure. The same laws make employers think twice before hiring. High taxes and burdensome employment protection rules discourage job creation with the consequence that some Europeans—often the young—remain excluded from the labor market. Europe's policies regulating work can be linked to the inefficiencies in the labor market, which in turn contribute to a loss of competitiveness and reduced ability of enterprises to innovate.

The strains in Europe's insider-outsider labor market have grown since economists first pointed out its inefficiencies in the 1980s. Youth unemployment rates of 40 percent such as in Spain are hardly compatible with the objective of social inclusion. At the same time, many Europeans fear that with globalization and European enlargement, their jobs are competed away through outsourcing and immigration. When the amount of work available is seen as a fixed pie, the inclination is to limit the number of eaters. The tension between insiders and outsiders has correspondingly grown.

It need not be like this. Compared with the 1970s and 1980s, Europe has become better at creating jobs. Excluding some from the labor market is an anachronism in a continent facing a rapid decline in its labor force over the coming decades. If current patterns persist, Europe will have 30 million fewer young workers (ages 19–39) by 2060. Europe's youth have to be brought into the economic mainstream. And even then, shortages of skilled labor remain likely.

Encouragingly, a growing number of European countries have been changing their labor market policies. It will be reassuring for many Europeans that labor markets in Denmark and Germany have succeeded in combining high levels of income security for workers with stronger incentives to look for new



opportunities, and with measures to lower the payroll tax and thus encourage employers to create jobs. It should also be reassuring that governments in Northern Europe have been successful in matching younger workers and jobs, though such policies are difficult to get right and can be expensive.

Some parts of Europe are poised to do a lot better than others when it emerges from the current economic turbulence. These differences in prospects have consequences for workers. Europe's single market is premised on the aspiration that labor can move freely in response to economic opportunities. In reality, Europeans move little both inside countries and across national borders. High regional unemployment rates motivate costly regional development policies that attempt to bring jobs to people, rather than encourage people to move to where the jobs are. Low levels of mobility are associated with high unemployment.

Language barriers, family ties, and attachment to local culture make Europeans reluctant to move, yet these are not unique to Europe. Younger, educated, and ambitious Europeans would benefit from stronger signals from the labor market, better-functioning housing markets, and more easily portable health and social protection benefits. In Europe's economic powerhouses like Germany, enterprises are often short of skilled labor. In Spain and Italy, many university graduates are struggling to enter the labor market. Europe as a whole will benefit from higher labor mobility.<sup>18</sup> Indeed, for countries that share a single currency, labor mobility may be the most important missing ingredient—one that could help make the eurozone an "optimum currency area."

Europe will also have to learn to compete for global talent. Europe offers much in the way of cultural richness and economic opportunity, yet talent from around the world is more likely to go to the United States because of better universities, more-accommodating labor markets, and institutions that are more welcoming (The Economist 2009). Europe has much to change in its approach to immigration.

### **Government: making a representative state more efficient**

Seen from Asia or America, Europe is a region with big government. For many, big government is associated with bloated bureaucracies, high taxes, and wasteful government spending. Little wonder, it is said, that European economies have trouble growing. The recent financial turbulence in Europe, prompted by concerns over large public debts and persistent fiscal deficits, has added weight to the arguments of those skeptical of large government.

This report asks whether large governments are indeed harmful for growth. In Europe, this seems to be the case; countries with larger governments grow more slowly. And in Europe, governments are larger. This is primarily because of higher spending on social protection—most important, public pension systems. Population aging lies behind growing social security spending in all high-income and many middle-income countries, but the impact is highly variable.

Rethinking the design and size of social security systems in Europe can draw on existing good practice, such as in Iceland or Japan, to deal with the

demographic drag on economic growth. Many countries in Europe have already started to increase the retirement age and tighten eligibility criteria for public pensions. Others have introduced mandatory “second pillars,” which accumulate contributions in individual pension accounts, to encourage domestic savings and reduce the burden on public pay-as-you-go systems. Sweden and Switzerland are often seen as models in this regard, but as the experience of several Eastern European countries during the past three years demonstrates, sustaining these reforms can be politically difficult. Whatever route is chosen, those countries in Europe that have not done so yet must find ways to restrain spending on social security or risk growing fiscal challenges.

There are economies in Europe with large governments that do well. Sweden, for instance, hardly fits the stereotype of a rigid, bureaucratized Leviathan, though government spending in 2010 was more than half of GDP. One reason that Scandinavian countries with large governments do so well is that public services are of high quality. This report considers their reforms to draw lessons for the rest of Europe and the world. But one asset that Northern European countries have that may be tough to replicate is a higher degree of social trust. Where the rule of law is weak and social trust is low, large government is likely to be harmful. So Southern Europe might have done better to keep government small, since it is difficult to make it efficient without the preconditions for compliance with taxes and regulations, high levels of work participation, and frugal use of social welfare. This is a lesson that emerging market economies in Europe with large public sectors, such as Ukraine’s, should learn.

Whether or not large government is bad for growth and fiscal austerity is seen as harming the short-term prospects of growth in Europe, for countries with large public debts fiscal consolidation is a necessity. Neither higher taxes nor productivity increases are likely to keep the public finances of these countries afloat at current spending levels. High-quality fiscal consolidation strategies to reach sustainable paths for public debt are analyzed in chapter 7. There is ample room in Europe to cut spending without affecting social outcomes. Nonetheless, the political challenge of maintaining primary surpluses for several years is daunting. Some countries have room to adjust more gradually than others. And given the close economic links between European countries, those with fiscal space could perhaps use it.

## Restoring Europe’s lustre

In November 2008, as the consequences of the financial collapse gripped markets and policymakers worldwide, a senior U.S. government official remarked: “You never want to let a serious crisis go to waste.”<sup>19</sup> It is not clear whether the United States has used the crisis well. But three years later, the epicenter of economic turbulence lay not there but in Europe. The attention was focused on restoring the confidence of markets in European governments. But behind the market nervousness were doubts about the sustainability of Europe’s economic and social model. The European sovereign debt crisis could be seen as an opportunity to address these concerns quickly.

This report was written with more deliberate adjustments in mind. That will indeed be the course of reform in the many countries that have responsibly applied the principles of the European growth model. But the countries that have strayed furthest from them will be forced to adjust abruptly. It should be a warning to the others. There have been changes in the world that necessitate a reexamination of the basic economic model. Since 2005, the contribution of developing countries to global growth has been greater than that of advanced economies, even though their share in global GDP is half that of the developed world. All advanced economies should reflect upon these shifts.

This report is such a reflection for 45 countries in Europe. An unprecedented combination of enterprise, labor, trade, finance, innovation, and government attributes makes the European growth model unique. The close economic ties between richer and poorer countries; the balance between profit and public interest in enterprise; the social contract that protects the poor, elderly, and unemployed; and the representativeness of government at continental, national, and local levels are unique and admirable. Europeans cherish these features and much of the world admires and tries to emulate them. This report concludes that the European economic model needs to be adjusted, not abandoned.

The changes that have made it necessary for Europe to craft a new economic model are demographic, entrepreneurial, and fiscal. Europe's working population is expected to decline by about 15 percent by 2050, while that of the United States will grow by more than 25 percent. Asia's productivity and competitiveness will allow its enterprises to outstrip all but the most innovative ones in the United States. It will especially pressure Europe, where productivity growth has been slowing since the mid-1990s and the service economy has been held back by fragmented regulation. The growing costs of social security and slowing economic productivity will squeeze Europe from two sides in the coming decade. The pressures may rise quickly. Debt burdens that seemed manageable at the borrowing costs of 2008 may be unbearable in the market conditions of 2012. Europe needs to change.

The order of chapters in this report reflects the changes required in ascending order. Europe's strong points are in trade and finance. In the areas of enterprise and innovation, Europe has countries that do well in the world. But many European countries are struggling to generate and support entrepreneurial high achievers and innovators. The biggest need for change is in the areas of labor and government. Labor policies must be reoriented toward greater labor mobility, incentives to work, and more competitiveness and job creation in sectors where Europe lags behind. Almost everywhere, European governments are too big and inefficient in delivering services. They will have to become smaller or more efficient, whichever is quicker. Their weaknesses and strengths are summarized in table 1.1.

The necessary changes will not be easy, but many European countries have already made progress, and others can learn from their experiences. Other parts of the world are dealing, or have dealt with, similar pressures, and Europe may learn from them too. Using more than 16 pairs of benchmarking briefs prepared for this report, chapter 8 provides accounts of successful experiences.

Table 1.1: Strengths and shortcomings of Europe's growth model

Strengths		Shortcomings
<b>Trade</b>		
<p>Highest share of trade in GDP of all regions in the world.</p> <p>Lowest barriers to trade in goods.</p> <p>Growing size and sophistication of production networks connecting emerging and advanced Europe.</p> <p>High degree of trade integration in traditional services.</p> <p>Fastest convergence in incomes and living standards in the world.</p>		<p>Single Market for Services remains incomplete.</p> <p>Common Agricultural Policy reduces the benefits of trade integration for Europe's eastern neighbors.</p>
<b>Finance</b>		
<p>Capital flows downhill from countries with high incomes and low growth rates to countries with low incomes and high growth rates.</p> <p>Financial foreign direct investment has brought western know-how and finance to emerging Europe.</p> <p>Dependence on western banks to date has mitigated the effect of the crisis on emerging Europe.</p>		<p>Boom-time excesses point to the need to ensure crisis-proof financial integration and strengthen supranational regulation.</p> <p>Cheap finance made Southern and Eastern Europe complacent about external imbalances.</p>
<b>Enterprise</b>		
<p>Business bears more responsibility for social and environmental consequences of its activities than in any other part of the world.</p> <p>European enterprises have—by and large—generated employment, productivity, and exports.</p> <p>Variations in business regulation across Europe do not confirm a “race to the bottom.”</p>		<p>Countries with more onerous business regulations have lagged in productivity growth and exports.</p> <p>Growing gap in economic competitiveness between the southern states and the rest is a source of instability in the eurozone.</p> <p>European production has become greener but not its consumption.</p>
<b>Innovation</b>		
<p>Some European countries figure among the top global innovators and exporters.</p> <p>Established tradition of strong public support to universities and R&amp;D institutes.</p> <p>Europe has a proud tradition of innovation in engineering, pharmaceuticals, and clean energy that could be harnessed for future innovation.</p>		<p>Europe's private R&amp;D spending is much less than in U.S. and Asia's developed economies.</p> <p>Linkages between research institutes and business are weak because of overdependence on public funding.</p> <p>Europe is not specialized in fast-growing high-technology sectors such as ICT and biotech.</p> <p>Europe has fewer leading innovating companies and few top universities globally.</p> <p>Bank-dominated finance is ill suited for innovation.</p>
<b>Labor</b>		
<p>Greater post-tax earnings equality.</p> <p>Strong income protection and unemployment insurance systems.</p> <p>Good aggregate job creation performance over past decade.</p>		<p>Labor participation rates below those in U.S. and East Asian advanced economies.</p> <p>Rapid aging will result in workforce falling by a sixth over the next 50 years.</p> <p>Generous eligibility raises concerns over the sustainability of social security.</p> <p>Large informal sectors in some European countries and high youth unemployment point to problems of labor market exclusion.</p> <p>Low labor mobility despite formally free movement of labor within Europe.</p> <p>Unfriendly immigration policies may keep global talent away.</p>
<b>Government</b>		
<p>Most representative and decentralized of all regions.</p> <p>Broad coverage of public services and social security.</p> <p>Low post-tax income inequality.</p>		<p>Government size is 10 percent of GDP greater than in other parts of the world, and public spending to GDP has risen by about 5 percentage points during the crisis.</p> <p>Pension burdens are high for a relatively young (but quickly aging) region.</p> <p>Generosity of social welfare programs weakens incentives to work.</p> <p>High marginal tax rates promote evasion and make Europe less attractive for enterprises and skilled workers.</p> <p>Variation in quality of public services unrelated to government spending.</p> <p>Unsustainable public debt in some countries, fiscal imbalances in many.</p>

To sustain its success in the twenty-first century, Europe will need to draw on the strength of its integrating institutions, especially the Single Market for Services. It will need to stimulate greater competition to push laggard enterprises to catch up with Europe's best, and to free Europe's high achievers to innovate and grow. It will need to reorganize work and government to deal with the imperatives of regional integration and global competition, while maintaining domestic cohesion. This will require greater flexibility and mobility of labor, efficient management of capital mobility, and a new balance between economic freedom and social security.

All this is hard work. But the policymakers who address these imperatives will create a growing Europe. It will be a Europe that keeps its way of life and its place in the world, that radiates hope and again becomes an inspiration for others. It will be a Europe that has restored its lustre.



#### Answers to questions on page 35

- The principal components of Europe's growth model—trade, finance, enterprise, innovation, labor, and government—are organized in unique ways.
- Sluggish productivity growth, a declining workforce, and growing fiscal imbalances have revealed weaknesses of the European economic model, and the entry of a billion Asian workers into the global market is adding to the stress.
- Many changes are needed in how governments and labor markets are organized. Fewer changes are needed to foster innovation, productivity growth, and job creation by enterprises, and fewer still to improve finance and trade in Europe.

## Chapter 1: Annexes

### Annex 1.1: List of countries and regions

EU15		EU candidate states		Latin America (LAC)	
Austria	AUT	Albania	ALB	Argentina	ARG
Belgium	BEL	Bosnia and Herzegovina	BIH	Brazil	BRA
Denmark	DNK	Croatia	HRV	Chile	CHL
Finland	FIN	Kosovo	KSV	Colombia	COL
France	FRA	Macedonia, FYR	MKD	Mexico	MEX
Germany	DEU	Montenegro	MNE	Peru	PER
Greece	GRC	Serbia	SRB	Uruguay	URY
Ireland	IRL	Turkey	TUR	Venezuela, RB	VEN
Italy	ITA				
Luxembourg	LUX				
Netherlands	NLD				
Portugal	PRT				
Spain	ESP				
Sweden	SWE				
United Kingdom	GBR				
EU15 southern states		Eastern partnership states		North America and Oceania	
Greece	GRC	Armenia	ARM	Australia	AUS
Italy	ITA	Azerbaijan	AZE	Canada	CAN
Portugal	PRT	Belarus	BLR	New Zealand	NZL
Spain	ESP	Georgia	GEO	United States	USA
		Moldova	MDA		
		Ukraine	UKR		
EU12		European Free Trade Association		Africa	
Bulgaria	BGR	Iceland	ISL	Algeria	DZA
Cyprus	CYP	Liechtenstein	LIE	Egypt, Arab Rep.	EGY
Czech Republic	CZE	Norway	NOR	Morocco	MAR
Estonia	EST	Switzerland	CHE	South Africa	ZAF
Hungary	HUN			Tunisia	TUN
Latvia	LVA				
Lithuania	LTU				
Malta	MLT				
Poland	POL				
Romania	ROM				
Slovak Republic	SVK				
Slovenia	SVN				
		East Asia		Other	
		China	CHN	India	IND
		Indonesia	IDN	Russian Federation	RUS
		Japan	JPN		
		Korea, Rep.	KOR		
		Malaysia	MYS		
		Philippines	PHL		
		Singapore	SGP		
		Taiwan, China	TWN		
		Thailand	THA		
		Vietnam	VNM		

## Notes

- 1** In 2004, around 50 percent of EU15 citizens supported the accession of additional members to the European Union. In 2008, 47 percent of citizens in the EU27 supported the accession of additional members, but support in all new member states except Latvia was above 60 percent, whereas the four biggest EU15 countries all had support levels of about 40 percent or less.
- 2** According to Eurobarometer, it has fallen from 66 percent in 2004 to just 52 percent in 2008.
- 3** Specifically, this report distinguishes between the EU15 (often called the “old member states”) and the EU12 (the new members) and within these groups between subgroups of “Northern,” “Continental” or “Central,” and “Southern” European countries. Among the EU’s neighbors, the report distinguishes countries that are advanced economies (the European Free Trade Association members: Iceland, Liechtenstein, Norway, and Switzerland) and those that are emerging markets. The report also distinguishes between candidates for future membership in the European Union (Turkey and the western Balkans) and countries that are part of the EU eastern partnership (Armenia, Azerbaijan, Belarus, Georgia, Moldova, and Ukraine).
- 4** See annex 1.1 for a list of country abbreviations.
- 5** By far the largest capital flows, a substantial share of which in official transfers, occurred between East and West Germany. But this is a special case of integration and convergence within one nation with little relevance for regional integration experiences, perhaps except for the Democratic People’s Republic of Korea and the Republic of Korea.
- 6** The lack of convergence globally is not what economists would expect. Neoclassical models of economic growth predict income convergence across countries. In Solow (1956), the long-run growth rates of per capita income are purely driven by technical progress, while the level of per capita income is determined by the “steady state” savings rate. Allowing for differences in savings rates across countries, one obtains the less demanding prediction of conditional convergence, which holds across a large range of countries (for example, see Mankiw, Romer, and Weil 1992). Europe has seen unconditional convergence.
- 7** Europe uniquely has also experienced faster convergence in consumption than in income. This to some extent reflects nonsustainable borrowing for consumption purposes, predicated on the assumption of almost “automatic” income convergence in Europe. As the experience in Europe’s southern countries demonstrates, such an assumption is risky. Europe’s institutions make it easier for poorer economies to catch up. But persistent high income levels must be earned in Europe as elsewhere.
- 8** Note that in this chart, Azerbaijan is excluded from the trend line for Europe because as an oil producer it runs huge current account surpluses. Poorer developing countries are excluded from the “rest of the world” trend line because official flows play a much greater role and the determinants of these flows are quite different.
- 9** This puzzle was first formally noted by Gourinchas and Jeanne (2007).
- 10** EBRD (2009) reached a similar conclusion.
- 11** Gordon (2004) estimates that around one-third of the gap in incomes per capita between the EU15 and the United States may be due to voluntary reductions in labor supply in Europe. However, the remainder reflects regulations that reduce labor supply and should be seen as a welfare loss. In Europe, this claim is considered debatable.
- 12** They also mirror low tax morale and low confidence in public institutions (World Bank 2011). While labor market regulations and payroll tax rates do matter, general institutional weaknesses are likely to be at least as important in perpetuating informality.
- 13** Most European countries also provide more protection against unemployment than other OECD countries. Of the 15 OECD countries with replacement rates during the first year of unemployment above the average (66 percent), 14 are EU member states. The United Kingdom, Ireland, and Greece stand out for low replacement rates.
- 14** The incidence of low pay is defined by the OECD as the share of full-time workers earning less than two-thirds of median earnings. Low pay is thus a relative rather than absolute concept and closely related to measures of the dispersion of earnings.
- 15** Other analyses suggest that instead of a European model, there are several regional models within Europe. Roxburgh and Mischke (2011) identify a northern model, which includes Ireland, the Nordic nations, and the United Kingdom; a continental model, including Austria, the Benelux states, France, and Germany; and a southern model, including Greece, Italy, Portugal, and Spain. Atkinson, Piketty, and Saez (2011) distinguish an English-speaking group of countries in the evolution of income distribution from Continental Europe. Eastern Europe is in many respects unique given the persistent legacies of central planning. This chapter emphasizes the common aspects; the next six chapters identify cross-country differences in the principal components of the growth model.
- 16** Although public debt levels are high in most European countries, the sustainable level of public debt differs significantly between countries like Germany that is running current account surpluses and countries like Greece with a large current account deficit. von Weizsäcker (2011) argues that for countries like Germany, the optimal public debt level has increased as demographic changes have led to a downward shift in the natural rate of interest. In a “closed economy” setting with public debt held domestically, this implies a higher sustainable public debt level. Japan falls into the same category.
- 17** Darvas (2011) examines recoveries following banking crises and shows that in countries with flexible exchange rates, postcrisis growth was higher, even when credit was subdued, than in countries facing the need to adjust with fixed exchange rates.
- 18** This argument assumes that the skills provided by Spanish and Italian universities are the skills required by German employers. Increasing labor mobility in Europe also requires improved recognition of professional qualifications and arguably greater attention to quality in Europe’s education systems.
- 19** Rahm Emmanuel, the White House chief of staff, in an interview with *The Wall Street Journal*, November 19, 2008.



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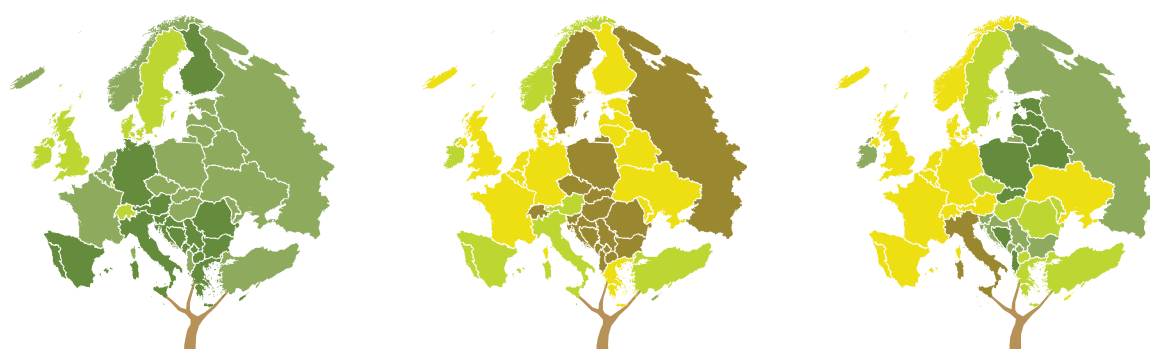
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# Spotlight One

## Europe—convergence machine

Economic growth has helped Europe rise from the devastation and misery of World War II to unprecedented wealth, technological sophistication, and the world's best quality of life. Since the war, Western Europe's output has tripled and Eastern Europe's doubled. The European Union, itself an unprecedented achievement, is in many ways the world's largest economy. European societies have developed market-based systems combining high levels of economic activity with equity and social inclusion.



### Growth rate

#### 1950 to 1973

Western Europe converges toward the living standards of the United States

#### 1974 to 1993

Northern and Southern Europe converge toward the income levels of Continental Europe

#### 1994 to 2010

Eastern Europe converges toward the incomes and institutions of Western Europe

#### Annual average growth of GDP per capita, percent



These developments are all the more remarkable when considering the poor conditions—social, political, and economic—that prevailed at the end of what has been called Europe’s second Thirty Years’ War. From 1913 to 1950, the continent’s growth rate was half its long-run trend. Europe entered the twentieth century as the richest region in the world, but by mid-century, retaining this distinction was anything but assured. Fewer than six decades later, however, an American economist would write:

*In the second half of the twentieth century, the lives of Europeans were transformed beyond recognition. In 1950, many of the continent’s residents heated their homes with coal, cooled their food with ice, and lacked even rudimentary forms of indoor plumbing. Today, their lives are eased and enriched by natural-gas furnaces, electric refrigerators, and an array of electronic gadgets that boggles the mind. Gross domestic product per capita, what the income of a typical resident of Europe will buy, tripled in the second half of the twentieth century. The quality of life improved even more than suggested by this simple measure. Hours worked declined by one-third, providing an enormous increase in leisure time. Life expectancy lengthened as a result of improved nutrition and advances in medical science (Eichengreen 2007, p. 1).*

By 2008, on the eve of the financial crisis, Europe was the envy of the world. The United States had the might and China the momentum, but Europe had the highest living standards. Even with average incomes about a quarter short of the United States’s, Europe had become the “lifestyle superpower” that in 1992 Prime Minister Kiichi Miyazawa had promised to make Japan. Millions of people from around the world flocked to Europe to see this economic miracle and taste European life (figure S1.1).

This six-decade run of prosperity breaks neatly into three periods—each about two decades long—of changing economic growth patterns:

- From 1950 until 1973, Europe exhibited historically high rates of economic growth, nearly full employment, and convergence to the United States. This period of accelerated growth—a “Golden Age” in Western Europe and a “Silver Age” in centrally planned Eastern Europe—ended for most of the continent in the early 1970s (Crafts and Toniolo 1996).
- From 1974 until 1993, Northern and Southern Europe continued to converge to the levels of living in Europe’s core. Yet despite continued growth, Europe’s largest economies stopped catching up to the United States, the world’s technology leader. Meanwhile in the east, growth first slowed and then collapsed along with the Berlin Wall and central planning during the early 1990s.
- With the signing of the first EU Association Agreements by countries in Eastern Europe in 1994, growth accelerated quickly in the east until the economic crisis in 2008. Convergence proceeded across the continent. This period saw more than a decade of convergence in living standards in the 12 new EU member states and the 8 Balkan economies aspiring to join them. In the south, convergence was reignited during this period, though at a slower pace than in the east.

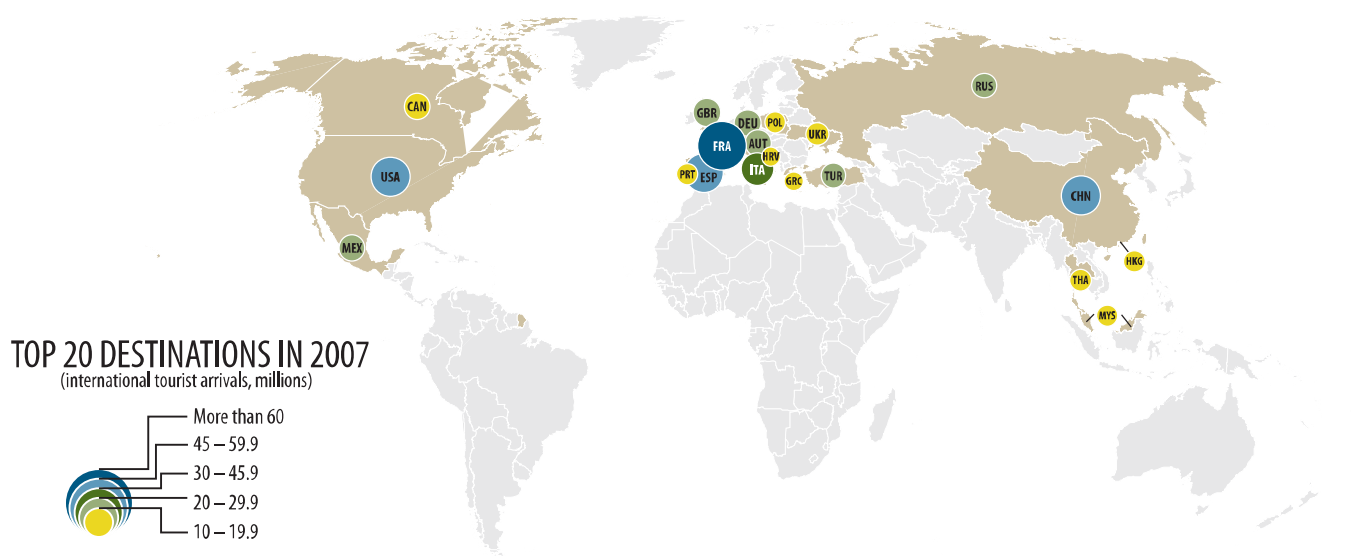


These patterns evolved alongside, and were influenced by, growing economic cooperation across Europe. Beginning with the 1949 Council for Mutual Economic Assistance in the east and the 1950 European Payments Union in the west, the continent pursued near-constant—if not always linear—economic integration. Political integration eventually followed, resulting in a European Union that merged east and west. The impetus for these regional agreements was geopolitical, but the outcome was regimes that facilitated economic integration and growth, particularly in Western Europe.

**Figure S1.1: Europe—the lifestyle superpower**

(top 20 international destinations for tourists, 2007)

Source: World Bank staff, using data from the UN World Tourism Organization.



## 1950 to 1973: golden, with a silver fringe

Europe's growth from the first few years of postwar reconstruction until the oil crisis of 1973 was its fastest ever recorded. Growth in real GDP per person was over 3.5 percent in Western and Eastern Europe and 4.5 percent in Southern Europe during this period (table S1.1). The average growth rate for all of Europe had not exceeded 1.5 percent in the previous 130 years. The expansion was even more remarkable because it came after four decades of subtrend growth below 1 percent caused by destruction and depression.

For the first time in the twentieth century, Europe outperformed the United States (which grew at 2.3 percent) and every other major economy except Japan. Growth in every European country save the United Kingdom exceeded U.S. growth. Labor productivity growth was 2 percentage points higher a year in the west and 8 points higher in the south. The top performers in Western Europe (Austria, Germany, and Italy), Southern Europe (Greece, Portugal, and Spain), and Eastern Europe (Bulgaria and Romania) had growth rates that exceeded U.S. rates by 2 percentage points or more. The gap in GDP per capita between Western Europe and the United States closed from 48 percent in 1950 to 28 percent in 1973. A similar pattern of convergence occurred in Southern Europe, with the gap closing from 79 percent to 65 percent over the same period. Slightly slower growth in Eastern Europe resulted in a slower pace of convergence with the United States, with the gap falling from 78 percent to 70 percent.

**Table S1.1: Relentless growth in the United States, a miracle in Europe, and resurgence in Asia, 1820–2008**

(average annual compound growth rates, GDP per capita, US\$ 1990 Geary-Khamis PPP estimates)

Period	Western Europe	Southern Europe	Eastern Europe	Former Soviet Union	United States	Japan	East Asia	Latin America
1820–1870	1.0	0.6	0.6	0.6	1.3	0.2	–0.1	0.0
1870–1913	1.3	1.0	1.4	1.0	1.8	1.4	0.8	1.8
1913–1950	0.8	0.4	0.6	1.7	1.6	0.9	–0.2	1.4
1950–1973	3.8	4.5	3.6	3.2	2.3	7.7	2.3	2.5
1973–1994	1.7	1.9	–0.2	–1.6	1.7	2.5	0.3	0.9
1994–2008	1.6	2.7	4.0	4.2	1.7	1.0	3.9	1.6

Note: Regional aggregates are population-weighted. Western Europe refers to Austria, Belgium, Denmark, Finland, France, West Germany, Italy, the Netherlands, Norway, Sweden, Switzerland, and the United Kingdom. Eastern Europe refers to Albania, Bulgaria, Czechoslovakia, Hungary, Poland, Romania, and Yugoslavia. Southern Europe refers to Greece, Ireland, Spain, and Turkey. After 1989, West Germany becomes Germany, and the data reflect the newly independent countries in Eastern Europe that emerge from Czechoslovakia and Yugoslavia.

Source: Maddison 1996; Conference Board 2011.

At the beginning of World War II in 1939, per capita GDP was about \$5,000 in Western Europe and \$2,000 in Eastern and Southern Europe. By contrast, per capita GDP in the United States was more than \$6,500. By the end of the war in 1945, per capita GDP had fallen to \$4,000 in Western Europe and to under \$2,000 in Eastern and Southern Europe. But by the first oil price shock in 1973, per capita income was more than \$12,000 in Western Europe, just under \$6,000 in Southern Europe, and around \$5,000 in Eastern Europe. Per capita income in the United States also grew, from \$11,700 after the war to around \$16,500 in 1973.

Europe's productivity surge was multifaceted. From an accounting perspective, much of the surge in the 1950s reflected higher labor productivity, originating in capital deepening and heightened total factor productivity. Factors of production destroyed or misallocated as a result of the war were allocated more efficiently, incorporating new technologies and improved scale economies.<sup>1</sup> Eichengreen and Vazquez (2000) describe a period of "extensive growth," driven by additions to the stock of labor and capital and helped by stable returns to capital and labor. By imitating U.S. production practices and importing American technology, European countries experienced further productivity growth.

Growth accounting reveals that in the 1960s labor productivity in most countries grew from both applying more capital ("capital deepening") and improving total factor productivity (largely "technical progress"; figure S1.2, panel A).<sup>2</sup> These patterns held across Western Europe and were even stronger in Southern Europe. By contrast, higher total factor productivity and (to a lesser degree)



more work drove the United States's comparatively slower growth. Europe, unlike the United States, had countries to rebuild after the war and reallocated labor accordingly. This was a time of "classical catch-up." Countries improved productivity by bringing unexploited technology into use rather than through innovation. Europe realized productivity gains by rebuilding destroyed capital and importing technology from the United States (Abramovitz 1986). After 20 years of war and economic depression, there was finally room for large productivity gains.

European countries also integrated into a relatively stable global economy. After World War II, policymakers tried to understand the sources of the global economic disorder of the 1930s and apply its lessons.<sup>3</sup> A relatively liberal regime of international trade underpinned by fixed but adjustable exchange rates was one result. The Marshall Plan, which acted as a "structural adjustment" program and anchored postwar trade liberalization, may have initiated Europe's commitment to trade. The Marshall Plan may have even helped create the early formal mechanisms of European integration (De Long and Eichengreen 1993). Beginning with the European Coal and Steel Community in 1951 and the European Economic Community in 1958, formal agreements led to significantly expanding intra-European trade.

Europe's trade openness may have both triggered more efficient allocation of investment and accelerated technology transfer from the United States. International integration's importance is evident from growth patterns in Portugal and Spain, which were less closely integrated with other Western European countries until the mid-1950s and early 1960s. Spain saw no major acceleration until it entered technological aid arrangements with the United States in the early 1950s, and Portugal's growth rate doubled after it joined the Bretton Woods system in 1960.

In many countries, an "ever closer union" went hand in hand with a domestic political economy of growth that permitted high investment in those catch-up years (Eichengreen 1994). The social market economy led to moderated wage demands in exchange for commitments from firms to reinvest profits. The high postwar investment rates are derived from a complex network that bound labor's participation in firms' production and investment decisions with relatively generous unemployment benefits and limited industrial policy supports. Growth rates were lower in countries that did not strike these labor-firm bargains—such as the United Kingdom.

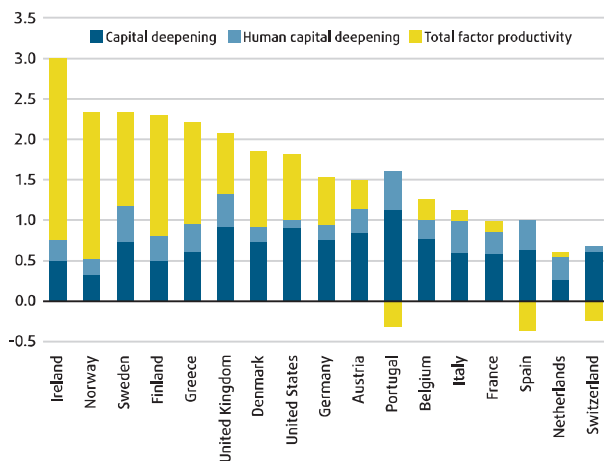
Despite a different economic philosophy, international integration proceeded apace in Eastern Europe. From a growth accounting perspective, the former Soviet Union's pattern was similar to that of other parts of Europe, with productivity growth driving much of the postwar boom. The high rate of capital accumulation in the former Soviet Union's postwar program did result in a large capital-deepening effect, though (Crafts and Toniolo 1996). Eastern Europe grew by different means: communism fueled an "extensive growth" driven by more labor and capital instead of improved technology or efficiency. But multifactor productivity—crudely estimated since the data are deceptive—was lower in the communist countries than in any economy in Western Europe, even when compared with countries with similar per capita income levels, such as Ireland or Italy (Crafts and Toniolo 2008).

## 1974 to 1993: convergence in the north and south, collapse in the east

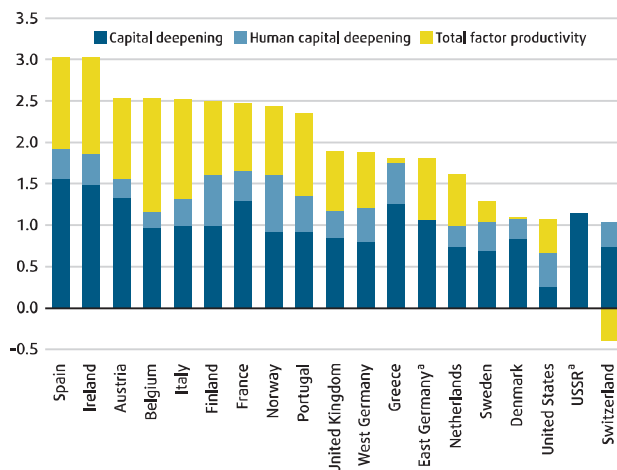
Rapid postwar growth ground to a halt in the early 1970s. The slowdown was widespread and affected market and socialist economies alike. Growth rates across developed and developing economies were at least 2 percentage points lower from 1973 to 1990 than from 1950 to 1973 (table S1.1). The collapse of the Bretton Woods international monetary system and the first oil price shocks

**Figure S1.2: Decomposing the growth in worker productivity**

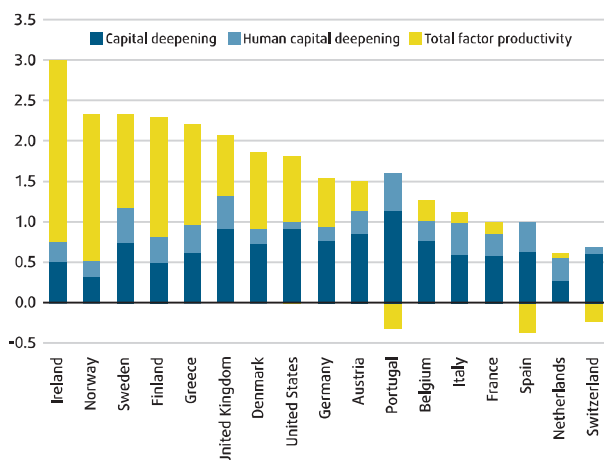
A. Big postwar increases in productivity, especially in the south, percent, 1960–70



B. Productivity growth weakens across Europe, but outstrips the United States, percent, 1970–90

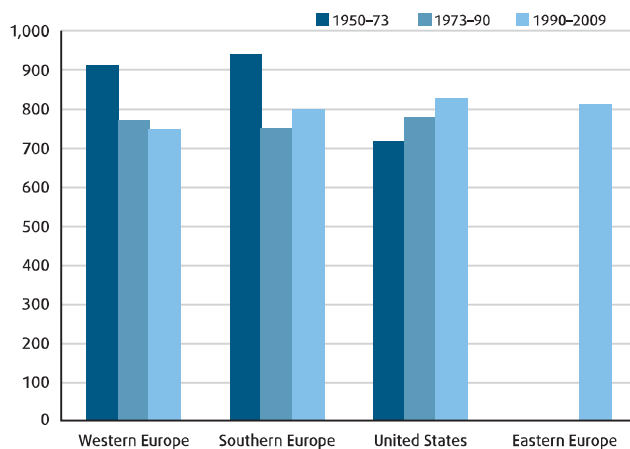


C. Productivity growth drops below the United States, except in Northern Europe, percent, 1990–2003



**Figure S1.3: Europeans work fewer hours while Americans work more**

(annual hours per worker, 1950–2009)



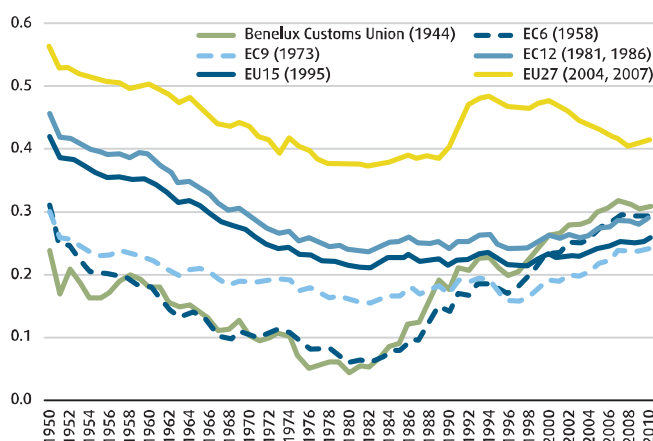
\* Data on human capital deepening are not available.  
Source: Crafts and Toniolo 1996 and 2008.

Source: Conference Board 2011.



**Figure S1.4: Convergence until the 1980s, divergence since**

(coefficient of variation of GDP per capita in Europe, 1950–2010, US\$ 1990, Geary Khamis PPP estimates)

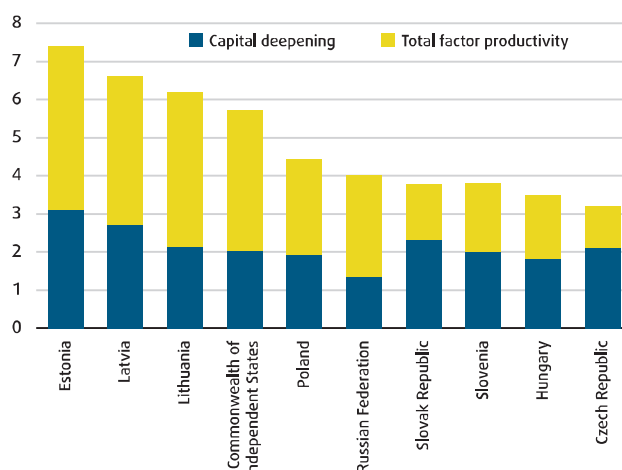


Note: The aggregates illustrate the EC or EU membership for the identified period regardless of whether that unit has been created or not. For example, the EU27 reflects data for Eastern European countries for 1950, though these countries did not join the European Union until 2004 or 2007. The aggregates reflect West Germany until 1988 when a unified Germany is added in its place.

Source: World Bank staff calculations, based on Conference Board (2011).

**Figure S1.5: Big increases in productivity during the transition, especially in the former Soviet Union**

(decomposition of labor productivity growth, percent a year, 1990–2006)



Source: Iradian 2007.

were associated with the interruption of the rapid trajectory of total factor productivity growth across Europe. Growth in the west fell from almost 5 percent in 1973 to 1.5 percent in 1974, and has yet to surpass 3.5 percent. The driver of the postwar boom—improved factor productivity—weakens across the region, along with capital accumulation and improvements in workers' skills (figure S1.2, panel B). Every country experienced declines in total factor productivity growth.

Even so, from a longer historical perspective, growth in Western Europe was reasonably impressive, averaging 1.7 percent over a 20-year stretch. But convergence to U.S. income levels stopped. In 1982, Western Europe's per capita income was about 77 percent of the United States's. By 1990, it was 72 percent and by 1999, 69 percent. Although the United States also saw an interruption in growth that slowed productivity increases, it continued to accumulate capital and improve skills. Once again, Western Europe was falling behind the United States. The prospective cohesion countries were a bright spot. Since 1945, Southern Europe—the poorest part of noncommunist Europe—has consistently grown faster than the rest of Western Europe. The prospect of membership in the European Community generated incentives for structural reform. Southern Europe grew at an average annual rate of 2.3 percent, compared with less than 2 percent in Western Europe. Yet, even in the cohesion countries, growth dropped off steeply.



The decline in Eastern European performance over this period was even steeper. Growth averaged just 0.8 percent in Eastern Europe and 0.9 percent in the former Soviet Union from 1974 until the end of central planning in 1990. During this period, the Soviet economy experienced an enormous decline in labor productivity, and total factor productivity growth may have even been negative over this period. Central planners ploughed back the earnings of large enterprises: investment-to-GDP ratio doubled from 1950 to 1970 while the capital stock grew 8.5 times. But the inefficiencies of heavy industrialization and forced capital accumulation became apparent by the 1970s (Crafts and Toniolo 2008). The collapse of central planning resulted in a free fall in output, and annual average compound growth from 1990 to 1993 was -3.5 percent in Eastern Europe and -6.5 percent in the former Soviet Union.

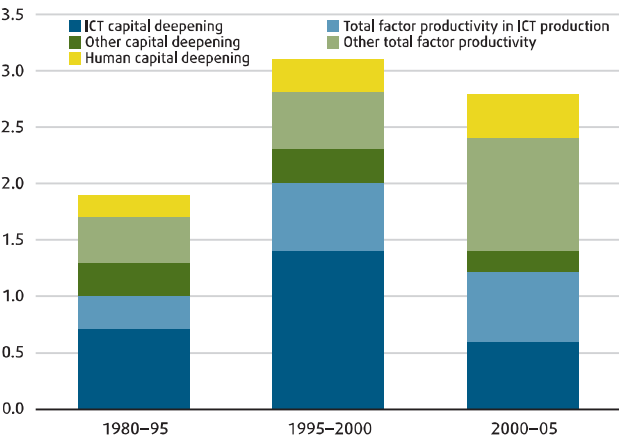
Perhaps the simplest explanation for this decline across Europe is that the inputs for catch-up growth had been exhausted. As the technology gap between the United States and countries such as France and Germany narrowed, the low-hanging fruit of imported productivity gains was plucked. Southern and Northern European countries that were slower to integrate into the European economic system benefited from productivity growth somewhat longer; they still had room to catch up to advanced Europe and the United States. It is also possible that the domestic and international institutions that so successfully supported rapid growth in Western and Southern Europe locked in a growth model that became progressively less suited to a changed global economy. The institutions that had underpinned extensive growth based on capital accumulation and imported American know-how were less suited to the intensive growth requirements of the period after the early 1970s (Eichengreen and Vazquez 2000).

Figure S1.6: Productivity got a big boost from ICT in the United States, not so much in Europe

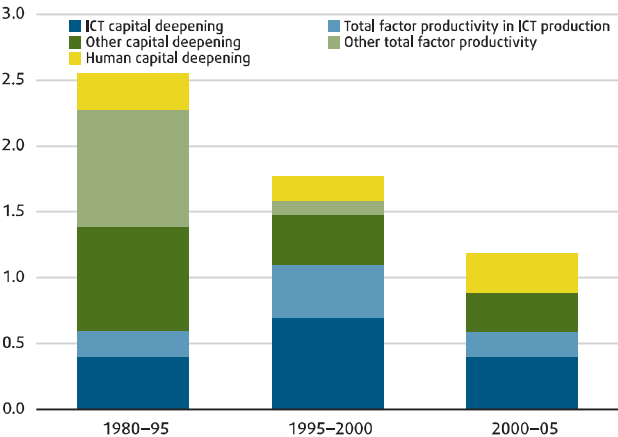
(contributions to labor productivity growth, 1980–2005, percent per year)

Source: van Ark, O’Mahony, and Timmer 2008.

A. Labor productivity went up in the United States in the mid-1990s—and stayed high



B. Labor productivity fell in the EU15, and ICT’s boost was small





Among these outdated institutions were the mechanisms that facilitated a wage restraint and reinvestment consensus. As the potential for catch-up growth was exhausted, the demands for higher wages increased amid heightened union activity. And investment slumped. Whether this regime could sustain the existing rate of productivity, much less develop into a dynamic innovation engine, was questioned. The United Kingdom's relatively good performance during the 1970s and 1980s is sometimes attributed to the fact that it had not developed the same corporatist arrangements. The social market economy had started to show its weaknesses. It was good for countries catching up, but not for countries in the lead. It could take advantage of benign global conditions, but it would not adjust well to big changes in the world economy.

A range of labor market practices that may have dampened growth accompanied the postwar settlement. Two seemingly contradictory developments are particularly noteworthy. The gap in per capita incomes between the United States and Europe increased, but Europe continued to close the gap in labor productivity. The combination of a persistent gap in GDP per capita and increasing output per hour worked reflected a decline in work: lower labor force participation rates and a drop in working hours. Over time, Europeans have worked fewer and fewer hours than Americans (figure S1.3). In the 1950s, Western Europeans worked the equivalent of almost a month more than Americans. By the 1970s, they worked about the same amount. Today, Americans work an extra month compared with the Dutch, French, Germans, and Swedes, and work noticeably longer than less well-off Greeks, Hungarians, Poles, and Spaniards.

Put differently, the ratio of hours worked per capita fell from 127 percent in the west and 131 percent in the south in 1950–73 to 91 percent and 97 percent by 1990–2009. The lower opportunity costs of unemployment in a social market economy, longer holidays, and lower female labor market participation may explain this. Or it may simply be that Europeans value leisure more than Americans—chapter 6 further investigates this (Blanchard 2004). But the effects of Europe's declining work hours are clear: capital intensity increased as the slowing growth of labor led to a rise in real wages and a general substitution of capital for labor (van Ark, O'Mahony, and Timmer 2008). By the mid-1990s, many Western European countries had capital stocks per hour worked that were 10 percent higher than in the United States. When taken with the lower levels of multifactor productivity in Europe during this period, Europe's seemingly superior labor productivity performance is worrying. Its cause may lie not in innovative enterprises but in labor market rigidities resulting from the postwar consensus (van Ark, O'Mahony, and Timmer 2008).

## 1994 to 2009: convergence in the east

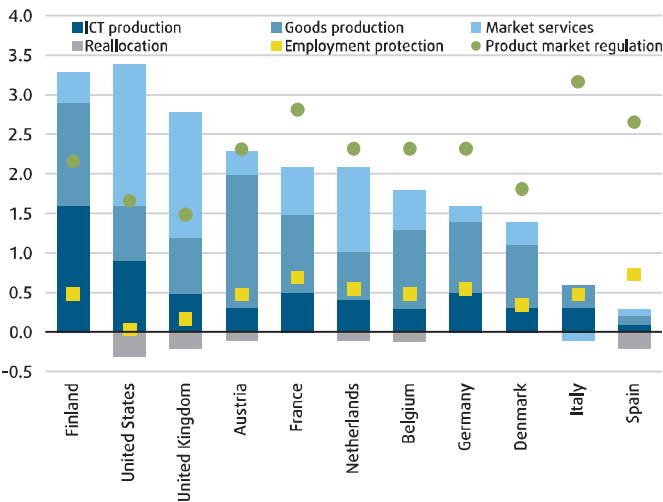
The general decline in performance from the 1970s gave way to considerable diversity by the 1990s. Output in Europe began to vary from the early 1980s and continued to do so through the 1990s and early 2000s, particularly in the west and south (figure S1.4). Between 1990 and 2009, Greece, Ireland, and the Netherlands experienced growth at or above 1989–2010 levels. By contrast, Denmark, Italy, and Switzerland experienced growth under 1.5 percent.

For most of Western Europe, catch-up with the United States continued to slow between 1990 and 2009. The average gap in per capita output was almost unchanged from 1973 to 2008 and closed at a diminishing rate in Southern Europe. In most European countries, labor productivity was below the United States's. Similarly, total factor productivity rates were lower in about three-quarters of European countries as European productivity continued to fall while the United States recovered. But again, the picture is varied. Denmark, Finland, Greece, Ireland, Norway, Sweden, and the United Kingdom had relatively rapid productivity growth during this period (figure S1.2, panel C).

In the newly independent countries of Eastern Europe, catch-up growth was based mainly on reallocating factors. After the massive collapse in output immediately after the end of central planning, Eastern Europe recorded faster GDP per capita growth than the rest of Europe and the United States. With the signing of the first EU Association Agreements in 1994 by Hungary and Poland, Eastern Europe began to integrate with the rest of Europe. This integration of markets and institutions propelled the convergence of east with west as Eastern Europe grew more than 4 percent from 1994 to 2008. Productivity growth reflected patterns from the Western and Southern European high-growth era and was driven by large total factor productivity gains, particularly in the Baltic

Figure S1.7: Policy affects the pace and composition of productivity growth

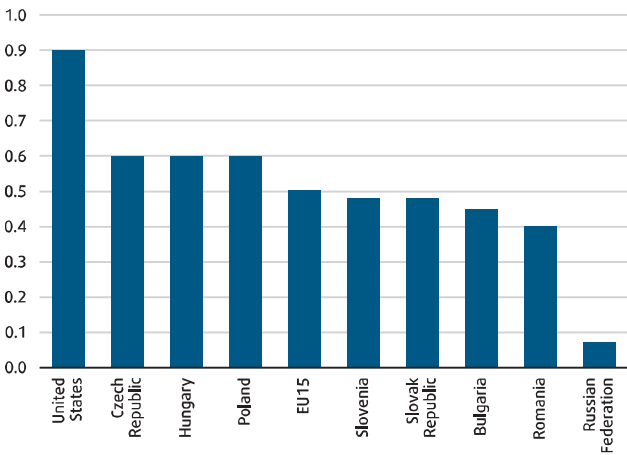
(sectoral contributions to labor productivity growth and regulatory burden, 1995–2004, percent per year)



Note: The “Reallocation” identity reflects the effects of reallocations of labor among sectors. The underlying Employment Protection Index was transformed so that it ranges from 0 to 1, where higher values reflect higher levels of protection. The Product Market Regulation Index ranges from 0 to 10, where lower values reflect higher levels of regulation.  
Source: Timmer, O’Mahony, and van Ark 2007 (for productivity data); Crafts 2006 (for Employment Protection Index); and Conway, Janod, and Nicoletti 2005 (for Product Market Regulation Index).

Figure S1.8: Information technology played a bigger role in Eastern Europe

(contribution of ICT to labor productivity growth, 1995–2004, percent per year)



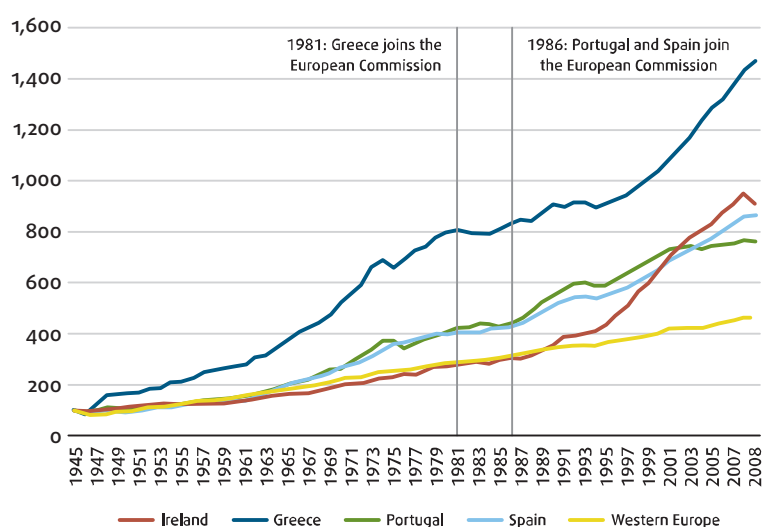
Source: Alam and others 2008; Timmer, O’Mahony, and van Ark 2007.



economies (figure S1.5). The overindustrialization of the centrally planned economies had led to massive misallocations of labor, particularly in industry. The posttransition shift in workers from manufacturing to market services, small in the Soviet era, was major. From 1990 to 2005, the share of services in employment grew 16 percentage points in Eastern Europe and 9 percentage points in the former Soviet Union (Alam and others 2008). Eastern Europe and the former Soviet Union also benefited from some of the same gains from integration as Western Europe. Expanded trade and financial links between east and west anchored reforms at home, provided access to service and merchandise trade markets, and loosened the link between domestic savings and investment through capital flows.

The United States's ability to again outpace Europe in productivity growth reflected Europe's inability to adapt to structural changes in the global economy. Productivity growth in services and industry required information technology. In the mid-1990s, innovations in information and communication technology (ICT) produced a highly productive and capital-deepening sector with large positive externalities for improving productivity across the economy. Labor productivity growth shot up in the United States from 1980–95 to 1995–2000. Productivity enhancements in the ICT sectors and large gains in capital deepening were not the only benefit—multifactor productivity in other sectors also grew. These spillover effects continued to drive total factor productivity growth in the United States during the early 2000s when the initial burst of ICT-specific contributions to labor productivity began to diminish. By contrast, Western Europe's labor productivity fell steadily during this period, with considerably smaller share contributions from ICT. By the early 2000s, Western Europe faced almost no measured productivity growth (figure S1.6).

What explains the reemergence of the productivity gap between the United States and Europe? And why did new information technologies' power grow in North America but not in Europe? The components of the postwar



**Figure S1.9: Growth has been greater in Europe's southern states**

(growth in real GDP per capita, 1945–2008, 1945=100)

Note: Western European aggregate reflects a population-weighted average.  
Source: Maddison 1996; Conference Board 2011.

## Notes

- 1 There are numerous studies that employ growth accounting approaches to understanding the components of economic growth in post war Europe. Some landmark studies include Denison (1967) and Maddison (1987).
- 2 In this picture, human capital formation plays only a small role and it is not clear whether this reflects the tendency of growth accounting to underestimate human capital or whether the already high-quality human capital that persisted in Europe at the start of this period left little room for further contribution to productivity. See Crafts and Toniolo (1996).
- 3 Eichengreen (1994) makes the case for the domestic and international institutional underpinning of postwar growth.
- 4 In a model fit with ordinary least squares: OVERALL PRODUCTIVITY GROWTH = 3.1 – 2.6 EMPLOYMENT PROTECTION INDEX ( $t = -2.0$ ), where higher values on the employment protection index reflect higher levels of protection.
- 5 In a model fit with ordinary least squares: OVERALL PRODUCTIVITY GROWTH = 4.7 – 1.2 PRODUCT MARKET REGULATION INDEX ( $t = -2.4$ ), where higher values on the regulation index reflect more stringent regulation.
- 6 The term “afterglow” is here adapted from some political science literature to refer to institutions and obligations that governments continue to support even after such policies may no longer appear rational. For other applications of the term and concept see Lake (1993).

European model that led to higher employment protection probably prevented the development and exploitation of new technology. Higher employment protection correlates with lower overall productivity growth and ICT deepening (figure S1.7).<sup>4</sup> Employment protections may deter investment in ICT equipment because practices central to developing this technology—such as flexible working and hiring practices—are more expensive (Gust and Marquez 2004).

The higher-performing Western European economies that regulated their labor markets more lightly (Finland and the United Kingdom) generated large ICT-related productivity gains. In Finland, these effects were even larger than those in the United States. Likewise, heavy-handed general product regulation may deter ICT capital investment, either directly or through a more general increase in costs.<sup>5</sup> Some of the Eastern European countries without the legacy of the Western European model were able to start from scratch and better exploit ICT (figure S1.8). Prospective EU member states should take note.

## Afterglow

The nexus of political institutions and market practices that developed in Europe after World War II lifted the continent to the heights of global prosperity. European integration not only headed off conflict, but also anchored trade and factor liberalization that bound Europe and brought the world together. Modern Europe’s most attractive feature may be the prospects it offers poorer countries. The European economic model has served as a “convergence machine,” taking in low- and middle-income countries and helping them become high-income countries. The machine can even count the currently troubled EU15 southern states among its successes (figure S1.9).

The European convergence machine continues to anchor productivity-enhancing reforms and policy integration across Europe and even into Central Asia. But this machine cannot continue to deliver rapid growth and improved quality of life in the advanced economies of Western Europe. European policymakers have assembled protocols and commitments to encourage more innovation and dynamism. Yet, the policies at the center of Europe’s postwar growth model are not flexible enough for European economies to benefit from the technologies that supported high productivity growth in the rest of the world over the last 15 years. As Crafts and Toniolo (2008) note, the problem is not that European product market regulation and employment protections became more stringent, they just became more costly. The Western European model so effective in supporting catch-up has created “afterglow” institutions that are hindering growth in a new era.<sup>6</sup>

In areas aspiring to become part of the machine—notably the Balkan states and the eastern partnership countries—Europe’s afterglow structures will probably not preclude the many benefits of greater economic union. And as ties to advanced Europe become stronger and more sophisticated, the afterglow structures may not prevent productivity gains in the new member states. By contrast, these legacy structures must quickly become more flexible in Western Europe. Convergence to a rigid core will soon lose its appeal.

Bryce Quillin contributed this spotlight.

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## Chapter 2

### Trade

Škoda Auto used to be the butt of jokes in the 1980s: Why do Škodas have rear-window heating? So your hands do not freeze while pushing them. In 1989, the company sold about 150,000 cars in the former Czechoslovakia, despite having a monopoly. In 1991, Volkswagen AG bought a 30 percent stake in Škoda Auto, and by 2000 it had taken over the company. The subsidiary initially made the simpler parts that VW required for its cheaper cars. Škoda now makes more complicated transmissions and even engines for its parent. But it still makes its own cars—more than 750,000 of them in 2010—in plants at home in the Czech Republic and in the Slovak Republic, Ukraine, the Russian Federation, and India. Škoda tops consumer satisfaction surveys in the United Kingdom and India, beating Ford, Honda, and Toyota and inspiring loyalty instead of derision. And the company made almost \$2 billion in profits for Volkswagen last year.

Škoda's success is symbolic of the progress in the manufacturing trade in Central and Southeastern Europe. German, Swedish, Swiss, French, and other manufacturers have been offshoring production, increasing the productivity of subsidiaries in emerging Europe and the profitability of their parents. Romania's Dacia is doing the same for Renault. Italy's Fiat has found it profitable to look east too: it now owns two-thirds of Serbia's Zastava Automobiles—known for producing the joked-about Yugo—and produces bestselling minivans in collaboration with TOFAS in Turkey. Asea Brown Boveri, the Swiss-Swedish engineering giant, produces electrical equipment in many plants in emerging Europe stretching from the Czech Republic to Russia, from Latvia to Croatia. Back-and-forth trade in parts and components is part of an increasingly sophisticated "Factory Europe" that extends beyond the enlarged European Union to include Turkey, the former Yugoslavia, Ukraine, Belarus, and Russia.



- Is "Factory Europe" as dynamic as "Factory Asia"?
- Is the Single Market for Services underachieving compared with the United States?
- Is the Common Agricultural Policy compromising Europe's global leadership?



But manufactured goods are no more than a quarter of Europe's \$16 trillion economic output. More than 70 percent of GDP—or almost \$11.5 trillion—consists of services: wholesale and retail trade, tourism, construction, transport, communications, modern business services, and finance. Europe's annual trade in services—counting both cross-border services trade and foreign sales of affiliates of multinational companies—is about \$4 trillion. European policymakers view the vibrant U.S. market for services—coincidentally also valued at about \$11.5 trillion—as the benchmark, and perceive the single market as falling short.

Many of these services are inputs to the production of other goods and services. Some reduce the distance and time between producers and consumers and between suppliers and buyers; think of transportation, finance, and communication. Others are direct inputs required for production and marketing—such as accounting, legal, and engineering services. Their quality affects productivity economywide. So trade and liberalization of services increase overall productivity. By allowing foreigners into communications, transportation, and banking, for example, the Czech Republic made these services more reliable, and improved the performance of “downstream” manufacturing sectors. European policymakers expect their economies to gain a lot through integration in services.

Some of these services are traditional and difficult to trade without face-to-face contact; think of hotels, restaurants, and supermarkets. Europe actually does a brisk trade in these services. France, Spain, Italy, the United Kingdom, and Germany are among the top destinations for tourists, for example, and Sweden's Ikea and the French Carrefour are global brands. Air transport has improved, and so have passenger trains, but international road and rail freight is inefficient. What vexes Europeans most, though, are what Baumol (1986) called “modern, progressive, and impersonal” services—those that can be traded over longer distances—in which the Americans and Asians are doing so well. Asia and North America are seeing a burgeoning trade in “digital services” such as Internet sales and IT support, and Europe is lagging.

But in one part of the modern services trade—cross-border banking services—Europe may be doing better than any other part of the world. Banking is quickly becoming integrated into a single market in the European Union and even in the candidate countries. European banks have branches or subsidiaries overseas, and many are doing such a busy retail and wholesale trade in emerging Europe that some observers are worried about capital flows being excessive. This report is optimistic about banking in Europe, and chapter 3 elaborates. In other modern services—especially those that involve new information technologies such as the Internet—Europe is underachieving. A recent HM Government (2011) document notes:

*“Only 12 per cent of EU online trade is cross-border. Consumers in one part of the EU are often prevented from buying digital content from another. EU citizens can only access iTunes in 15 Member States and Spotify in seven. The benefits [EU citizens] have shared by freeing up the airline industry have yet to be realised on the railways or in other forms of transport. These are just a few examples—there are many more” (p. 4).*



Another example is the rapidly growing e-book trade. Almost a third of all book sales—by value, not volume—are now electronic, and are increasingly read on media tablets such as Apple’s iPad and Amazon’s Kindle. Sales of media tablets are projected to exceed \$50 million in 2011. In the United States, e-books are now outselling hardcover publications. But e-book sales are anemic in Europe, because regulations make it difficult to sell books Europe-wide. The story is often similar in other services. In transportation and communications, in engineering and accounting, in architectural and legal services, and in health and education, Europe’s services trade is segmented. To compare multicultural and multilingual Europe with the U.S. single market is unreasonable, but regulatory heterogeneity in Europe is excessive. iTunes users would think it is unreasonable.

The third aspect of Europe’s trade that is often viewed by economists as less than satisfactory is that of agricultural goods. The sizable subsidies and other aspects of the Common Agricultural Policy have been criticized as helping neither equity nor efficiency in European and international agricultural markets.

This chapter asks and answers the question: Is Europe taking advantage of economic enlargement? The short answer is that it is for manufacturing, somewhat less for services, and least for agriculture. Europe’s biggest success is the increasingly more sophisticated trade in goods spurred by a relocation of economic activity toward the new member states and EU candidate countries. In assessing trade as a principal component of Europe’s growth model, this chapter tries to answer three questions:

- **Is Factory Asia outcompeting Factory Europe?** While Factory Asia is growing more quickly in size, the goods trade in Europe is becoming more sophisticated than in East Asia. Western Europe is not just giving the new member states of the European Union and other neighbors such as Serbia and Turkey a bigger share of its tasks, it is also giving them tougher things to do. The eastward expansion of Factory Europe is straining logistics—especially information and communications infrastructure—and it could grow even faster and further if this were fixed.
- **Does the Single Market for Services work as well as it should?** While it is impossible to generalize for activities that add up to two-thirds of European GDP, the short answer is that it does not. Travel is well developed but transportation is not; the market for financial services is quite efficient, but other business services—especially those involving modern information technologies like the Internet—are not. For trade in nonfinancial modern services, the solution lies not in trade facilitation but in better and more harmonized regulation of enterprises and improved labor mobility, issues taken up again in chapters 4 and 6, respectively.
- **Is the Common Agricultural Policy harming Europe?** The brief answer is that it is, but not in ways commonly talked about. At about 33 eurocents per person a day, the financial cost of the Common Agricultural Policy (CAP) is small. But the subsidies go mostly to well-off farmers in richer France, Italy, and Germany. Despite Europe’s position as the largest importer of agricultural goods from the poor countries in Africa, the CAP may also result

in Europe ceding the moral high ground to emerging economies in global trade talks. But Europe mostly pays for its agricultural trade policies not with the approximately \$75 billion a year distributed for agriculture and rural development by the European Commission, but through missed opportunities for closer regional integration with eastern partnership countries, where more than a third of all workers still depend on agriculture for a living.

These weaknesses notwithstanding, the overall assessment of European trade has to be a positive one. In 2009, Europe's merchandise trade was worth \$4.5 trillion, more than Asia's and North America's combined. Based on balance of payments accounts, its cross-border trade in services was worth \$2.25 trillion, more than for the rest of the world combined. Trade between advanced and emerging Europe is growing bigger and noticeably more sophisticated every year, aiding quick convergence in productive capacity and living standards, and helping to create a bigger and stronger economic union. Trade is the mainstay of the European economic model, and its most attractive attribute.

## Europe: the world's trade center

With increasing frequency, Europe is portrayed in the press as a sluggish part of the world. When it comes to international trade, it is actually the busiest.

In 2005, and even in 2009, Europe's merchandise trade dwarfed North America's and Asia's. Nearly 45 percent of the world's \$10 trillion merchandise trade begins or ends up in Europe (figure 2.1). Two-thirds of this trade is among European economies, making its regional trade the biggest in the world. This has not come at the cost of global trade relations. Europe also has thick trade ties with every other part of the world, importing more manufactured goods from Asia than the United States, and trading more with Africa than Asia or North America. Europe also imports and exports more farm products from poor countries than any other developed region.

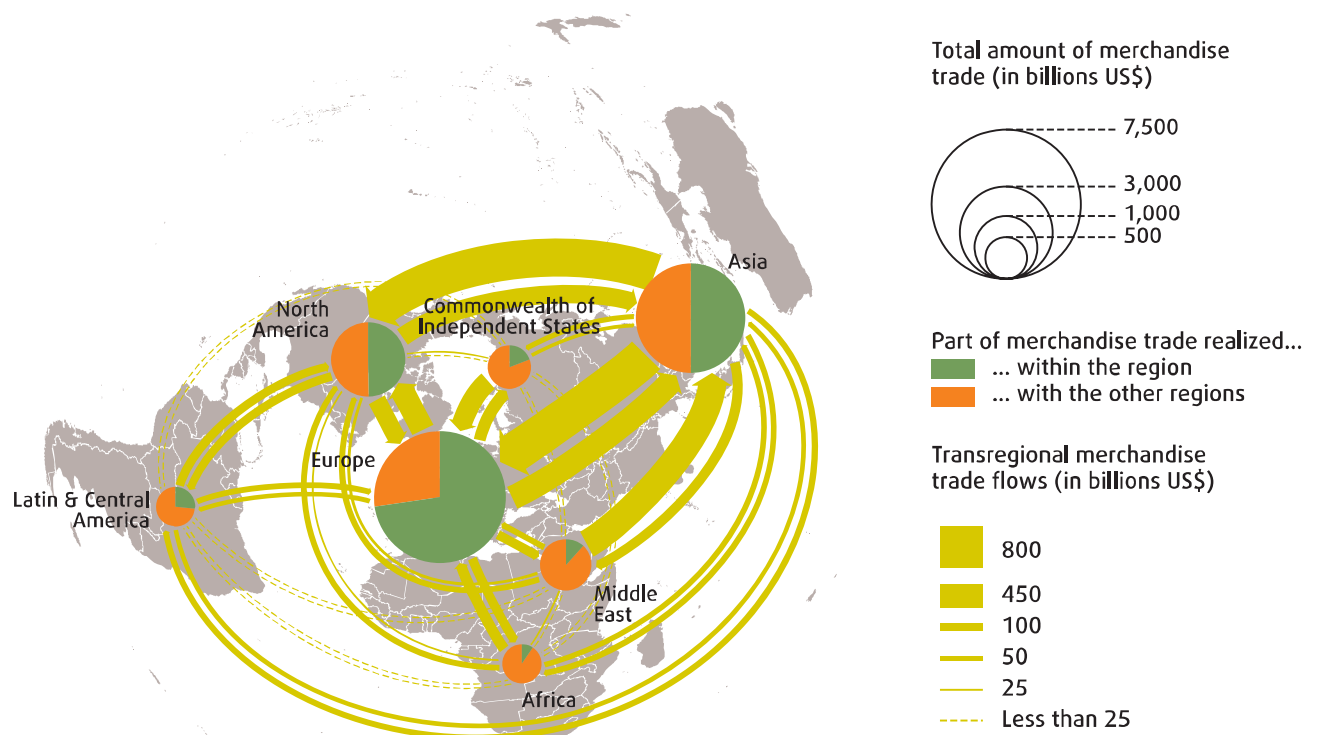
For services, Europe is again the global leader in trade. The data are difficult to come by and the magnitudes differ a lot depending on whether balance of payments information only is used, or the services trade is also imputed from reports by foreign affiliates of companies. Based on balance of payments statistics, the value of cross-border services exports of the European Union and candidate countries was just under \$2 trillion in 2007, and about \$2.25 trillion in 2009. The value of the services trade rises further if the sales of services by foreign affiliates of multinational firms are added. For the European Union, the value of these sales was more than \$2 trillion in 2008. So, total European services trade is worth around \$4 trillion. According to the Trade in Services database, the EU15 accounted for one-third of global cross-border exports; the U.S. share was 13 percent (Francois, Pindyuk and Woerz 2009). The EU15 was also the biggest importer of cross-border services, with more than one-third of global trade.

Europe's services trade is more than half of the global trade in services, and more than half of this trade in services is within the European Union's single market. But it is also clear that there is a lot less regional trade in services than in goods—the ratio between intra-EU and extra-EU exports for services was 1.3

while the ratio for goods trade was 2.1 in 2008 (figure 2.2). Western Europe is the largest contributor to the European Union's exports in services, with more than 70 percent of total cross-border exports and some 95 percent of total sales by foreign affiliates. Western Europe trades relatively more with economies outside the European Union, while Southern Europe and the new member states trade more within.

Through the goods trade and direct investment, enterprises in the EU15 countries have become globally competitive. Although Asia is catching up, Europe is the world's trade leader in industrial merchandise. Trade facilitation measures can increase the size and sophistication of this trade and increase the productivity in manufacturing in both advanced and emerging Europe. But Europe has yet to exploit such synergies in modern services. More trade in services will help increase productivity in an even bigger part of the European economy. Regulatory reform could increase services trade in the single market by multiples of the current \$4 trillion. And the European Union could do a lot more to encourage the regional trade in agricultural produce with the eastern partnership. The next three sections of this chapter take up each of these three components of trade in turn.

**Figure 2.1: Europe has the world's busiest goods trade**  
(world merchandise trade, US\$ billions, 2008)



Source: World Bank staff using WTO 2009a.

## Factory Europe—a little bigger, a lot smarter

A few years ago, Baldwin (2008) noted the rise of “Factory Asia”: “Like some gigantic, impossibly complex and wonderfully efficient factory, the region churns out millions of different products ... by sourcing billions of different parts and components from plants spread across a dozen nations.” The Barbie doll, which is assembled in China and consists of pieces from many Asian countries, has been used to highlight the large and increasing fragmentation of production across borders in the region (Tempest 1996). Other products include cars, computers, and mobile phones (Gill and Kharas 2007).

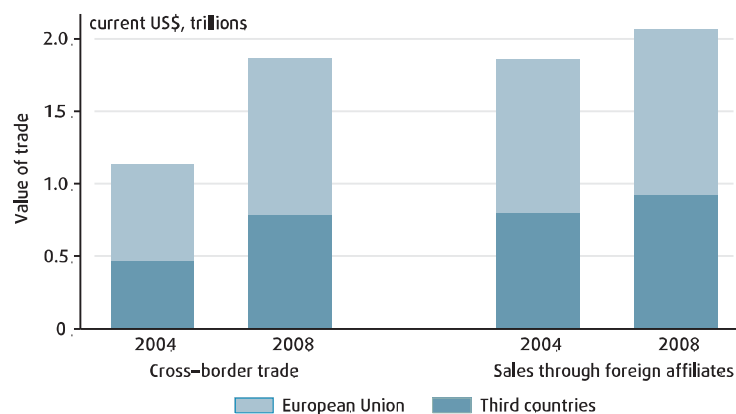
Such examples are no longer unique to Asia, if they ever were. Siemens has organized its activities in a global value chain, which includes engineering in Western Europe and assembly in Eastern Europe (Marin 2010b). Škoda in the Czech Republic makes high-tech components—including transmissions and engines—for Volkswagen (box 2.1). The production line for the Porsche Cayenne ends in Leipzig, Germany, but stretches out to the Slovak Republic (Watson 2010).

This fragmentation is indicative of greater efficiency in production and trade, and is a source of productivity growth in both advanced and emerging Europe. Intermediates trade is likely to be especially helpful. Productivity growth in firms is facilitated by access to cheaper or greater varieties of inputs. Being a part of a production chain catalyzes cooperation in technology and knowledge-transfer more than might be the case for trade in final products (Grossman and Helpman 1991; Dixit and Stiglitz 1977; Romer 1990; Frankel and Romer 1999). And the expansion of the European Union may affect patterns of intermediates trade to a greater extent than standard trade.

This section takes the reader on a brief tour of Factory Europe. First, it looks at trade in finished products. The European Union’s new member states have rapidly increased their trade both with the European Union and with the rest of the world. Indeed, while the EU15’s share of total trade with the new member

**Figure 2.2: The European Union does a brisk trade in services**

(cross-border service exports and sales of foreign affiliates, current \$ trillions, 2004 and 2008)



Source: World Bank staff calculations, based on Eurostat.

### Box 2.1: Volkswagen and Škoda

Intra-firm trade with Eastern European affiliates is estimated to have helped German firms increase productivity by more than 20 percent, and German offshoring within Europe has raised the productivity of the subsidiaries almost threefold compared with that of local firms. More imported inputs have raised firm productivity in Hungary, driven to a large extent by access to increased variety or complexity of inputs—not just volumes. Reductions in intra-firm tariffs and input tariffs associated with EU enlargement has helped the offshoring relationship between German or Austrian firms and their Eastern European affiliates by raising their total factor productivity.

The relationship between Germany's Volkswagen and the Czech Republic's Škoda provides an inspiring example. Volkswagen (VW) acquired Škoda in 1991, and took over its management 10 years later. In 1990, Škoda sold 170,000 cars despite having enjoyed a

monopoly in communist Czechoslovakia. The cars inspired jokes and derision. By 2007, its annual sales were up to 630,000, with plants in places as far away as India, and cars that had started to inspire loyalty. Before the global crisis, its plans were to increase sales to more than a million. Its rapid growth had made it an important part of VW's strategy to outdo GM and Toyota for global market share.

Škoda has its own cars but also makes components for VW. Starting with the basics, VW helped Škoda transition into a market economy. VW allowed Škoda to benchmark its production practices against those of plants in Germany. The quality of Škoda's own cars has improved, overcoming a reputation for bad quality, and some components are now shared in Škoda and VW cars. Škoda now makes high-tech components for VW automobiles, including transmissions and engines. One example is the Mlada Boleslav engine plant. In 2009, the plant started making

a cutting-edge 1.2TSI petrol forced-induction engine, the product of collaborative R&D, that could produce 77 KW. VW used to fear the loss of intellectual property, limiting willingness to share technology and know-how. But the 1.2TSI is an example of how this has clearly changed.

The Czech auto industry includes a broad and complex supplier network within its borders. The simple parts of the production process shifted east 10 years ago and have continued to move further east. The Czech Republic and the Slovak Republic have increased their presence in higher value-added activities that are more complex technically.

Source: Marin 2010a; Hansen 2010; Halpern, Koren, and Szeidl 2011; Ledgard 2005; Škoda Auto 2010; Watson 2010; Volkswagen 2009. For a discussion of the car industry in Europe, see Rhys 2004.

states has increased, trade of the new members outside the EU15 grew even faster than their trade with the EU15, and so the relative importance of the EU15 has declined. The EU candidate countries seem to be following the same pattern with a lag of a few years. A typical example is the trade in motor vehicles, accounting for almost one-fifth of all exports by new member states. EU enlargement has created new markets for advanced economies in Europe and helped emerging Europe become more competitive, not just in Europe but worldwide. Germany is not the final assembly point for inputs imported from the east—in fact, both German (and Austrian, Belgian, Dutch, French, and Scandinavian) companies and their eastern subsidiaries are exporting successfully along a differentiated product range. This pattern is distinct from the role Japan and now China play in Asia (box 2.2).

Second, an examination of intermediates trade shows that Factory Europe is not as large as Factory Asia, but it is becoming smarter more quickly. Trade in intermediates is a smaller proportion of total trade within Europe than within Asia. EU enlargement has led to a rapid increase in intermediates trade with the new member states, although once again, new members have increased their trade with non-EU partners even faster. Most important, however, intermediates trade within the enlarged European Union has become a lot more sophisticated and complex, at the same time as the sophistication and complexity of the EU15's trade with the rest of the world has stagnated. EU enlargement has had a limited effect on the size of Factory Europe, but it has influenced its complexity. Factory Europe is becoming a bit bigger, but a lot more brainy.

### Box 2.2: Germany is not Europe's China

Gill and Kharas (2007) and others have documented an interesting asymmetry in intra-Asian trade. They show that intermediates tend to be imported by China from the rest of the region—from Southeast Asia and from Japan and the newly industrialized economies in Northeast Asia—so that China runs a sizable trade deficit within the region. In turn, China exports finished

goods to the rest of the world, including the European Union and United States, running a trade surplus with the rest of the world. The question naturally arises whether the world's second-largest trader—Germany—has a similar relationship in Europe.

Information on trade balances (including intermediates) was analyzed in search of a European analog. The new members have

trade deficits with the region and the rest of the world while Germany has trade surpluses with both the region and the rest of the world. Prima facie, there is no evidence of a large economy in Europe playing the role that Japan once played in Asia, and that China is now playing.

Source: Gill and Kharas 2007.

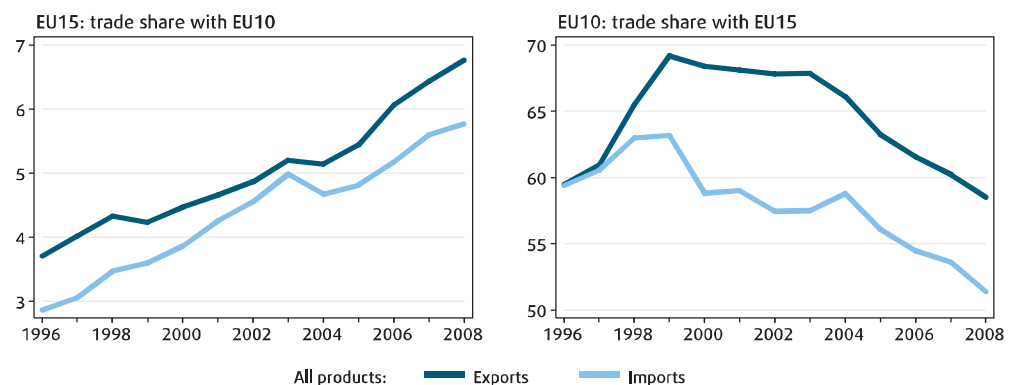
## The goods trade has grown most in the East

Trade-to-GDP ratios have increased worldwide and Europe is no exception. For the EU15, the ratio rose from 45 to 54 percent from the late 1990s to the late 2000s. For the 2004 members, the ratio rose from 63 to 94 percent. For the 2007 entrants and potential members, the change was smaller, rising from 43 to 52 percent (box 2.3 explains the regional grouping used in this section). Trade within the EU27 also rose: the export-to-GDP ratio increased from 15 to 19 percent. But this masks an asymmetry within the union. Exports from the EU15 to the new member states as a share of total exports doubled over the period, reflecting how the 2004 members became increasingly important for advanced Europe (figure 2.3). By contrast, the importance of Western Europe for the new members declined. The large and proximate markets to their west are still important destinations and sources of goods but—due in part to relatively slow GDP growth—the importance of those markets has been falling since 2000.

The composition of the goods trade has changed too. For the 2004 members, machinery and transport equipment comprise more than a third of imports and almost half of exports (figure 2.4). The proportion has risen, but the data indicate a shift away from the EU15 as a source of this product category. The patterns of

**Figure 2.3: The European Union's new members are more important partners for the EU15, the EU15 less for the new**

(shares of regional trade for EU15 and EU10, 1996–2008)



Note: The EU10 includes new member states joined the EU in 2004, except Cyprus and Malta.  
Source: World Bank staff calculations, based on UN Comtrade.

### Box 2.3: Scope of the goods trade data

This chapter considers trade in the European Union's 27 member states and the accession countries, broadly defined to include Ukraine. Of the European Union's new members, the data are best suited for 8 of the 10 countries that joined the European Union in 2004. These countries are Czech Republic, the Slovak Republic, Slovenia, Hungary, Poland, Latvia, Lithuania, and Estonia. This is mainly because the data coincide with their accession years (since the mid-1990s) and formal membership. The group is called "EU10," "new members," "2004 members," or the "new member states."

The group known as the "potential members" or accession countries includes Bulgaria and Romania because they joined only in 2007, close to the end of the period of available

data; the Western Balkans (Albania, Bosnia and Herzegovina, Croatia, the former Yugoslav Republic of Macedonia, and Serbia—all at various stages of accession); Turkey (which has a customs union with the European Union and is an official accession candidate); and Ukraine (even though it has neither). This is a diverse group, so it is sometimes necessary to look at subgroups or individual countries within this category. Data going back to 1996 are used when available for the 2004 members or potential members, except for Bosnia and Herzegovina, which started reporting in 2003. For comparison, the nine Asian countries in Kimura, Takahashi, and Hayakawa (2007) are considered to be China, Hong Kong SAR (China), Indonesia, Japan, Malaysia, Philippines, the Republic of Korea, Singapore, and Thailand.

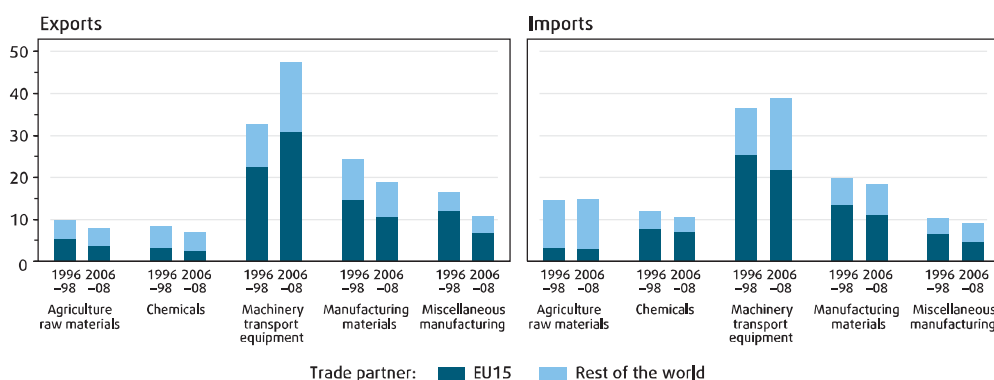
BEC nomenclature is used unless stated otherwise, grouping products into consumption, capital, and intermediate goods (Miroudot, Lanz, and Ragoussis 2009). Goods are classified according to "expert judgment" and may not fall neatly into one category. For example, it is not obvious whether fruits should be classified as consumption or intermediate goods. But this approach has the advantage of covering a wide spectrum of goods trade. In contrast, studies identifying parts or components can only reliably do so for a subset of sectors (for example, Kaminski and Ng 2005; and Kimura, Takahashi, and Hayakawa 2007).

Source: Behar and Freund 2011.

trade in machinery and transport are thus illustrative of the general pattern: EU15 trade has shifted eastward, while the new members' trade has become global.

Interestingly, the pattern seems to repeat itself in the EU candidate countries. The share of machinery and transport equipment in exports from the 2004 entrants rose from 30 to 50 percent between 1995 and 2002, and then stopped growing. But these exports are still growing fast in Romania, Bulgaria, Turkey, and the other countries in the Balkans—from a share in total exports of about 10 percent in 1995 to 30 percent by 2008.

The fastest-growing subcomponent of machinery and transport equipment trade includes cars and other road vehicles. For the new members who joined in 2004, the proportion of motor vehicles in total exports continued rising even after overall machinery export growth flattened out and reached almost



**Figure 2.4: Machinery and transport equipment are half of the exports of new member states**

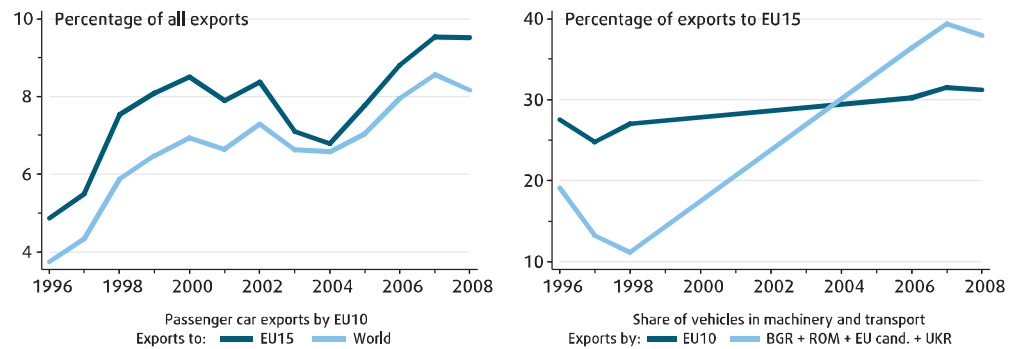
(sector shares of 2004 entrants' trade, 1996-98 and 2006-08)

Note: The category of agriculture and raw materials includes products with codes 0-4 in Standard International Trade Classification (SITC), Revision 2. Period averages for the years 1996-98 and 2006-08 are shown.

Source: World Bank staff calculations, based on UN Comtrade.

### Figure 2.5: Automobiles are a big part of the goods trade in Europe

(share of road vehicles in exports of emerging Europe, 1996–2008)



Note: Passenger cars (code 51 in Broad Economic Categories (BEC) classification) are shown. In the right panel, data for “potential members” are linearly interpolated between 1999 and 2005.

Source: World Bank staff calculations, based on UN Comtrade.

20 percent, the highest ratio in the world. For the 2007 members and the EU candidate countries, the increase in the share of motor vehicle exports is even faster (figure 2.5). Candidate countries have seen a large rise in both exports and imports, mainly because of Turkey.<sup>1</sup> EU enlargement and integration may be helping Europe’s carmakers maintain global competitiveness in the same way as Factory Asia helped Japan’s and the Republic of Korea’s.

The parallel patterns in the new member states and EU candidate countries illustrate a more general point: enlargement is a process and its economic impact is felt long before the final accession act is signed (box 2.4). Trade liberalization is usually a precursor to enlargement. Turkey even joined a customs union with the European Union in 2005. For the eastern partnership countries, deep and comprehensive free trade agreements are negotiated as a key step toward closer integration. In the new member states and in the candidate countries, the prospect of membership has often catalyzed a first round of deep structural reforms, which in turn have attracted foreign investment and facilitated deeper trade integration.

### Trade in intermediate goods has grown more

One way to compare Factory Europe with Factory Asia is to look at regional trade in intermediates. This matters because intermediates trade may be a particularly potent source of economic growth. Productivity within a firm is increased by improved access to inputs that are cheaper or more plentiful, of higher quality, and greater in variety, as well as through the technology and knowledge they embody (Grossman and Helpman 1991; Dixit and Stiglitz 1977; Feenstra, Markusen, and Zeile 1992). International trade can provide more or cheaper inputs, or these inputs may embody a higher level of technology than locally available ones. When they are part of a supply chain, relationships between producers and consumers of intermediates are likely to be closer. So there are more opportunities for transfers of better production methods and other know-how than is the case for consumption goods. One should expect a link between fragmentation—manifest in trade in intermediates—and productivity growth.



The proportion of the EU27's output traded across borders as intermediates increased, but Asia overtook it in 2004 (figure 2.6, left panel).<sup>2</sup> Emerging Europe experienced a rapid increase, including with non-EU trade partners. For the 2004 members, for example, the share of intermediates trade in GDP rose from 15 to almost 25 percent. At 21 percent, Asia's ratio is lower despite having doubled since 1995. Factory Asia has been growing fast. In Factory Europe, mostly the eastern wing has been growing.

The share of intermediates in total trade in Europe is no higher than in the late 1990s. Asia has seen a steady increase (figure 2.6, right panel). This is true for trade within the region as well as trade with the rest of the world. The share of intermediates within EU27 exports to the world has stayed at about 50 percent, while import shares have risen marginally from 55 to 57 percent. Asia's share in worldwide intermediates exports fell marginally to 50 percent, but its import shares rose from 64 to 73 percent. In Europe, the shares of intermediates inputs in exports and imports have been roughly constant, at about 50–55 percent for the EU15, 55–60 percent for the 2004 entrants to the European Union, and 60–65 percent for the 2007 entrants and the EU candidate countries. These numbers suggest that—outside Asia—the increases in fragmentation may be more modest than popularly believed.<sup>3</sup>

The aggregate patterns presented mask asymmetries and geographical shifts. The new members form an increasingly important market for EU15 intermediate products (figure 2.7). The EU15 is sourcing more of its intermediates from the new members, but there was a slowdown since the early 2000s. The importance of the EU15 as a source of imports for the new members is falling: the new members now import less than half of their intermediates from the EU15.

#### Box 2.4: EU integration is a process

The recent expansion of the European Union eastward is formally marked by the addition of 10 members in 2004 and the further addition of 2 members in 2007. But formal enlargement comes toward the end of a longer integration and harmonization process. Many concrete measures are taken well before the accession year. These come through two main mechanisms, which are often negotiated and implemented in parallel:

**Trade agreements.** While the European Union has many different kinds of motivations for agreements, one form is especially designed for countries applying to join it, and this intention is made explicit. These introduce free trade in almost all industrial products but not agriculture. As part of the process, countries must relinquish all other bilateral trade agreements.

**Association agreements.** Trade agreements are nested in association agreements, which are typically aimed at aligning legislation with the European Union and recognizing intellectual property rights. For the Balkans, for example, this comes as part of a stabilization and association process. Tellingly, an objective is “to encourage the countries of the region to behave towards each other and work with each other in a manner comparable to the relationships that now exist between EU Member States” (European Commission 2010). It includes integration into regional infrastructure networks.

In the mid- to late 1990s, countries that eventually became part of the EU27 signed Association Agreements with EU (for example, Hungary in 1994, Romania and Bulgaria in 1995, and Estonia, Latvia, Lithuania, and Slovenia in the late 1990s). In 1995, Turkey signed an association agreement, and formed a customs union on December 31, 1995.

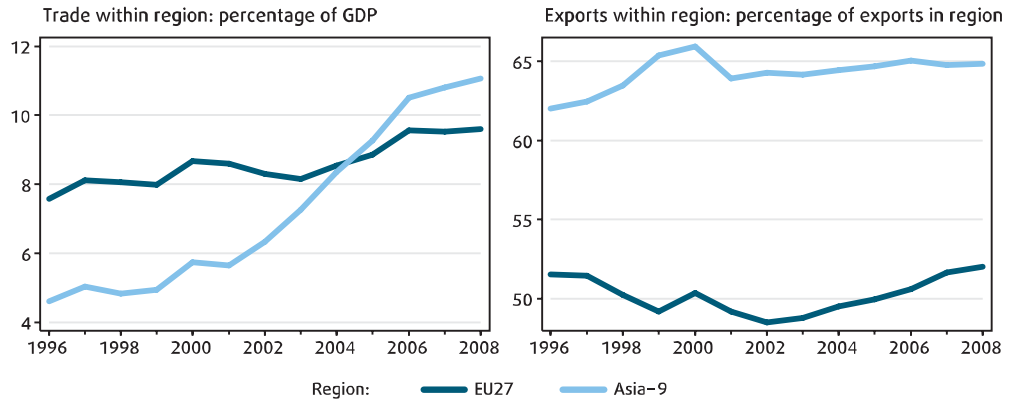
In 1998, the Ukraine–European Union partnership and cooperation agreement was signed, though association agreement negotiations are still under way. In 2000, the prospects of joining the European Union were mooted for Balkan countries in Zagreb, including any intention to sign stabilization and association agreements. In 2004, the former Yugoslav Republic of Macedonia signed a stabilization and association agreement, becoming the first (West) Balkan country to do so. Others soon followed: Croatia in 2005, Albania in 2006, Montenegro in 2008, and Bosnia and Herzegovina in 2008.

Integration with the European Union should not be viewed as a discrete change upon membership. The process of actual reforms precedes formal entry, sometimes by more than a decade.

Source: Behar and Freund 2011.

**Figure 2.6: Intermediates are about half of the European Union's trade, but two-thirds of the trade in Asia**

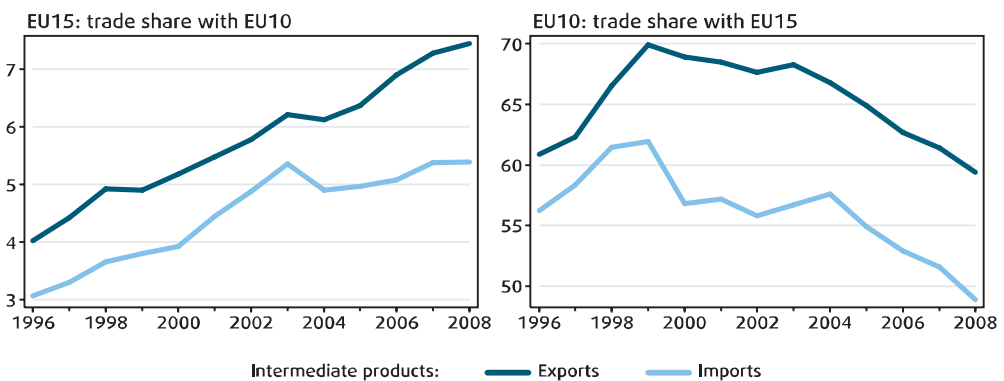
(share of intermediates trade in GDP and total trade, 1996–2008)



Note: Trade in intermediates is defined by the BEC nomenclature.  
Source: World Bank staff calculations, based on UN Comtrade; and WDI.

**Figure 2.7: New EU members are more important for the EU15 for trade in intermediate goods**

(intermediate goods trade shares, EU15 and EU10, 1996–2008)



Note: Trade in intermediates is defined by the BEC nomenclature.  
Source: World Bank staff calculations, based on UN Comtrade.

## More variety in the intermediate goods trade

The trade between Fiat and its affiliates in Serbia and Turkey, or between Škoda and Volkswagen, is classified as intermediates intra-industry trade, which has been growing substantially in and near the European Union. The intra-industry trade in intermediates between the new member states and the EU15 is higher than between average trade partners in the rest of the world. The Grubel-Lloyd index for intermediates has risen by 22 percent, higher than for all products (figure 2.8). The Grubel-Lloyd index for intra-industry trade in intermediates between the new member states and the EU15 rose by about 30 percent; by contrast, the index for trade between the EU15 and the rest of the world actually fell.

The growing intra-industry trade is best understood as driven by increased “horizontal differentiation,” which is manifest in greater variety (Jones and Kierzkowski 2005). An alternative interpretation of growing intra-industry trade is the fragmentation of production. But as seen above, the evidence for increased fragmentation within Factory Europe is ambiguous. By contrast, 9 of 13 EU15 countries—Belgium and Luxembourg excluded—increased the variety of

**Table 2.1: A greater variety of intermediate goods are being traded**

(variety of intermediate goods sent from 2004 members to the EU15)

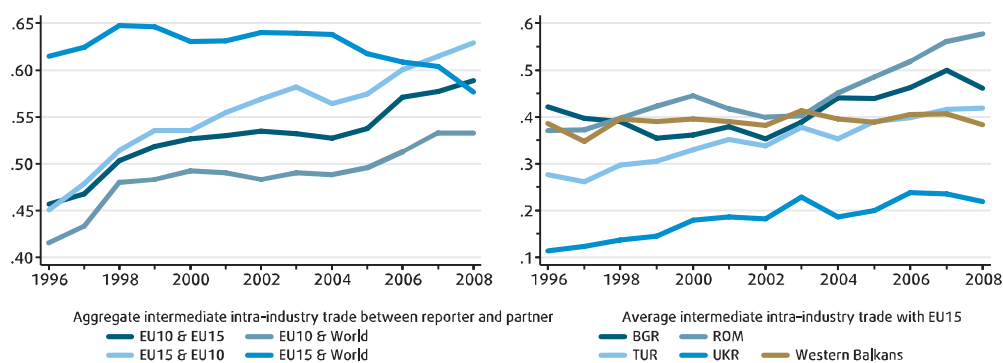
	1996–98	2006–08
Average EU15 imports	1718	1807
Average new member state exports	1482	1591
Aggregate EU15 imports	2997	2942
Aggregate new member state exports	2914	2924

Note: The first two rows (“average”) show simple averages across corresponding groups and the third and last rows (“aggregate”) do region-wide values, using either EU15 import data or 2004 members’ export data. Harmonized Commodity Description and Coding System (HS) 1996 six-digit trade data are used, and from them, intermediate products are chosen using the HS-BEC concordance information.

Source: World Bank staff calculations, based on UN Comtrade.

intermediates that they sourced from the new members. Similarly, 7 of 10 new members increased the variety of goods sent to the EU15 from 1482 to 1591. So, while the picture for the European Union as a whole is mixed, more EU15 countries are receiving more varieties from more 2004 members (table 2.1).

By contrast, the variety of goods shipped by the new members to the world as a whole fell. The variety of goods imported by the EU15 from the world also fell. In other words, a bigger share of EU15 intermediate varieties is coming from the new members, and a larger share of new members’ intermediate varieties is destined for the EU15. The rise in variety is not confined to intermediates. The variety of consumption goods exported by the new members to the EU15 rose as much as that of intermediates. But the variety of consumer goods sent to the world as a whole also rose, so the relatively greater variety in the trade with the EU15 (compared with trade with the rest of the world) is a development in the intermediate goods trade, not the trade in final goods.<sup>4</sup>

**Figure 2.8: Growing intra-industry ties in the east, but faster within the European Union**

(intermediate intra-industry trade index, 1996–2008)

Note: Intermediate intra-industry trade is measured with SITC (Revision 2) four-digit trade data, and the SITC-BEC concordance information is used to select the SITC products that are classified by the BEC as intermediates.

Source: World Bank staff calculations, based on UN Comtrade.

### Box 2.5: Measuring the sophistication of exports of goods

The first measure of trade complexity is the sophistication of intermediate products, constructed by adapting the method in Hausman, Hwang, and Rodrik (2007). The sophistication of each product is estimated by using the GDP per capita of those countries that export it. Every product's share in each country's total exports is calculated. This share for the country is standardized by dividing it by the average share of this product for all countries. The key step is that this is multiplied by the GDP per capita of that country. Summing across all countries gives the sophistication of that product, or its "PRODY." The sophistication of a country's export basket, or its "EXPY," is calculated by multiplying the sophistication of each product by the share of that product in the country's exports and summing across all products. The averages of GDP per capita and exports over 2001–03 are used, and the sophistication of products is held fixed so that any changes over time are due to changes in the export basket from year to year.

The main adaptation of this measure for this report restricts this to only the four-digit Standard International Trade Classification

Revision 2 goods classified by the Broad Economic Categories as intermediates. To distinguish these measures of intermediates sophistication from those for all goods, we use the terms *I\_Prody* and *I\_Expy*. We also produce an analog for imports and refer to it as *I\_Impy*. Mishra, Lundstrom, and Anand (2011) develop a similar procedure for services trade, which is used in the next section.

The second measure of trade complexity is the relationship-specificity of products. This measure was developed by Nunn (2007), who constructed the fraction of each product exported by a country that was itself made with differentiated inputs within the country. The higher the fraction, the less regulated the process by which the good was put together. Because this requires more relationships, this gives the relationship-specificity of the product. Nunn's measures use input-output data to construct the share of each product that uses differentiated inputs as defined by Rauch (1999).

The measures for three-digit International Standard of Industrial Classification data are taken from Nunn's Harvard University

website add the website ([www.economics.harvard.edu/faculty/nunn/data\\_nunn](http://www.economics.harvard.edu/faculty/nunn/data_nunn)) and mapped to four-digit data using the appropriate concordance information. Of most interest is the fraction of intermediates using differentiated inputs; the technique makes use of a further concordance to Broad Economic Categories-defined intermediates categories to construct the index of relationship-specificity of intermediates (RSI).

The two measures provide alternative accounts of the complexity of the products being traded. The RSI, which is affected by the rule of law and other behind-the-border factors, accounts for the complexity of production chains within a country. It therefore does not matter whether these chains are complete (exports of final goods) or part of a broader chain (intermediates). Therefore, even if cross-border trade in all goods is considered, the RSI still provides information about the complexity of the steps needed to make those goods. The sophistication measure incorporates the complexity of trade across countries.

Source: Behar and Freund 2011.

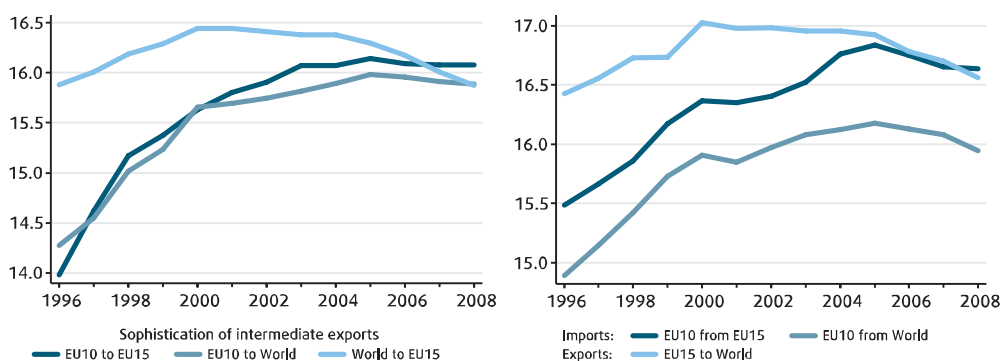
## Emerging Europe's goods trade is getting sophisticated

In addition to greater horizontal differentiation, is there also evidence for increased vertical differentiation, which would imply improved quality of inputs traded? Yes. Both the measure of export sophistication and the measure of relationship-specificity show that trade within Europe is becoming more complex, while trade with non-European partners seems to be declining in complexity (box 2.5).

The sophistication of intermediates exports from the new member states to the EU15 rose by about 15 percent from 1996 to 2005 but has remained flat since then (figure 2.9). The sophistication of EU10 intermediates exports to the EU15 rose faster than to the world. For EU15 intermediates exports to the world, sophistication follows an inverted U-curve and the measure in 2008 is roughly the same as in 1996. By contrast, the sophistication of EU15 exports to the 2004 members has risen by 7 percent over the period despite a slight decline since 2004. Echoing the earlier pattern shown for the trade in finished products, changes in the nature of intermediates received by the new members are similar regardless of whether they come from the EU15 or the rest of the world. By contrast, from the perspective of the EU15, the new members are becoming an increasingly sophisticated source and market relative to other regions. And this seems to be the case for both the 2004 members and the EU candidate countries. This is largely because of Turkey: both the size and sophistication in its trade are at the highest levels and have shown the clearest upward trend. The other countries in this group—including Bulgaria and Romania—have not seen an increase in the sophistication of trade.

The second measure of complexity is based on the relationship-specificity of intermediates (RSI): the fraction of differentiated inputs embodied in exports. The RSI for the world's exports fell while that of the new members rose by 7 percentage points to 70 percent for all goods and by 6 percentage points to 67 percent for intermediates. For intermediates exports in particular, the new members' exports have a higher RSI than do those of the world as a whole. EU candidates and the 2007 entrants have less complex exports, but Bulgaria and Romania have experienced a large increase.<sup>5</sup> Joining the European Union has allowed the 2004 and 2007 members to produce more relationship-specific goods, and the EU15 can now source more relationship-specific products from them. Figure 2.10 shows a rise in the RSI of 6 percentage points to 69 percent for intermediates and by 5 percentage points to 72 percent for all goods, but a decline in the relationship-specificity of imports from other countries.

Trade within Europe is becoming more sophisticated, while Europe's trade with the rest of the world is becoming less complex. Enterprises in advanced Europe are giving emerging Europe more difficult things to do. Factory Europe is more spread out and much smarter today than it was two decades ago.

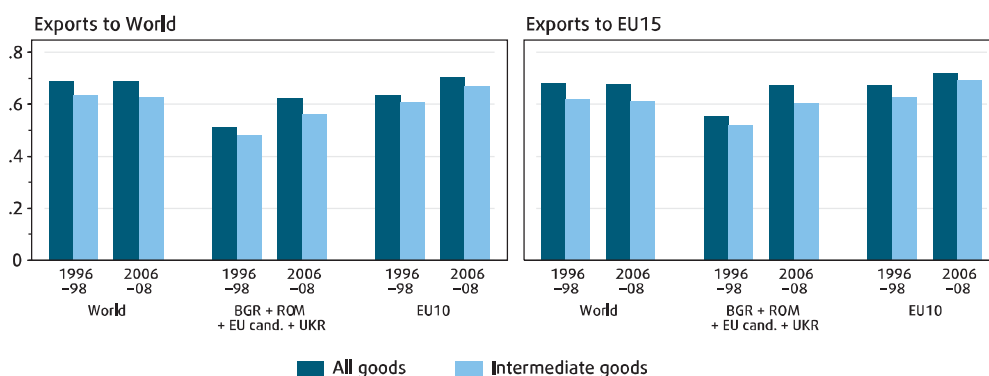


**Figure 2.9: Advanced and emerging Europe are trading more sophisticated intermediate goods**

(EXPY for intermediate goods, US\$ thousands, 1996–2008)

Note: Trade in intermediates is defined by the BEC nomenclature.

Source: World Bank staff calculations, based on UN Comtrade; and WDI.



**Figure 2.10: Emerging Europe's exports have become more complex**

(relationship-specificity index of exports, 1996–98 and 2006–08)

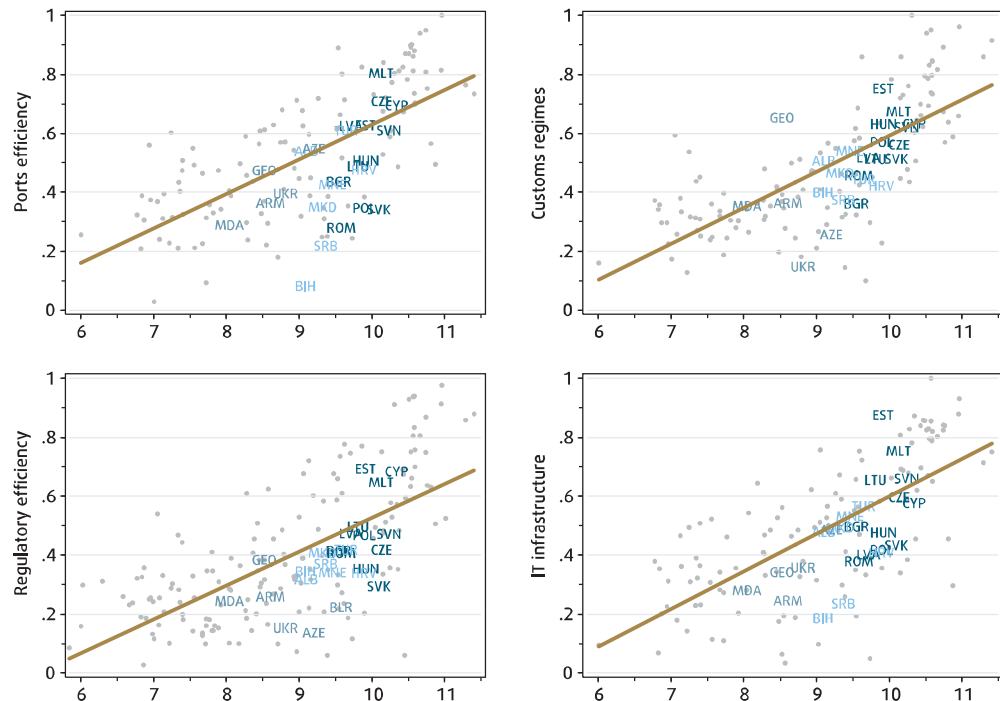
Note: Intermediates export is defined by the BEC nomenclature.

See box 2.5 for the construction of the index.

Source: World Bank staff calculations, based on UN Comtrade and Nunn 2007.

**Figure 2.11: Emerging Europe has developed sizable backlogs in trade facilities**

(ports efficiency, customs regimes, regulatory efficiency, and IT infrastructure, 2009–10)



Note: The x-axis in each panel shows per capita GDP, PPP, in logs.

Source: World Bank staff calculations, based on the latest available data (Dutta and Mia 2011; IMD 2010; Schwab 2011; and WDI) to update estimates in Wilson, Luo, and Broadman 2010.

## A growing backlog in trade facilities

The new member states and candidate countries are doing well to become part of the production networks centered in Germany and other EU15 economies. But many of them have now developed a sizable backlog in trade facilities: in particular, the airports and ports, customs regimes, regulations, and IT infrastructure needed to make the goods trade hassle-free. Except for a few countries, most emerging European countries do not do well, especially in port efficiency and in IT technology (figure 2.11). The first round of gains in size and sophistication of merchandise trade seems to have come from lowered divisions between emerging Europe and the big (and growing) market in Western Europe. With eurozone growth prospects uncertain and the composition of trade changing to become increasingly sensitive to transport costs, the next round of gains will depend on how much economic distance is shortened.

Sizable trade gains—more from greater exports than an increase in imports—can be had if the port efficiency, regulatory regimes, and IT infrastructures in the new and candidate member countries are improved by even just half the distance to the EU15 average. The greatest absolute trade gains come from cutting the gaps in port efficiency and IT infrastructure. Most of these trade gains result from greater exports.

Priorities for investments in improving trade facilitation infrastructure are not the same for the new member states and the EU candidates. Among the four most important trade facilitators, IT infrastructure improvements will lead to the largest gains in both groups of countries (Wilson, Luo, and Broadman 2010). Simulations suggest that about 40 percent of the trade gains across the region will come from improved information and communication technology (ICT). For the new members of the European Union, another 35 percent improvement will come from investments in air and maritime port efficiency. The results for the candidate members suggest more widely dispersed gains with investments in port efficiency, customs regimes, and regulatory policy of similar importance. Improvements in each dimension result in about 20 percent of the total trade gains.

Public investment programs and EU development programs should consider these results. Improvements in port facilities and IT infrastructures are likely to be more costly than reforms of customs regimes and regulatory policy. For EU candidate countries, the latter should continue to have high priority, given financing constraints. The eligibility for additional EU financing after accession increases the scope for ambitious investments in transport and IT infrastructure. In all countries, the private sector has a role to play in the funding and operation of infrastructure facilities.

## Service Europe—not yet a single market

The Internal Market Strategy for Services expects eventually “to make the provision of services between member states as easy as within a member state” (OECD 2007, p. 75). For a multilingual, multicultural region with diverse political and legal precedents, this is a tall order. Indeed, while in assessing its performance in the goods trade Europe measures itself against East Asia, a developing region, its benchmark for trade in services is the United States, a developed country. For more than half a century, European policymakers have been trying to reduce the costs of cross-border transactions and foster the integration of the internal market. For the goods trade, they have largely succeeded. For services, the single market is still a work in progress and—given the nature of regulatory reforms needed to make it work efficiently—it is likely to remain one for a while.

Too much attention to export performance risks neglect of efforts to make service markets more open, which may well be the wider channel for productivity improvement. Most services are still not tradable through digitized means, so foreign direct investment (FDI) and the movement of people is the biggest part of internationalization, and the channel through which productivity growth is induced, both in services themselves and in “downstream” industries. Productivity is what’s key, not trade. Given that the lion’s share of output and employment is in services, many of which will remain nontradable, the focus should be on improving markets for services, hence raising the average productivity of enterprises. Indeed, the performance of business services can explain a good part of aggregate productivity differentials among advanced economies (Inklaar, Timmer, and van Ark 2007).

This is discussed in detail in chapter 4. This chapter discusses the progress in the services trade. Until recently, economists treated “nontradables” as almost synonymous with services, recognizing the special difficulties in crossing borders to provide services: “Because, by definition, services are a flow and so are not storable, their exchange frequently requires the proximity of supplier and consumer” (Francois and Hoekman 2010, p. 648). The requirement of proximity entails additional costs—the “proximity burden” of the services trade. The questions to be answered are: Has technology reduced this proximity burden? How much has the single market program helped? These questions are taken up in turn.

### The services trade in the European Union is growing

The internal market of the European Union is more important than third countries for trade in services. But the internal market for trade in services has been less integrated than for goods. Services exports within the European Union have grown slower than exports to third countries in recent years despite the implementation of the Services Directive and other initiatives to push forward regional integration in services. The European Commission passed the Services Directive in 2005, aiming to eliminate regulatory barriers to a Single Market for Services. But from 2004 to 2008, intra-EU exports grew at 13 percent, while extra-EU exports grew at 14 percent. Nonetheless, the EU10 and the candidate countries integrated faster within the internal market than with the rest of the world. Services exports from the EU10 members to other EU member countries achieved an annual growth rate of 24 percent, 6 percentage points higher than the rate of their exports to third countries. For the candidates, the difference was 10 percentage points. The prospect of joining the European Union seems to facilitate market entry in services.

Trade in services through establishment-based transactions or sales by foreign affiliates is a big part of the services trade. As in the United States, establishment-based transactions are the most important channel for Western European companies to sell services, while cross-border trade remains the dominant channel for other members (table 2.2, top panel). The sales by affiliates of the Western European members were some 46 percent higher than cross-border services exports (table 2.2, bottom panel). For their intra-EU exports, the value of establishment-based transactions was also about 45 percent higher than that of cross-border exports. By contrast, the sales by the affiliates of companies in both Southern EU members and the EU10 were less than one-third of their cross-border exports. But there was little additional integration of Western Europe with other members through establishment-based transactions. Between 2004 and 2008, the sales by affiliates in EU members grew at a meager 0.4 percent while the sales by affiliates located in third countries increased by 3 percent.

Transportation and travel remain dominant in the European Union’s services exports. While services were traditionally regarded as nontradable, transportation and travel had always been the exceptions. Western Europe accounts for 70 percent of total exports in transportation and over half of total exports in travel. For the members of Southern Europe, travel is the most important services export. In 2008, the value of exports in travel accounted



for 40 percent of total services exports by Southern Europe and almost one-third of total exports in travel by the European Union. For the EU10 members and candidate countries, the two also stand out as the leading services export sectors.

Financial and other business services are now becoming the drivers of EU service exports. Financial services cover financial intermediation and auxiliary services, except those of insurance enterprises and pension schemes. Other business services consist of professional and management consulting services; research and development services; and technical, trade-related, and other business services (UN 2011). These services were traditionally not tradable, partly due to the “proximity burden” and partly due to heavy regulations. The rapid advance of information and computer technology over the past decades has spurred trade in these sectors by reducing the “proximity burden.” Regulatory simplification and harmonization with international standards have also helped.

### Services are becoming more tradable—especially modern services

Services exports by Europe and developing countries almost tripled between 1997 and 2007. Services exports have changed qualitatively. They have increasingly become a final export that is directly consumed. Because many services can now be stored and traded digitally, they are not subject to many of the traditional trade barriers (such as transport costs, border delays, physical inspections, and so on) that physical exports have to overcome. Services not only have become more tradable, but they can also be increasingly unbundled: a single service activity in the global supply chain can now be fragmented and done separately at different geographic locations.

The new member states have been especially successful in growing services exports since the mid-2000s—not quite star performers like India or China, but high performers compared with the rest of the world (figure 2.12, left panel). Figure 2.12 (right panel) graphs the tradability of services between 1986 and 2008. In Europe, there are three developments of note. First, the share of service value added that is traded rose from 10 to 15 percent. Second, the share of services traded in the new member states has increased erratically, but now is almost double its share at the beginning of the transition. Third, the EU candidate countries have seen a drop in the share of services traded since the late 1990s, likely due to rapid expansion of domestic services such as construction, transport, travel, retail trade, and government services, rather than a drop in services exports. What is also clear from international comparisons is that aside from India, trade is a bigger part of the services economy in Europe than in any other part of the world.

The increased tradability is mainly due to new technologies that have changed the nature of many services from “traditional” to “modern.” Traditional services require face-to-face contact, while modern services can be delivered over longer distances. Modern services, such as banking and financial services, telecom support, and technical support, are now more “impersonal” and tradable across borders. But technological progress has also helped such

traditional services as tourism, retail trade, education, and health care take advantage of new information and communication technologies, exploit the potential for fragmentation and scale economies, and become more productive.

**Table 2.2: Western Europe drives much of the services trade**

(cross-border exports, 2008)

	EU members			Candidate countries
	Western Europe	Southern Europe	EU10	
Value of exports (current \$, billions)				
EU members				
Western Europe	560	97	41	16
Southern Europe	189	26	7	5
EU10	57	6	13	3
EU candidate countries	33	8	5	3
Share in total exports (percent)				
EU members				
Western Europe	42	7	3	1
Southern Europe	56	8	2	1
EU10	52	6	12	3
EU candidate countries	45	11	7	4

(sales by foreign affiliates, 2008)

	EU members			Candidate countries	Other countries	
	Western Europe	Southern Europe	EU10		High and upper middle income	Middle income
Value of exports (current \$, billions)						
EU members						
Western Europe	514	271	226	34	839	42
Southern Europe	55	8	11	5	13	4
EU10	2	0	7	3	1	1
Share in total exports (percent)						
EU members						
Western Europe	26	14	12	2	43	2
Southern Europe	56	8	11	5	13	4
EU10	13	1	54	19	9	5

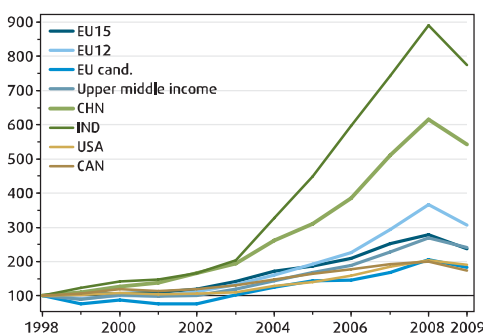
Note: The top reports numbers from balance of payments data, and the bottom from establishment accounts. EU candidate countries include EU members that joined in 2007 (that is, Bulgaria and Romania).

Source: World Bank staff calculations, based on Eurostat.

Cross-border trade in modern services has been growing faster (figure 2.13). In the EU15, the rate of growth of trade in modern services is 15 percent, higher than that in the United States. The growth in the new member states is even higher at 25 percent. But EU candidate countries saw a contraction in modern services trade, and rapid growth in traditional services.

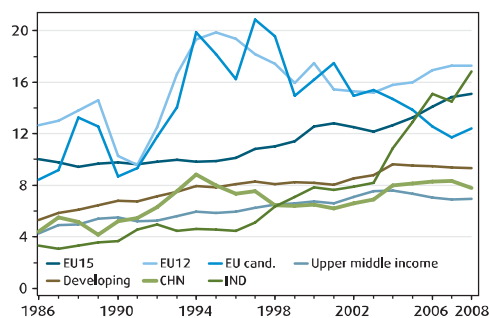
The share of service value added as a percentage of GDP is high in the EU15, followed by EU new member states and EU candidate countries.<sup>6</sup> This is normal, given their per capita incomes. But in most European economies total productivity growth is faster than predicted by growth in output of services. In other words, services output growth contributes less to overall growth in GDP per capita than might be expected given the share of services in GDP. This is consistent with the finding reported in chapter 1 that a gap in services accounts for the largest part of the difference in overall productivity between Europe and the United States. It also explains the focus of European policymakers on deepening the market in services as a core element of Europe's future growth strategy (for example, Monti 2010).

(services exports, 1998–2009, 1998 = 100)

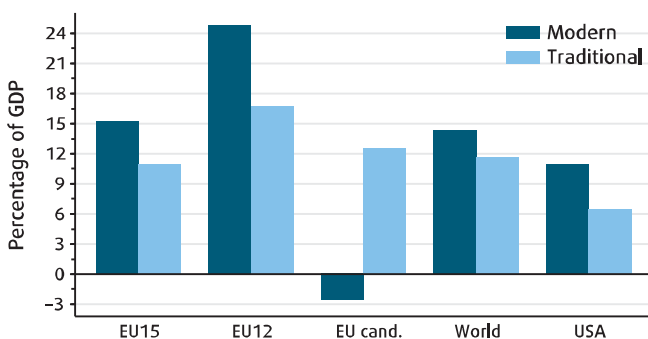


Source: IMF BOPS; and WDI.

(exports as percent of service value added, 1986–2008)



**Figure 2.12: Services exports are growing fast in the new member states**



Note: Modern services include communication, insurance, finance, computers and information, royalties and license fees, and other business services. Traditional services are transport, travel, construction, and personal, cultural, and recreational services.

Source: World Bank staff calculations, based on IMF BOPS.

**Figure 2.13: Modern—more tradable—services are growing faster almost everywhere**

(annual growth in modern and traditional services trade, 2000–08)

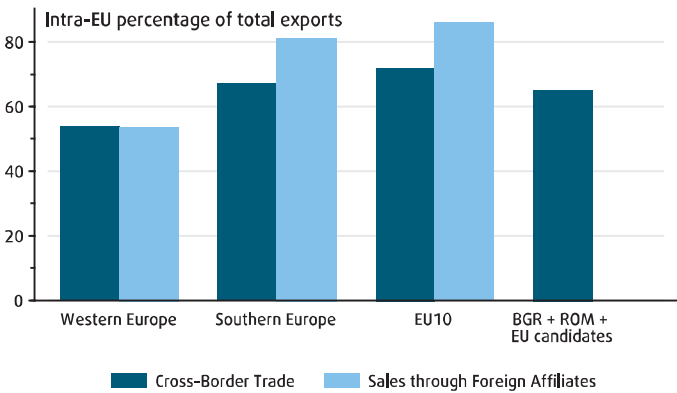
The single market is delivering—but not for modern services

The services trade in the European Union is now a \$4 trillion business, and more than half of this is in the internal market (figure 2.14). For the smaller economies in the east and south, the internal trade is actually more than two-thirds of the total. There has been progress toward deeper integration of services in the European Union (European Commission 2002).

Not surprisingly, Western Europe accounts for almost 80 percent of the internal services trade (figure 2.15), and more than half of the sales within the internal market by foreign affiliates took place in Western Europe.<sup>7</sup>

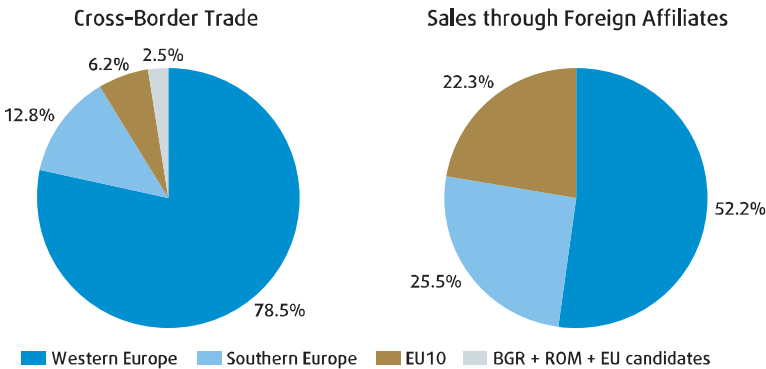
But the EU10 and the EU candidate countries appeared to integrate faster into the single market. Exports of the EU10 to the internal market grew at 24 percent annually, 6 percentage points higher than their exports to the rest of the world. For the accession countries, the difference was 10 percentage points. As discussed in the previous section for goods trade, integration is a gradual process and precedes actual accession—the prospect of joining the European Union seems to facilitate market entry by the accession countries.

Figure 2.14: Internal trade tendencies in the European Union vary across countries



Source: World Bank staff calculations, based on Eurostat.

Figure 2.15: Western Europe does most of the internal trade in services, 2008



Source: World Bank staff calculations, based on Eurostat.

**Table 2.3: The single market has increased services trade and FDI by about 25 percent**

(estimates of the effect of the Single Market for Services on trade and FDI, 1992–2006)

Source	Data	Time	Methodology	Effect (percent)
Fink (2009)	Cross-border trade	1999–2002	Gravity model without country-pair fixed effects	32
	Cross-border trade	1999–2006	Gravity model with country-pair fixed effects	33
	Outward FDI	1992–2005	Gravity model without country-pair fixed effects	30
	Outward FDI	1999–2005	Gravity model with country-pair fixed effects	18
Straathof and others (2008)	Cross-border trade	2002–05	Gravity model without country-pair fixed effects	11
	Outward FDI	1994–2004	Gravity model with country-pair fixed effects	22

Source: World Bank staff.

The single market program has promoted deeper integration of services. Straathof and others (2008) and Fink (2009) both show that the single market program reduces trade costs and leads to more bilateral trade between members, both as cross-border trade and foreign direct investment.<sup>8</sup> Services trade flows and FDI within the European Union are 10–30 percent higher compared with their trade with third countries and trade by the rest of the world (table 2.3).<sup>9</sup> Enlargement, especially in 2004, has promoted deeper integration of new members with the European Union, and most of the increase in services trade does not seem to have come at the expense of third countries.

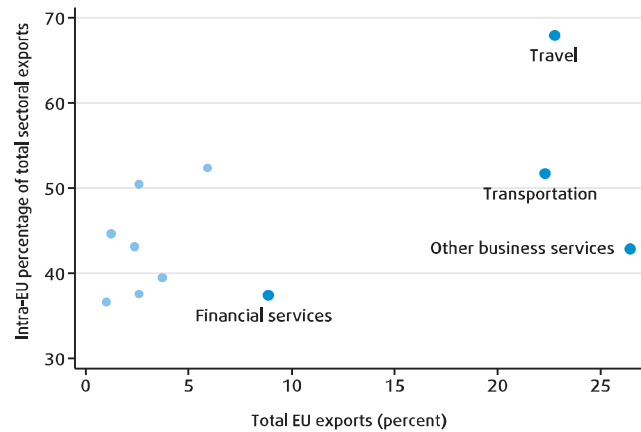
But the single market works a lot better for trade in traditional than in modern services. Transportation and travel, two traditional sectors, dominate the European Union's cross-border services trade. Their levels of integration—or the working of the single market—differ a lot. For travel, more than two-thirds of exports were transactions within the European Union; for transportation, only half of total exports were oriented toward the internal market (figure 2.16). For business services—which include the ICT-facilitated digital trade that is so fragmented in the European Union—the internal market accounts for just two-fifths of the trade. Financial services integration is taken up in chapter 3; this chapter looks more closely at transportation, information and communications technology, and other business services to see how the single market can be made to work better.

## Europeans are dissatisfied with the Single Market for Services

While the internal trade in services has been growing, the progress is considered unsatisfactory for several reasons. First, services are a large fraction of the economy but a small share of trade. In the EU15, services are more than two-thirds of total value added and about three-quarters of employment. In the new member states that joined in 2004, services are more than 60 percent of value added and employment. More than half of labor productivity growth between

**Figure 2.16: The single market works better for traditional services**

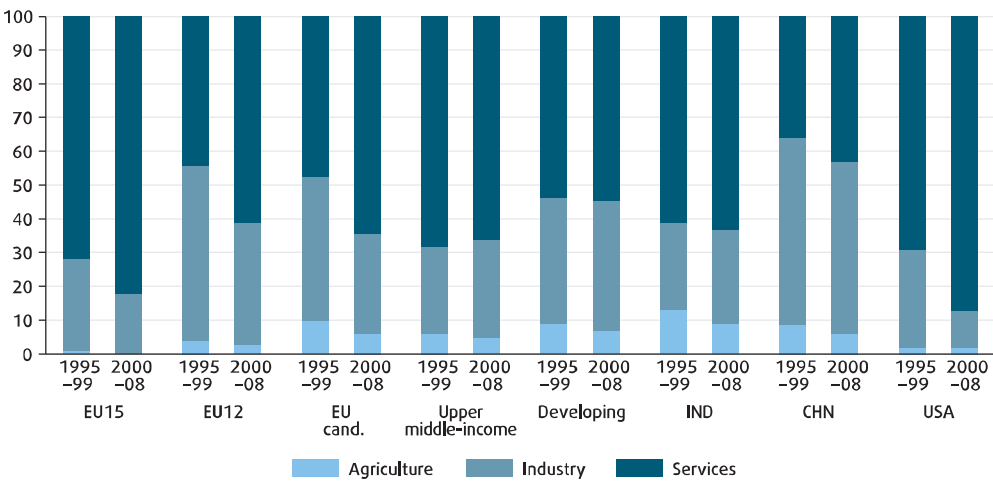
(Intra-EU Share of service exports, percent, by type of service, 2008)



Source: World Bank staff calculations, based on Eurostat.

**Figure 2.17: Services are contributing even more to growth in Europe**

(sector shares in economic output, 1995–99 and 2000–08)



Source: WDI.

2000 and 2006 in EU15 countries was in services, but services are just one-fifth of total intra-EU trade. Even after accounting for the sales by foreign affiliates, services were just one-third of total intra-EU trade in 2008. Services are an ever larger slice of the European economy, and a still larger part of its economic growth (figure 2.17). New developments in information and communication technology have increased both the tradability of and productivity growth in services, traditionally considered less tradable and a productivity laggard. So trade in services appears underdeveloped—less than 10 percent of service value added is currently exported, compared with 90 percent of goods value added.

The second reason is that services trade within the European Union has not grown as quickly as the internal trade in goods. In terms of simple statistics, the exports of goods within the internal market are more than double the exports of members to third countries. By contrast, the exports of services within the internal market are only 20–40 percent higher than the exports to third countries, depending on the measure used. The evidence suggests that

### Box 2.6: How big should the Single Market for Services be? Clues from Canada

Regional trade in goods in East Asia is a common benchmark for Europe. But when it comes to trade in services, policymakers in the European Union compare their progress to that of countries like the United States or Canada, not to continents or regions such as North America or East Asia. If there were a Single Market for Services in Europe as in the United States or Canada, how much would trade in services go up—would it increase 20 percent, twofold, or twentyfold? And how much would this increase productivity?

Lejour and de Paiva Verheijden (2007) provide answers to the first question by analyzing the services trade among Canadian provinces between 1997 and 1999, and among OECD countries between 1999 and 2001 (box figure 1). It was impossible to do something analogous for the United States: reliable data for trade in services among U.S. states are simply not available. Sizewise, comparisons with the United States are more apt: in 2011, the value added in services in the European Union was \$11.4 trillion (70 percent of its GDP of \$16.2 trillion), almost exactly the same as that in the United States (77 percent of

its GDP of \$14.8 trillion). In other respects, Canada is a better benchmark. Linguistic, legal, and cultural divisions hamper trade in most services more than does distance. So for Europe, it may be instructive to see how much the French- and English-speaking provinces of Canada trade despite the divisions.

In 2000, services trade as a share of GDP in Canada was almost 9 percent of GDP, more than twice the ratio for the EU. Given the fact that size matters for goods and services trade (larger countries and provinces trade more), and the European Union's GDP was about 10 times that of Canada in 2000, the share of services trade in the European Union should be greater, not smaller. Smaller distances in Europe relative to Canada would make this ratio even bigger for the European Union, while linguistic differences would make it smaller.

Looking more closely, GDP size matters roughly the same amount for trade in travel, transport, commercial, and government services. Distance matters more for commercial and transport services, and least

for travel-related services. When differences in regulations are accounted for, language matters only for travel and commercial services. The strictness of product market regulations in the origin country reduces trade in commercial services, while destination country regulations affect travel and trade in government services.

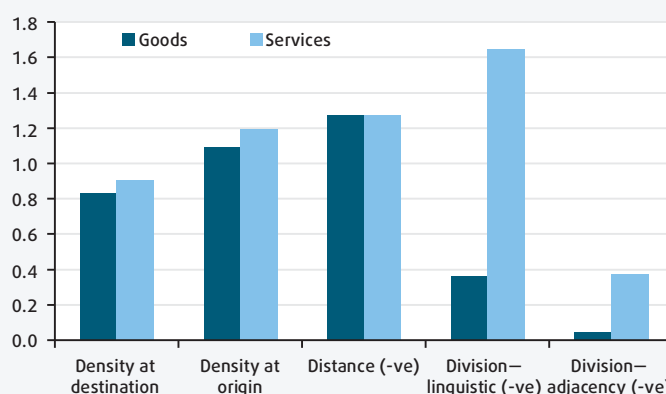
There is considerable unexploited potential for both goods and services trade in the European Union. If the EU market functioned like that of Canada, intra-EU goods trade would be three times as high as it was in 2000, and services trade between three and five times as much. Given that not all differences in language and legislation can be eliminated, a reasonable objective over the next few years might be a doubling of intra-EU cross-border trade in services by 2020. Using 2007 statistics, this would mean an increase in intra-EU services trade of about €660 billion, or around \$1 trillion (roughly \$100 billion a year). A threefold increase would mean that services exports within the European Union would rise by €1.3 trillion, or about \$2 trillion.

Source: Lejour and de Paiva Verheijden 2007.

### Box figure 1: Language differences hamper services trade more

(effects on trade between Canadian provinces, 1997–99)

Source: Lejour and de Paiva Verheijden 2007.



the effect of the single market is greater for goods than services, when it might be expected to be the other way around.<sup>10</sup> New technologies have resulted in rapid growth of “modern impersonal services,” such as information technology, business-related services, medical records transcription, call center operations, education services, and entertainment production services. More and more

services can now be stored and traded digitally, and they have become similar to manufactured goods in that they benefit from technological advancement and their costs depend on economies of scale, agglomeration, and division of labor. More important, these sophisticated services provide an opportunity for innovative, high-tech jobs.

The third reason is that trade in services within the European Union has not been growing faster than services trade to third countries. Cross-border exports in the internal market grew at 13 percent annually between 2004 and 2008, while the exports to third countries grew at 14 percent. The difference led to a 3 percentage point decline in the ratio between intra-EU and extra-EU exports. Foreign affiliate sales within the European Union have been more volatile than sales to third countries, and the ratio between intra-EU and extra-EU sales dropped by 9 percentage points over the same period.

A useful thought experiment to gauge the potential gains of deeper integration is to estimate the extra scope for intra-EU trade if the internal market were to function like the interstate trade in services in some benchmark countries. As federal countries, Canada and the United States are the obvious benchmarks. The level of income and role played by the services sector in both economies are comparable to those of the European Union. Their interprovince/interstate market could be taken as having the maximum possible integration. Regulatory barriers are low in both countries. According to the Organisation for Economic Co-operation and Development (OECD), Canada's regulatory regime was rated 0.95 and the United States' at 0.84 in 2008, compared with the most restrictive regime in Europe rated at 2.60 and the most liberal one at 0.84. Although provinces/states have their own rules and organizational legacies, the federal government in both countries provides a framework for regulating services. The

### Box 2.7: Can liberalization of services contribute to productivity growth? Evidence from the Czech Republic

The debate on the welfare effects of trade and investment liberalization has traditionally centered on goods. The literature confirms productivity gains in many cases. Services liberalization is another potential source of productivity gains—working through the same channels. The evidence, however, has been scarce—even more so when it comes to plant- or firm-level evidence. But a recent study by Arnold, Javorcik, and Mattoo (2011) on the Czech Republic's services liberalization in the late 1990s helps to shed some light on the issue.

In 1998, the Czech Republic adopted a more friendly approach to foreign direct investment, including services. In telecommunications, for example, a third mobile operator entered the market in 2000 with 100 percent foreign ownership, and one existing mobile company attracted a controlling stake by a foreign investor. In banking, 90 percent of assets were

in foreign hands by 2001.

Anecdotal evidence suggests that services seem to have become more reliable after allowing foreign entry. Moreover, these foreign providers were at the forefront of introducing innovations. For example, Ceska Sporitelna, an Austrian-owned bank, installed 1,080 ATMs across the country. It was also the first bank to offer transaction ATMs and became the market leader in remote banking. Cash flow management tools, multimodal transport services, and digital services in telecommunications were also introduced by foreign companies.

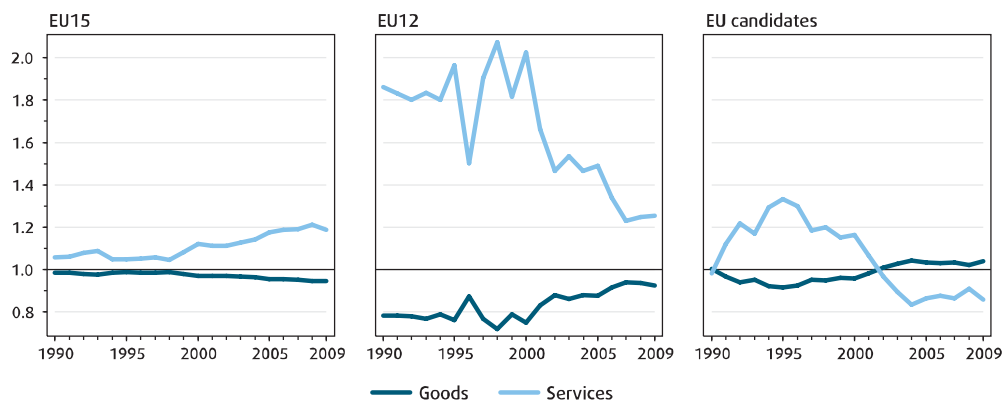
Results of a World Bank survey of 350 Czech firms provide more systematic support. The share of positive perceptions ranged from 55 percent of the respondents when asked about the quality of accounting and auditing services to 82 percent for telecommunications. With regard to the variety of products offered,

the positive views of liberalization varied between 56 percent of respondents who evaluated accounting and auditing services to 87 percent of respondents asked about telecommunications.

Analysis of data from a panel of manufacturing firms over 1998–2003 confirms that allowing foreign entry into services industries is the key channel through which services liberalization contributes to better performance of “downstream” manufacturing sectors. Liberalization is captured in four ways: an index of policy reforms, the share of foreign-owned firms in services output, the share of private firms in services output, and the extent of competition. There is a strong correlation between services sector reform and the productivity of local producers relying on services as intermediate inputs.

Source: Arnold, Javorcik, and Mattoo 2011.





**Figure 2.18: The European Union has a comparative advantage in services**

(revealed comparative advantage, services and goods, 1990–2009)

Note: The index greater than one means the country has a comparative advantage in the activity.  
Source: Lundstrom Gable and Mishra 2011.

best guess is that intra-EU cross-border services trade could double or triple if the internal market functioned as well as the Canadian market for services (box 2.6).

Allowing greater foreign competition in services has helped to increase productivity in downstream manufacturing, that is, activities that rely on efficient provision of services. The experience of the Czech Republic illustrates these benefits (box 2.7).

### Could trade in modern services drive growth?

As Europe looks for new ways to increase incomes and productivity, it could better facilitate both the goods and services trade. The potential is believed to be greater for services trade. Whereas increasing trade volumes in niche products or services fuels economic growth, growth can also be achieved by improving the sophistication of goods and services exports. Export “quality” in goods and services helps economic growth or at least is associated with growth—what you export matters. While growth in manufacturing is still an important track for many countries, services exports may be an additional or even alternative channel. For the services-dominated economies in Europe, it may even be a big part of the solution to the search for an “export-oriented growth model.”<sup>11</sup>

This raises the question of how far the specialization in services can go in Europe, given the globalization of services and the competition from Asia. That is, does Europe have a comparative advantage in services? The revealed comparative advantage in goods and services—defined as the shares of the goods and services category in a country’s export basket compared to their shares in the global export basket—are informative in assessing this. The EU15 has a revealed comparative advantage in services, and the gap between goods and services is increasing (figure 2.18). The new member states also appear to have a comparative advantage in services; the gap with goods was sizable in the 1990s but is now at the same level as in the EU15 economies. EU candidate countries had a comparative advantage in services until the early 2000s; now they have a comparative disadvantage.<sup>12</sup>

### Box 2.8: Measuring the sophistication of services exports is much more difficult than for goods

It is not straightforward to apply the Hausmann, Hwang, and Rodrik (2007) methodology, developed for measuring the sophistication of exported goods, to measure how sophisticated services exports are.

Service PRODYs, reflecting the income level associated with each category of services produced in a country, must first be calculated. In technical terms,  $PRODY_j$  is the income associated with the service  $j$ , and is constructed by using the service export share of a country  $i$  in world's export of service  $j$ , divided by the sum of shares of  $j$  in world exports of  $j$  across all countries exporting that service. The ratios are multiplied by the exporting countries' per capita income ( $Y$ ) and the result is summed for all countries. In effect, the PRODY is the weighted average of per capita GDPs, where the weights represent the revealed comparative advantage in service  $j$  for each country. PRODYs are constructed for each service category and are by construction the same for all countries. EXPY is then the

weighted income value of services exported by a country, computed as the weighted sum of PRODYs; the weights are the share of the particular service in the country's total services export basket.

Trade data come from the IMF Balance of Payments statistics, available for more than 190 countries from 1990 to 2007. Due to data availability, the sample has just 100 countries. GDP data are from the World Development Indicators.

There are two differences for the services EXPY compared with the measure for goods exports: a high level of aggregation and the need for dynamic PRODYs. First, services export data are less detailed than for goods. There are only ten categories of services exports, compared with several hundred for goods. If a country—within a broad services export category—moves from a low PRODY subcategory of services to one with a higher PRODY, this does not show up in the static

EXPY. So while constructing the Services EXPY, PRODY values of a service export are allowed to vary from year to year. Hence, an increase in dynamic EXPY can be due to either an increase in the PRODY of a service or an increase in the share of high PRODY products in the export basket.

The second reason is that countries are exporting higher-value services, but the services exports themselves are increasing in sophistication due to information and communication technology. Many richer countries are exporting services, boosting the PRODYs of some service export categories. Since the data are much less disaggregated for services, using static PRODY would not capture the higher PRODY service exports that are subcategories of the broader groups in Balance of Payments data. The dynamic EXPY incorporates this because it allows the PRODYs to change over time.

Source: Lundstrom Gable and Mishra 2011.

Trends in productivity seem to back this assessment. Service productivity is many times higher in the EU15 than in emerging Europe. This can be explained by a more efficient service structure and workforce in the EU15 and by the type of services produced there. Services productivity has increased globally over the last decade, even for already high-productivity service economies such as those in the EU15. The growth in services productivity in the European Union's new member states has been highest, while EU candidate countries are catching up with higher-income countries more slowly.<sup>13</sup>

However, the services exports of the European Union are less sophisticated than those of India or the United States. Applying the technique used to measure the sophistication of goods production and exports is not easily extended to services, because data are much less disaggregated for services (box 2.8). But with services accounting for such a large proportion of GDP and hence of aggregate productivity growth, it is useful to analyze whether there is a link between the sophistication of services exports and GDP growth.

On average, the PRODYs for modern services are higher and their growth has been greater, despite higher initial levels. The EU15 has 43 percent of its export basket in modern services, the EU12 has 26 percent, and the EU candidate countries 11 percent. The world average is 21 percent. Due to the high PRODYs for modern services, EU15 EXPY is to a large extent explained by the high share of modern services, especially financial services. For the new member states and the EU candidates, the EXPY is still determined more by traditional services (table 2.4).

**Table 2.4: EU services exports are more sophisticated than those of the rest of the world**

(PRODYs, 1990–95, 1996–99, and 2000–07, and PRODY values and shares by service and country group)

	World			2007 services export share (percent)				2007 EXPY share			
	1990–95	1996–99	2000–07	World	EU15	New member states	EU candi-dates	World	EU15	New member states	EU candi-dates
<b>Traditional services</b>											
Transportation	8,161	9,629	11,990	21	19	32	18	8	5	10	8
Travel	7,433	7,851	8,999	41	22	30	58	6	3	5	15
Construction	14,510	10,534	10,464	2	2	3	3	8	7	12	20
Personal, cultural, and recreational	14,510	10,534	10,464	1	1	3	2	10	5	30	26
<b>Modern services</b>											
Communications	6,261	6,320	7,584	4	2	3	4	5	3	5	9
Insurance	8,167	11,306	13,630	2	2	0	1	9	9	2	5
Financial	18,590	23,063	25,743	3	9	3	1	20	33	10	4
Computer and information	14,916	20,092	18,797	2	5	3	1	12	16	10	6
Royalties and license fees	10,263	13,293	14,707	1	3	1	0	12	10	6	2
Other business services	7,883	9,437	13,162	15	26	19	9	10	9	9	5

Note: Government services are not included.

Source: Lundstrom Gable and Mishra 2011.

Services exports in the European Union are becoming more sophisticated. Figure 2.19 shows the evolution of Services EXPY. All groups start out with more or less the same level of sophistication in the beginning of the 1990s, and diverge in the late 1990s. The EU15 made the largest jump in the late 1990s, while the new member states continued an already strong trend though at a lower level than the EU15. The EU candidate countries and the eastern partnership countries dropped in Services EXPY in the late 1990s and have not been able to catch up since.

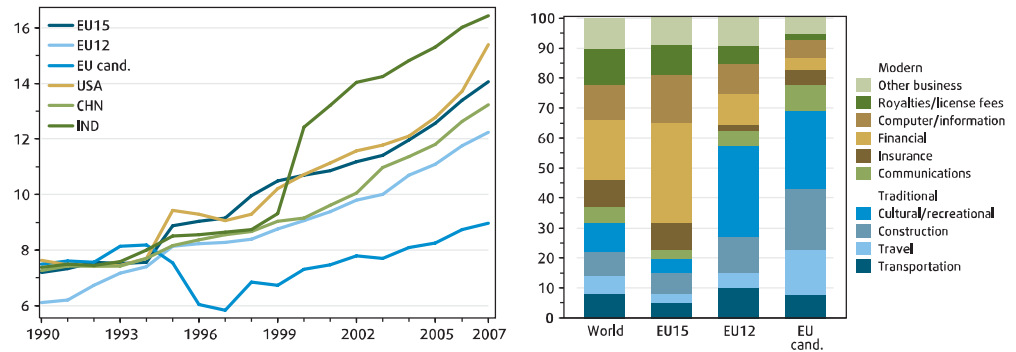
Compared to non-European peers, however, the EU15 has fallen behind. The services PRODY of the United States has been higher than that of the EU15 since the early 2000s. This is consistent with the growing productivity gap in services with the United States highlighted in chapter 1 as one of Europe's key challenges. India has seen a big increase in PRODY, and China has been closing the gap as well.

In general, countries with a high Services EXPY also have a high goods EXPY. European economies have more sophisticated exports than the median country, somewhat more so for goods exports than for services. To what extent has higher services trade sophistication been reflected in faster economic growth? Lundstrom Gable and Mishra (2011) find evidence of an association between growth and services trade sophistication for a global sample. In Europe, the correlation is especially strong for the European Union's new member states.

**Figure 2.19: India and the United States have more sophisticated services exports than the European Union**

(service EXPY, 1990-2007 (left), and shares in service EXPY, 2007 (right))

Source: Lundstrom Gable and Mishra 2011.



## Making the single market work for services

Services are where most economic regulations are concentrated (Conway and Nicoletti 2006). Mainly, this is due to the difficulty in evaluating the quality of services. The consumer cannot be certain about the quality of services until after they have been consumed, and sometimes not even then. The production and consumption of services also cannot easily be separated in place and time, making it difficult to standardize services products. In the case of complex services (such as professional services), the consumer may not have the knowledge to make a judgment about the services even after consumption. Regulations are necessary to address this problem of “asymmetric information.” They may also be needed because of the externalities associated with some services (for example, in the financial sector) and the need to provide equal access to essential services such as transportation and utilities.

### Homogenize regulations

Because of cumbersome regulations, services providers have to overcome many barriers to be able to export: outright legal discrimination (as with exclusive rights to domestic providers), implicit restrictive regulations (for example, licensing based on domestic qualifications), and lack of transparency and nonlegal barriers like language and culture. Some countries require services providers to meet an “economic needs test” to show that—even if they will provide better choice and value for consumers—they will not undercut or destabilize local competitors. These tests leave room for arbitrary enforcement. Businesses find it costly just to find out what the legal and administrative formalities are. For example, an engineering company may end up spending 3 percent of annual turnover on researching the differing legal requirements in just two other member states of the European Union where it wanted to supply services (World Trade Organization 2009b). These hurdles discourage services exports. Nicoletti and others (2003), among others, find that high regulation intensity between OECD countries depresses trade in services. Moreover, they find that the impact is greater than for trade in goods.

A unique character of services further compounds the issue. Services are often partly produced where they are consumed. The production process uses inputs

### Box 2.9: Reviving the reform agenda for the European single market

Enlargement and creation of the single market has proved beneficial for all EU members. European enterprises found it easier to trade goods and services across borders. Yet, the single market is far from efficient. Small and medium enterprises face difficulties when recovering foreign liabilities. EU citizens have to re-register a car and pay taxes every time they move to a different country.

Although the services sector in Europe contributes substantially to GDP growth and job creation, the reform agenda for creating a Single Market for Services is far from complete. Technological transformation has left Europe's market for modern services well behind that of its global peers. At the same time, political and social support for it seems to have lost momentum. The attention given to policies for strengthening a European single market differs considerably across the European Union's member states.

Paradoxically, overall enthusiasm for a single market declined even more during the recent financial crisis, while in fact Europe needs a strong internal market now more than ever before.

A recent report by Mario Monti (2010, p.37) for the European Commission points out that the "single market is Europe's original idea and unfinished business". It lists the completion of the single market as a prerequisite for economic growth in Europe. For the common digital market, the report recommends an introduction of a pan-European licensing market, EU copyright law, and European Union-wide online broadcasting as well as improvement of the business environment for cross-border e-commerce. Development of the European digital market by 2020 could yield around 4 percent of the European Union's GDP. EU customers would benefit from greater integration of retail banking. Workers would

benefit from greater mobility due to better information about amenities in other member states.

The report recognizes the discrepancies in how different countries imagine a fully functioning single market. New strategies proposed in the report seek a common ground between the Anglo-Saxon preference for competition, the variety of experiences among Nordic countries, the ambitions of emerging Europe, and the concerns of social market economies. But before new strategies are drafted and implemented, Europe would benefit from fully reinforcing laws already passed. On average more than half of EU directives are not implemented on time by the member states. The full implementation of the Services Directive alone could yield between €60 and €140 billion.

Source: Monti 2010.

from both exporting and importing countries, which does not apply to goods. As a result, providers who want to export are subject to the regulations of both countries. Mirza and Nicoletti (2004), for example, find evidence that policy factors affecting the use of inputs in the exporting and importing country both have impact on the same flow of traded services between the two countries, and the effects are of similar scale. Nicoletti and others (2003) find similar problems using regulations in exporting and importing countries to evaluate regulation intensity.

The differences between trading partners' regulatory regimes hinder the growth of the single market. Each member has its own qualification criteria, implying additional compliance costs every time a firm wants to expand to a new country. The importance of regulatory harmonization has been supported by recent studies. Kox and Lejour (2005) show that high heterogeneity in domestic regulations, together with the level of regulatory intensity, depresses cross-border trade in services. Kox and Lejour (2007) show that harmonization or mutual recognition by countries could lead to a 13–30 percent increase in trade. Notably, both studies suggest that eliminating explicit legal barriers is not sufficient either to promote either cross-border trade or to attract foreign direct investment in services.

### Remove regulatory barriers

Much like tariffs on trade in goods, stringent regulations also shield domestic firms from foreign pressure and reduce the competitiveness of domestic providers in regional and world markets. Firms also have little incentive to innovate. Existing studies consistently illustrate that a high level of regulation in exporting countries is also associated with low bilateral trade flows in services (for example, Mirza and Nicoletti 2004; Kox and Lejour 2005). Services

liberalization tends to foster productivity growth in the broader economy (Francois and Hoekman 2010).

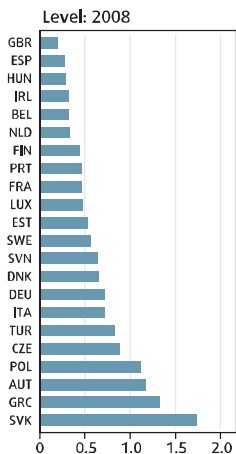
The European Commission (2002) did a comprehensive inventory of the internal regulatory barriers that hinder cross-border trade and prevent the commercial presence of foreign services providers. Services providers hit internal barriers at every stage of the business process. The report also discovered that many barriers are “horizontal”—that is, they affect a wide range of activities. It identified a wide range of barriers to services providers at every stage of business operation: from distributing services, selling services, and dealing with after-sales issues for cross-border trade, to establishing a business, using inputs, and promoting business for exporting through commercial presence. The distribution of services is affected by residency or nationality requirements, which prevent provision from home countries. Small and medium enterprises (SMEs) are hit the hardest. A recent report done for the European Commission reported that the gains from implementing the Services Directive are close to €500 billion (box 2.9).

There are many examples of companies that find it almost impossible to set up subsidiaries in other EU member states. Some actually find it harder to get established in the EU15 than in the new member states. This report also documents that all services providers encounter, at least, barriers at one stage of the business process; often they encounter them at several or even at all stages. Many barriers are horizontal. One common feature is a “single regime,” in which the national government applies the same regulations to both cross-border services trade and sales through commercial presence. A single regime may lead to duplication of requirements and disproportionate burdens for the second category because it already complies with home regulations. Legal uncertainty is another problem.

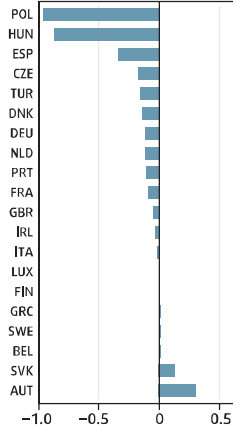
SMEs often do not have sufficient resources to meet these requirements or to afford the extra legal assistance costs. Monti (2010) provides the example of cross-border enforcement of judicial awards, which can cost as much as €2,000 even for pure formalities. As a result, SMEs are either dissuaded from cross-border activities or are at a clear competitive disadvantage compared to domestic operators. Those from less developed EU members are particularly disadvantaged. SMEs often do not consider expanding to other member states, even if their services are not market-specific and have export potential. There is a lack of trust and a natural resistance to deal with services providers from other member states.

The OECD product market regulation indicators help to measure regulatory barriers (OECD 2011). They quantify the barriers to several services sectors and network industries, offering a good basis to compare regulation of services. According to the latest (2008) indicators, the EU member and candidate countries have removed many of the obvious restrictions to trade and foreign investment. But they have been slow to improve domestic regulations, which affect the services trade and investment more. Administrative hurdles, barriers to entry, and restrictions to competition in domestic markets remain a concern of many European countries, especially Turkey, Poland, and Greece.

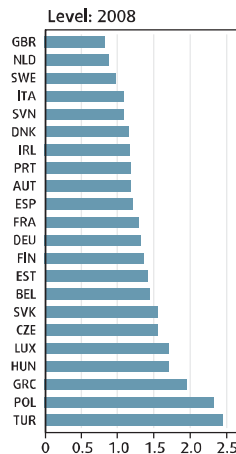
Barriers to trade and investment



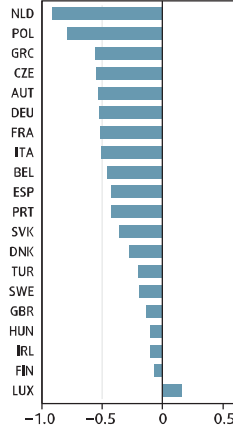
Change: 2003–08



Barriers to entrepreneurship



Change: 2003–08

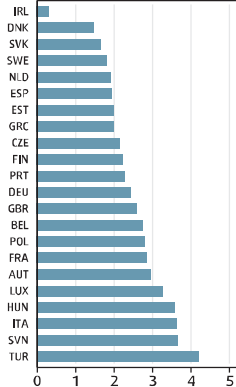


Note: The indicators range from 0 to 6, with 6 the most restrictive. In panels for changes, negative numbers indicate liberalization.

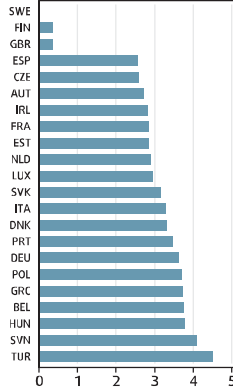
Source: OECD 2011.

Figure 2.20: European economies have made trade easier

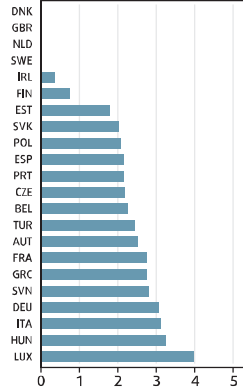
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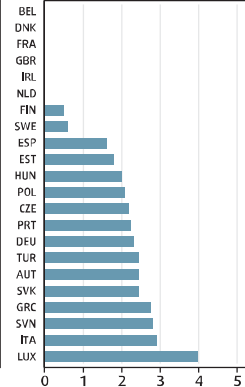
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Architecture



Engineering



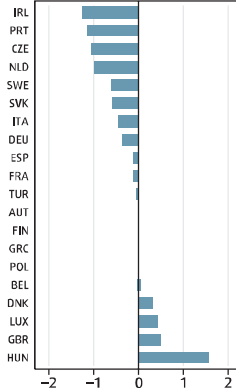
Note: The indicators range from 0 to 6, with 6 the most restrictive.

Source: Conway and Nicoletti 2006; and OECD 2011.

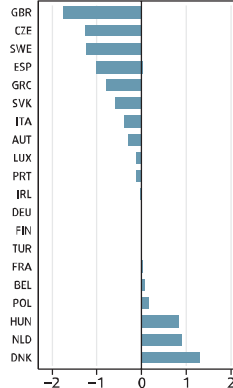
Figure 2.21: Professional services remain tightly regulated

(product market regulation indicators for regulations in professional services, 2008)

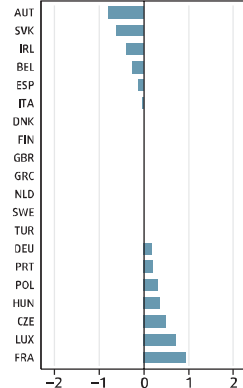
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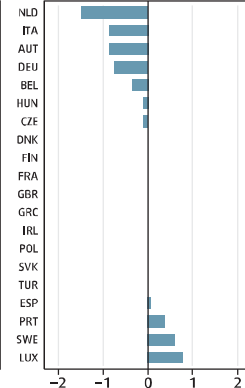
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Architecture



Engineering



Note: A negative number indicates liberalization.

Source: Conway and Nicoletti 2006; and OECD 2011.

Figure 2.22: Not all countries are making trade in business services easier

(changes in product market regulation indicators for regulations in professional services, 2003–08)

### Box 2.10: Facilitating the services trade in the Western Balkans

The share of services in the economy has been increasing in the Western Balkans (Albania, Bosnia and Herzegovina, Kosovo, the former Yugoslav Republic of Macedonia, Montenegro, and Serbia). It now accounts for about 70–75 percent of GDP in every country except Serbia, where services are still less than 60 percent. Travel, transport, construction, real estate, and wholesale and retail trade are the largest service sectors.

Trade in services has been increasing too. Services exports averaged €16 billion a year in 2007–09 and were 10 percent of GDP in the landlocked countries but about 20 percent or more in Albania, Croatia, and Montenegro. Tourism receipts are three-quarters of services exports in Croatia and Montenegro. The average ratio of services imports to GDP is about 10 percent, with Albania (18 percent) at the high end and Bosnia and Herzegovina (5 percent) at the low end.

While the size of services exports in the Balkans is similar to those of the EU15 and the new member state economies, the sophistication of exports differs. Traditional services dominate: travel accounts for two-thirds of total services exports—concentrated in the coastal countries—followed by

transport at 14 percent and construction at less than 5 percent. From modern services, communications service exports are the largest, but they are still less than 5 percent of services exports. Exports of computer and information and communication technology (ICT) services have been on the rise, but concentrated in Croatia, Serbia, and FYR Macedonia. Business services are 8 percent of total services exports, but poor statistics make it difficult to analyze their composition and direction.

Western Balkan countries are disadvantaged vis-à-vis the EU15 and the new member states because they do not have full access to the European Union's markets. In fact, companies face problems even when trying to export to other signatories of the Central European Free Trade Agreement (CEFTA), which replaced 32 bilateral agreements in 2007, and eliminated most barriers to trade in manufactures and farm products.

In assessing what can help trade in services between the six CEFTA countries, a recent World Bank study looked at five areas: market access, commercial presence, performance requirements, protection of rights, and movement of people. The region has made

progress in all aspects except the movement of natural persons. Tedious work authorization procedures and nonrecognition of professional qualification mean that none of the CEFTA countries offers "freedom of employment." Other problems:

- In construction, the main problem is that companies have to establish a local presence; only Bosnia and Herzegovina allows cross-border provision.
- In road transport (three-quarters of the transport business), bilateral relations still affect trade.
- ICT services are the most open of all the traded services; the biggest problem may be enforcing intellectual property rights.

Aside from these barriers, service exporters now face the hassles that all entrepreneurs have to deal with: enforcing contracts and dealing with product, labor, and land regulations. But perhaps the biggest impediment to the development of the services trade in the Western Balkans now is getting the same access to the large EU market that Bulgaria, Romania, and the other new member states enjoy.

Source: Handjiski and Sestovic 2011.

The majority of the EU members were rated as having a fairly open regime toward foreign business (figure 2.20). But regulatory regimes for services tend to be more restrictive. Professional services remain tightly regulated, with legal services the most restrictive (figure 2.21). Exclusive rights are reserved for lawyers in a majority of the countries. In addition to a law degree, practical experiences and professional examinations are also widely demanded. Concerning conduct regulation, only 2 countries of 22 allowed sole practitioners. Advertising by legal professionals is prohibited or regulated in most countries. There are six types of regimes to govern prices, ranging from minimum prices on some to all legal services, to maximum prices on some to all services. Some countries such as Luxembourg have actually tightened controls on professional services since 2003 (figure 2.22).

### Implement the services directive

The European Parliament and the Council adopted a directive on services in the internal market in 2006 (generally referred to as the "Services Directive") to eliminate barriers to the "freedom to provide services within the community" and the "freedom of establishment." It was designed to serve as a new legislative impetus for deeper integration. It has a relatively wide coverage.<sup>14</sup> When the draft was proposed by the European Commission in January 2004, the Services Directive was regarded as ambitious and far-reaching.<sup>15</sup>



Its expected benefits were subjected to a number of assessments. Because of the wide scope of the Directive, particularly in its draft (not the final) form, these assessments serve as illustrative estimates of the potential gains of deeper integration of services.

How big are the likely gains from homogenizing regulations and reducing regulatory barriers? Researchers have used two approaches to answering this question: evaluate the effects of proposed legislative reforms, and compare the single market with the internal market of benchmark countries. Both suggest that deeper integration through dismantling the regulatory barriers can yield significant trade gains.

Kox and Lejour (2006) focus on other commercial services, excluding transportation and travel, to be close to the scope of the Services Directive. The assumption is that the Services Directive will be fully implemented. Explicit barriers to trade and direct investment are expected to be reduced substantially, while barriers to competition are only moderately reduced. Their results indicate that cross-border trade in commercial services in the European Union could increase by 30–60 percent, while the foreign direct investment stock in services might rise by 20–35 percent.

Copenhagen Economics (2005) evaluates the effects of the Services Directive on trade in regulated professional and business services and distributive trade. The analysis indicates that the Services Directive will reduce the existing barriers to service provision by more than 50 percent. The direct policy impact—*intra-EU trade enhancement*—is between 1.0 and 9.4 percent for cross-border trade and between 1.3 and 2.7 percent for foreign direct investment, for the three sectors included. The analysis also predicts gains in employment and well-being. As highlighted by Monti (2010), however, poor implementation and poor enforcement of EU directives regulating the single market continue to hamper the realization of these gains.

### **Improve the services trade among candidate and partner countries**

For the non-EU economies in Europe, the problems are more severe. Services exporters have trouble accessing the EU markets. They also have difficulties accessing other nearby markets, as a recent World Bank report documents (box 2.10). Even the services traders in the former Yugoslavia—who have shared language and legislation for decades—now have trouble accessing regional markets. The typical barriers that exporters face relate to movement of natural persons (such as work permits for professionals and unskilled labor), licensing procedures (licenses issued in the home country are not recognized by the importing country), and recognition of professional skills and diplomas (qualifications obtained in the home country are not recognized). The difficulty of such barriers differs by activity: they present a significant obstacle to firms and individuals in construction, transport, legal, and health sectors, but not for ICT firms, banks, or telecommunications companies. For them, the agenda includes facilitation of trade in traditional services (construction, transportation, and travel) as well as attempts to revive trade in modern services with the economies of the European Union.

## The Common Agricultural Policy—cheap, but not worth it

The European Union's Common Agricultural Policy (CAP) has been subject to a lot of criticism for its wastefulness (it absorbs around one-third of the European Commission's annual budget, costing about €50 billion annually), poor targeting of benefits (larger farms in richer EU countries benefit more than small farms and poorer EU countries), and weakening of Europe's position in international trade talks. Moreover, EU agricultural subsidies are contributing to maintaining the European Union's position as a global net exporter of food, thereby discouraging the expansion of production in locations with much lower production costs and potentially contributing to higher global food prices as a result.

The criticism is well founded but probably a little exaggerated. At least in money terms, the CAP is relatively cheap, and the policies have been improved over time to become less distortional. It has progressively focused on supporting rural development or ecological objectives, such as organic farming, and helping the European Union's new members to comply with elaborate food safety regulations. And the European Union is the world's largest importer of agricultural commodities from the world's poorest countries, though this is because of special trade preference—despite the CAP, not because of it. But perhaps the biggest cost of the CAP to Europe is that it limits the opportunities resulting from economic integration with its eastern neighbors, which have among the largest underused land resources in the world.

Ukraine has about 42 million hectares of land suited for agriculture, of which only 30 million hectares are actually used; by comparison, the United Kingdom, one of the world's top 20 agricultural exporters in 2010, has a total of 12 million hectares. Between 1990 and 2000, the land under cultivation in Ukraine actually fell by about 2 million hectares as agricultural production decreased. About 30 percent of Ukraine's workers are on farms that are quite efficient, other than

### Box 2.11: Ukraine would gain a lot if it could get freer access to the European Union's agricultural market

Ukraine's exports in 2008 were about \$70 billion—about 36 percent of its GDP. The European Union is Ukraine's largest export market, but its share has dropped from 40 percent in 2002 to 29 percent in 2008. The Russian Federation is the second-largest export market, with a share constant at about 24 percent. The combined share of Turkey, the Arab Republic of Egypt, India, and Kazakhstan has gone up from 7 percent to 17 percent. Ukraine is just 1 percent of the European Union's (third party) imports.

Barley, wheat, maize, and sunflower seeds are Ukraine's main agricultural exports. In the five years leading up to World Trade Organization accession in April 2008, Ukraine reduced import tariffs on most goods from 15–66

percent to 5–15 percent, with the exception of sugar, for which the tariff was 80 percent but has been reduced to 50 percent. Ukraine's wheat exports to the European Union face a tariff of 10.5 percent, and its barley and maize exports a tariff of about 6.5 percent. Sunflower seeds are not subject to a tax, but sunflower oil faces a 6.5 percent tariff. However, the nature of EU import tariff calculations and exemptions means that ad valorem tariff rates fluctuate a lot. Again, observed tariffs on barley imports from Ukraine were 16 percent between 2003 and 2007, but have fallen to zero since.

A "deep and comprehensive" free trade agreement between Ukraine and the European Union will help Ukraine a lot more than it will

the European Union. A full liberalization of cereals and processed food imports will give Ukraine immediate benefits of more than \$350 million annually, or about 0.6 percent of GDP. Agricultural output and land use would rise by about 6 percent, mainly to grow more wheat, maize, and oilseeds. Ukrainian sunflower- and beet-processing industries would face more competition from EU producers, but even considering this, Ukraine would gain \$200 million each year. This is not a large amount, but the agricultural reforms that the trade might encourage would also bring Ukraine institutionally and economically closer to the European Union.

Source: [Chauffour and others 2010](#).

### Box 2.12: (Not) extending the single market to the European Union's eastern partners—the case of Georgia

Messerlin and others (2011) argue that the European Commission's current approach to trade with Georgia serves neither the European Union nor Georgia well. According to the analysis in the report, it is:

- Bad development policy for Georgia. It requires Georgia to adopt and implement many imprecisely identified EU internal market regulations that go beyond trade-related matters, many of which do not make sense for Georgia and other eastern partners. The regulatory changes imposed on Georgia are equivalent to taxing producers—endangering its growth and the sustainability of its fight against corruption, which is crucial for economic growth. The preconditions in sanitary and phytosanitary measures may double the price of many food products purchased by the third of Georgians who live in poverty. A better set of conditions would focus on infrastructure, which is probably the binding constraint for growth in Georgia.
- Bad commercial policy for the European Union and Georgia. It would lead to an expansion of the trade between Georgia and non-EU countries. Georgian consumers would be induced to import what Georgian producers could no longer sell because of EU norms; and their low incomes would induce them to turn to imports from non-EU sources that are less expensive than those from the European Union. To survive, producers who would not be able to sell their products any more on Georgian markets under EU norms would sell them to foreign markets not observing EU norms, thereby artificially boosting Georgia's exports to non-EU countries.
- Bad foreign policy for the European Union. Preconditions are being imposed on a country that is granted no EU membership perspective. They would make the EU deep and comprehensive free trade agreement (DCFTA) partners appear like EU member states but without full access to the EU

markets in agriculture and services and without EU aid.

The study's conclusion: The European Union should not inadvertently discourage Georgia from continuing its successful domestic reforms. It should open negotiations with Georgia without further delay since it has more than satisfied the relevant subset of preconditions. More broadly, a pro-growth DCFTA process would mean asking Georgia to do things as and when its income reaches sensible thresholds. In general, the European Commission's DCFTA doctrine should be made clearer, coordinated better among EU agencies (since DCFTAs involve a lot more than trade), and adapted to the circumstances of the partner.

Source: Messerlin and others 2011.

for beet sugar. The European Union is still Ukraine's largest export market, but just barely. Its share has been falling during the last decade, as Central European countries that have joined the European Union replace Ukrainian farm products in the common market (box 2.11).

The European Union, Russia, and Ukraine have accounted for more than 80 percent of Belarus's exports over the last decade, and about 90 percent of imports. Russia's share in Belarus's exports has been declining—from 65 percent in 1998 to 32 percent in 2008—but its share in imports has been stable. During this time, the European Union's share in overall exports has increased from 16 to 43 percent. Agricultural exports are a different story. While Russia's share in agricultural exports has stayed between 83 and 93 percent during the last decade, the European Union's share has fallen. For dairy products, one of Belarus's main farm exports, the decline was from 48 percent in 2000 to almost zero in 2008 (World Bank 2009). Much of this decline may be the result of Belarus's own sanitary and safety policies rather than the European Union's demands, but the result is the same: the prospects for the 30 percent of Belarussians who depend on agriculture for a living remain poor.

The European Union's approach to Moldova shows how it can be done. Moldova is the most rural and agricultural economy in Europe. More than half of its population is rural, a third of its labor force is in farming, and agriculture accounts for about a fifth of GDP. Agricultural output is still about a third below its pretransition level. Perhaps helped by its small size—its trade is just 0.1 percent of the European Union's trade—Moldova is doing better than Belarus and Ukraine in accessing the European Union's single market for farm products. But the European Union's share in its agricultural exports is just

about 36 percent, about half of this due to the European Union's enlargement and Moldova's long-established trade with Romania and Poland. Moldova has one of the most liberal trade regimes among developing countries, but trade is hampered by a poor domestic environment for doing business and capacity shortfalls in meeting the European Union's sanitary and quality standards. Moldova needs the European Union's assistance, and will get it through a deep and comprehensive free trade agreement.

If Moldova shows how the European Union's trade policies should be designed, Georgia's experience may well illustrate the opposite. Agriculture accounts for about half of Georgia's labor force, and about a third of Georgians live below the poverty line. Farm exports could be a potent source of growth for Georgia, and the country is negotiating a deeper economic partnership with the European Union, with agricultural trade as a special focus. Messerlin and others (2011) point out that "Georgia's own trade policy is more open towards the EU than vice versa, and Georgia has achieved governance reforms on a par with some of the old and new EU member states" (p. i). The European Commission is viewed as insisting on a difficult set of preconditions before negotiating, which it has not done for either Ukraine or neighbors in the southern Mediterranean. These may hurt Georgia's poor, and not really improve Georgia's growth prospects (box 2.12).

## Trade—the mainstay of the European model

This chapter asks whether Europe is taking advantage of enlargement through trade in manufactures, services, and agricultural products. The short answer is that it is doing so for industrial goods and traditional services, but it could do a lot better for modern services and agricultural produce. Trade in industrial goods has spread most quickly, not just to the European Union's new members but also to European Free Trade Association economies such as Switzerland, candidate countries such as Turkey, eastern partnership nations such as Ukraine, and even nations further afield such as Russia. Trade in agricultural goods has grown in the European Union and with the candidate countries, but it has not grown as much with the eastern partnership. The trade in modern services has increased mostly just within the European Union. In reaching this conclusion, this chapter tried to answer three questions.

**First, is "Factory Europe" as dynamic as "Factory Asia"?** Yes, but in ways that are quite different. Factory Europe is growing bigger, but more noticeably it is getting smarter. Spurred by the need to compete globally, industrialists in Austria, France, Germany, Sweden, and other advanced countries are offshoring activities to their cheaper, less developed neighbors. These activities—and the goods trade between emerging and developed Europe—have been becoming more sophisticated, as Western Europe transfers progressively tougher tasks to countries in Central, Southern, and Eastern Europe. The benefits extend not just to the new member states of the European Union such as the Czech Republic and Estonia, but also to the EU candidates such as Serbia and Turkey, and even the eastern partners such as Georgia and Ukraine.

EU enlargement has had a limited effect on the size of Factory Europe, but it has changed its configuration. Enlargement has led to an increase in Factory

Europe's complexity. The European Union's internal trade in intermediate goods has become more sophisticated and has been using more relationship-specific inputs. Factory Europe has become brainier.

New members' exports embody more complex and more time-sensitive relationships. As this trade has become bigger and more sophisticated, their trade facilities—ports, airports, customs regimes, and ICT infrastructure—have become strained. In particular, reducing infrastructural deficits in ICT is likely to result in sizable trade gains.

**Second, is the Single Market for Services underachieving compared with North America?** The answer is that for traditional services, such as travel and construction, it is not. But it is for modern services such as communication, insurance, finance, computers and information, royalties and license fees, and other business services—with the notable exception of banking. Technology has made them more productive and tradable. As in the rest of the world, European economic growth is increasingly composed of services. Services dominate growth in EU15 countries and, to less extent, in the new member states and candidate and partner countries. Within the European Union, trade in modern services is growing. But outside—in the Balkans and the eastern partnership—trade in modern services has stagnated.

An educated estimate is that with the right policy measures, the trade in services can double in value within the decade, and possibly even triple. But for this to happen, the trade in modern services must be greatly facilitated. Ideally, services exporters should have to satisfy product market regulations in just one (current or aspiring) member state. Ideally, the qualifications of professionals should be certified in just one country. Ideally, at least within the European Union, the movement of natural persons should be unfettered. For all these reasons, the single market is not likely to become as unified a market for services as those in the United States or Canada in the foreseeable future. But with appropriate changes in product market regulations, vendors of digitally tradable services might soon be able to treat Europe as a single market.

**Third, is the Common Agricultural Policy compromising Europe's credibility in global trade talks?** The European Union has followed increasingly enlightened trade policies toward the least developed countries of the world. But the European Union's agricultural policies are hobbling its efforts to extend the benefits of the single market closer to home—especially to eastern partners such as Georgia and Ukraine. The Common Agricultural Policy is popular among EU citizens, who appear to believe that 33 eurocents a day is a small price to pay for maintaining the livelihoods of the 15 million farmers and farmworkers in the European Union. In the eastern partnership countries—Armenia, Azerbaijan, Belarus, Georgia, Moldova, and Ukraine—this number may be even more, because more than a third of their people depend on agriculture. The European Union is missing the opportunity to improve their lives, and win the hearts and minds of 75 million eastern partners.

Increasing the trade in modern services is not easy because it requires improving and harmonizing regulations, in both exporting and importing countries. Addressing these barriers will require a consensus and measures to reassure skeptical consumers and workers (Monti 2010). Large gains may

be had in noncontroversial areas such as digital trade. Between 1998 and 2003, many countries in Europe showed that product markets can be made more competitive. The momentum for market regulation was lost during the boom years between 2004 and 2008. Now it should be regained. As chapter 3 discusses, Europe has shown that trade in one modern service—banking—can grow quickly and contribute to economic growth.



#### Answers to questions on page 87

- Factory Asia is growing faster, but goods trade in Europe is more sophisticated.
- The single market is working quite well for traditional services such as travel and transport, but it is underperforming in modern services such as insurance, information technology, and other business services.
- The European Union's agricultural policies hobble the extension of the single market to its neighbors, and Europe is missing an opportunity to improve the lives of 75 million people in the eastern partnership countries.

## Notes

- 1** By this measure, Turkey's exports are more than ten times those of the next biggest exporter in this category (Romania), which in turn are much bigger than the third-biggest. Turkey's car exports more than tripled, and its share went from 0.7 to 6.7 percent. Entry into the customs unions in 1996 may have had a lot to do with this. For the other countries, cars are a small part of exports and unimportant for the region's car trade.
- 2** This measure divides by GDP to control for total output (supply capacity), but within-region calculations arguably should be divided by the square of GDP to account for total demand as well. Doing so does not affect the main conclusions.
- 3** Data issues preclude firm conclusions, however. Numerous studies, using different time periods, and with different sectoral and different country focuses, come to varying conclusions. Hummels, Ishii, and Li (2001) report a declining share in intermediates trade in OECD countries between 1970 and 1992, while Yeats (2001) reports an increase. Miroudot, Lanz, and Ragoussis (2009), and Curran and Zignago (2009) find constant shares of intermediates in total trade in OECD countries and Europe respectively since 1995. Baldwin and Venables (2011) question the reliability of trade data and prefer firm-based analyses. Firm-level data show increasing fragmentation of production among German and Austrian companies as they outsource production toward the new member states, but micro studies for other Western European firms are few. Halpern, Koren, and Szeidl (2011) show that Hungarian firms have increased the import of intermediates, but the source of these imports cannot be ascertained in their analysis.
- 4** Martínez-Zarzoso, Voicu, and Vidovic (2011) also find a rise in the variety of intermediates exported from six Central and Eastern European countries to the European Union at the same time as a fall in the varieties exported to non-EU OECD countries. But for imports, the results are not the same. They find a rise in the variety of imports in these six countries from the European Union at the same time as there is a fall in the variety of imports from non-EU OECD countries.
- 5** Romania (28 percent) and Bulgaria (13 percent) had the biggest rises. The RSI measure appears to capture the effects of deeper integration beyond a customs union.
- 6** The sample consists of Albania, Croatia, the former Yugoslav Republic of Macedonia, Montenegro, and Turkey.
- 7** Other factors compound the estimation problems. Characteristics of third countries may determine bilateral trade flows, similar to the trade in goods (Anderson 1979). The formation of a Free Trade Agreement may target existing policy issues between countries that are hard to observe (Baier and Bergstrand 2007). Taking advantage of panel data, recent studies are able to mitigate the influence of these and other unobserved factors.
- 8** Previous studies are based on shorter time series, which restricts the choices of methodology, and the results are less consistent. See, for example, Ceglowski (2006) and Walsh (2006 and 2008).
- 9** The wide range of the estimate is mainly due to the poor quality of data for services trade. Data availability changes over the years, and the match between credit and debit data is poor.
- 10** Straathof and others (2008) study the effect for goods and for services and find a single market effect of some 30 percent for trade in goods, but only 10 percent for cross-border trade in services. Trade in goods within the European Union is about 30–60 percent higher than trade with or between third countries (see Fidrmuc and Fidrmuc 2003, Lejour, Solanic, and Tang 2006, Baldwin and Rieder 2007).
- 11** Hausmann, Hwang, and Rodrik (2007) have proposed that it is not just specialization but also the sophistication of exports of goods that matters for growth. To examine this phenomenon for service exports, Mishra, Lundstrom, and Anand (2011) propose an analogous index for studying service export sophistication. In a background paper for this report, Lundstrom Gable and Mishra (2011) show how different parts of Europe are faring in the services trade.
- 12** Kandilov and Grennes (2010) argue that for some types of services and destinations, Central and Eastern Europe are effective competitors for Asia.
- 13** Eschenbach and Hoekman (2006) propose that countries in Eastern and Central Europe that undertook productivity-enhancing service reforms, such as reforms of financial and infrastructure services, have attracted more FDI and had higher economic growth. Fernandes (2009) confirms this, and shows that the large service productivity gap between the EU15 and the new member states is shrinking as the latter catch up. Moreover, this effect is stronger the further an activity is from the technological frontier, suggesting that liberalization of services can speed catch-up.
- 14** The Services Directive excludes financial services, electronic communications services, most transport services, health care, services provided by temporary work agencies, private security services, audiovisual services, gambling, certain social services provided by the state, and services provided by notaries and bailiffs.
- 15** The draft was more ambitious than the Directive that was finally issued. Most important, the draft proposed the “country of origin” principle, which was dropped from the final directive.



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# Chapter 3

## Finance

In the boom years leading up to the financial crisis of 2008–09, Western European banks moved aggressively into emerging Europe.<sup>1</sup> Austrian, Italian, and Swedish banks were especially active; Belgian, French, and Greek banks a little less. Almost 80 percent of the banking sector in some countries that looked to Europe for trade and finance—such as Bulgaria, Croatia, the Czech Republic, and FYR Macedonia—were foreign-owned. It was big business. In 2007, Austria's Raiffeisen and Erste banks had, directly or through their subsidiaries, about \$300 billion in assets in emerging Europe, equivalent to almost 80 percent of the country's gross domestic product (GDP). A fifth of the loans of Sweden's biggest bank, Swedbank, were to customers in the Baltics. Italy's massive Unicredit Group had the biggest stake in the banking systems of Central and Southeastern Europe, spanning 17 countries. Belgium's KBC and France's Société Générale were also active. Greek banks came a bit late but, on the eve of the crisis, Alpha, National Bank of Greece, and Piraeus Bank held sizable stakes in the Balkans.

By mid-2009, many economists viewed this eastern expansion as a big mistake. Analysts who had covered crises in East Asia and Latin America saw emerging European economies as bubbles. Fears were rife that Western Europe's banks would walk away from these subsidiaries, leaving inexperienced regulators to clean up the mess. Experts put out assessments viewing the close ties with foreign finance as the result of policies that were inadequate to offset the misfortune of being too close to Western Europe. Few pundits felt that this financial integration might have been good for growth or to Eastern Europe's advantage to be near—physically and financially—a developed system of banks, or even that some of these savings-starved countries had instituted policies good enough to get the best from Western European finance. A massive pullout was expected.



- Why is finance in emerging Europe different from other regions?
- How did some European economies benefit more from international financial flows than others?
- Is there evidence of a “debt overhang” in emerging Europe that reduces growth and justifies government intervention?

It did not happen. These banks have all stayed, tolerating big losses in 2009 as incomes fell and bad debts mounted. Swedbank's Baltic Banking Unit cut its staff by a third and reported losses of about \$200 million in the first quarter of 2010. Unicredit and Raiffeisen also suffered big losses. But by late 2010, Raiffeisen's quarterly profits in the region had risen to \$500 million and Swedbank was generating profits from its Baltic business. Today, Eastern Europe accounts for about a tenth of the portfolios and profits of Unicredit, Raiffeisen, Erste, Swedbank, and SEB. The head of Raiffeisen Bank International expects Western European banks to stay and grow in Eastern Europe: "The region still has a lot of catching up to do to reach the economic level of Western Europe. We will continue to benefit from this process at least in the next one and a half to two generations" (Hansen 2010).

This chapter asks and answers the question: Has financial integration in Europe happened too fast? The answer is a qualified no. The chapter shows that finance in Europe has an enviable and unique feature—that capital flows downhill, as economic textbooks argue it should. Financial flows of all types go from richer, slower-growth countries to less developed fast growers. This close integration of the wealthy and the dynamic is an underappreciated attribute of the European economic model. The answer is qualified because emerging Europe, by being integrated, is now vulnerable to the consequences of prolonged uncertainty and potential financial deleveraging in the eurozone, and because financial integration in a few countries led to excesses and misallocation of resources. The chapter discusses how the risks can be better managed going forward.

Three questions follow.

- **Why is emerging Europe different from other regions such as East Asia and Latin America?** The answer lies in the powerful pull of accession to the European Union. The implication is that the closer a country gets to the European Union in its policies and institutions, the more it stands to benefit from financial integration. Perhaps the expectation of stronger institutions suffices to spur economic growth.
- **What helped some European economies—such as the Czech Republic, FYR Macedonia, Poland, the Slovak Republic, and Turkey—get more out of the largest international financial flows in history than others during the years preceding the crisis?** The main lesson is that external imbalances have to be managed, not eliminated. A blend of conservative economic policies—including cyclically sensitive fiscal and macroprudential policies for managing systemic risk—will help to keep growth sustainable. Policymakers should do what they can to "boom-proof" public finance and "crisis-proof" private finance.
- **In other countries that did not manage these flows as well, is there evidence of a "debt overhang" that justifies government intervention?** Evidence in this chapter should persuade the reader that, for the most part, economies in emerging Europe are both liquid and solvent, and that treasuries, enterprises, and households are not facing a debt overhang that could become a drag on activity. Some banking sectors in emerging Europe

might well face challenging times ahead. But the dependence on foreign banks has so far been a blessing as banking flows to the region have been remarkably stable. There are risks, but these originate primarily in the dependence on Western European banks that have large exposures in some EU cohesion countries, such as Greece, from where trouble could easily spill over into emerging Europe.

Thus, the chapter concludes, foreign capital is an enviable development opportunity integral to Europe's income-convergence engine. This strong conclusion comes with three caveats. First, it is based on an analysis of emerging Europe's experience over the past decade. The chapter contrasts the experience of the "EU cohesion countries" (Greece, Ireland, Portugal, and Spain) with developments in emerging Europe. It does not analyze the experience of the cohesion countries in detail. However, as later chapters show, heavy regulatory barriers and an overextended public sector are more likely candidates to account for the woes of Europe's south today. Second, the chapter suggests that the closeness to Western European finance led in some cases to excesses. Therefore, external imbalances need to be managed to avoid a buildup of vulnerabilities, and the chapter provides some guidance on how to do so. To recover quickly and manage the next boom, policymakers must clearheadedly assess what led to the misuse of proximity to Western European finance—and strengthen their preemptive and prudential arsenal. But managing external imbalances is not the same as self-insurance. Indeed, the latter is not the lesson policymakers in Europe should take away from the crises: Europe's emerging economies should not "become Asian." Third, the balance sheets of banks in Western Europe are strained by the sovereign debt problems faced in the eurozone. Since many of these banks are active in emerging Europe, they could be forced to deleverage from noncore markets; addressing the problems in the eurozone is thus crucial for all of Europe.

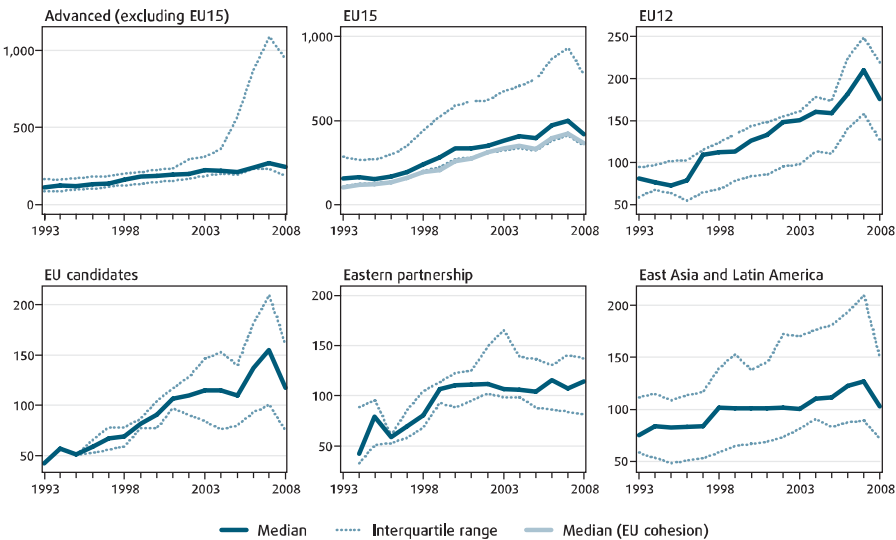
## Europe is unique

Worldwide, financial integration progressed rapidly from the late 1990s. The sum of foreign assets and liabilities as a share of GDP—the financial equivalent of trade openness indicators—increased greatly. But the rise was not uniform. There is sharp widening of the interquartile range (the gap between the top and bottom 25 percent of the distribution) in some of the country groups (figure 3.1). Europe stands out as a region that experienced a deepening in financial integration, in particular the EU cohesion countries (Greece, Ireland, Portugal, and Spain) and the EU12 and EU candidate countries. Among emerging markets and the EU eastern partnership the increase is less steep.

## Financial flows in Europe are different

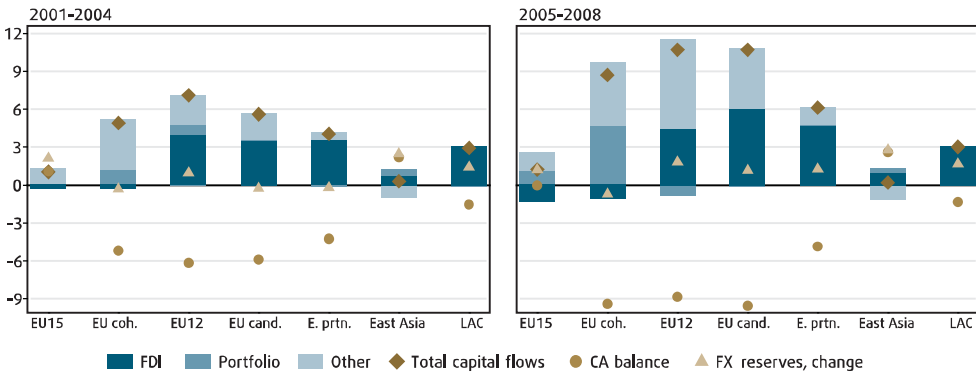
The types of capital that emerging Europe received are different. Foreign direct investment (FDI) was higher than in other emerging markets (figure 3.2). Banking and other flows, which recorded a sharp increase in the EU12 and EU candidate countries in 2005–08 relative to the preceding four-year period, also played a key role. To a lesser degree, this is also the case in the EU eastern partnership. Intracompany debt-creating flows from parent corporations and

Figure 3.1: Fifteen years of financial integration show that Europe is different  
(percentage of GDP)



Note: Financial integration is measured as foreign assets plus liabilities. The interquartile range reflects the region between the top and bottom 25 percent of the distribution among the countries in the group.  
Source: Updated and extended version of dataset constructed by Lane and Milesi-Ferretti 2007.

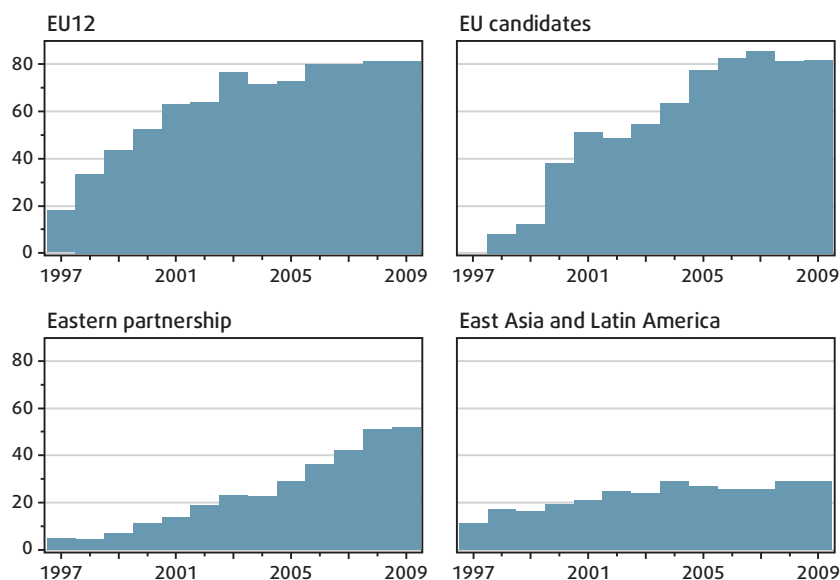
Figure 3.2: Capital flows in emerging Europe are particularly large  
(percentage of GDP; period average of group median values)



Note: "EU coh." refers to the EU cohesion countries, "EU cand." refers to EU candidate countries, "E. prtn." refers to EU eastern partnership countries, "LAC" refers to the Latin America and the Caribbean region. CA stands for current account and FX is foreign exchange.  
Source: World Bank staff calculations, based on IMF WEO.

banks in Western Europe to their subsidiaries in emerging Europe have FDI-like features: this type of capital flow (referred to in this chapter as financial FDI) combines the risk-sharing features of FDI and the lower costs of debt financing.

Another feature of emerging Europe is the role of foreign banks in corporate governance. Western European banks increasingly dominated credit in emerging European countries and weakened the link between governments and the enterprise sector. Failure to do so earlier had resulted in a history of quasi-fiscal bailouts during the 1990s. In the new member states of the European Union, the share of foreign ownership in banking system assets (through both branches and subsidiaries) increased early in the decade and today accounts for over 80 percent of total banking system assets (figure 3.3). The EU candidate countries



Source: Claessens and van Horen 2012.

**Figure 3.3: Foreign banks are emerging Europe's unique feature**

(percentage of banking system assets, median values)

followed the same path with some delay, but today foreign banks hold close to 80 percent of total banking system assets. Foreign banks are less dominant among the EU eastern partnership countries.<sup>2</sup>

### Capital flows in the right direction in Europe

Economic theory posits that because poor countries have low capital-labor ratios they should also have high expected rates of return to capital, making investment more attractive. Poor countries also typically save less. This mix—high investment, low savings—should lead to large current account deficits (capital inflows from abroad are just their mirror image). Yet, for most of the developing world, the evidence that capital flows downhill is limited (Lucas 1990).

Three explanations are possible for this lack of absorption of foreign capital. First, the policy framework of recipient countries does not always support the absorption of foreign savings. Countries like China, for instance, accumulate foreign exchange reserves to prevent an appreciation of the real exchange rate.<sup>3</sup> Second, the experience of some emerging markets with capital account crises and sharp reversals in external imbalances and growth might lead to more cautious economic policies, such as the self-insurance policies of some East Asian and Latin American countries after the crises of the late 1990s. Third, differences in risk-adjusted returns to capital and low total factor productivity might also constrain the absorption of foreign capital. In other words, the quality of economic policies and institutions might affect the returns to capital. Whatever the reason, just being poor or rich is not enough to explain the direction of capital flows. Surprisingly, capital does not flow to high-growth countries either.<sup>4</sup> High growth reflects actual marginal productivity and should therefore lead to an increase in capital flows to those countries that have higher



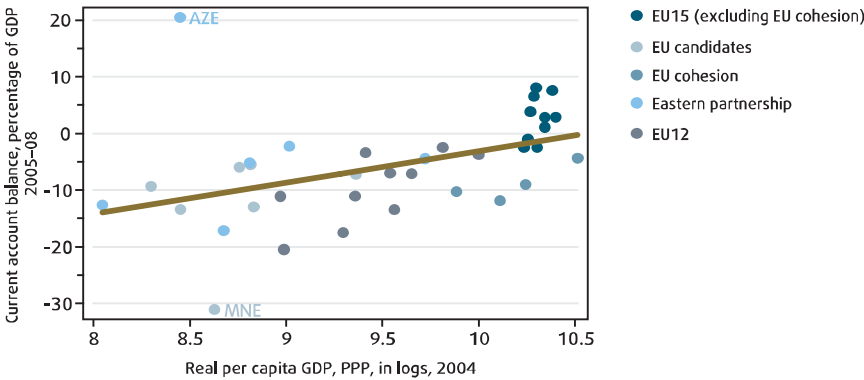
growth rates—and thus higher productivity. But this is not the case in most developing regions.

The exception is Europe, where foreign capital appears to flow toward poorer countries (figure 3.4)<sup>5</sup> and those with higher growth rates (figure 3.5, left panel).<sup>6</sup> But classifying countries in line with their political proximity to the European Union (EU12, EU candidates, and EU eastern partnership) suggests that there is also significant heterogeneity among those countries. Capital has flowed to high-growth countries in the first two groups, but in the less integrated EU eastern partnership countries, the pattern is similar to that of other emerging markets (figure 3.5, right panel).

**In Europe, finance supports growth—and more so the closer countries get to the EU**

It is then worth asking: Why is Europe different? The answer lies in the model of economic convergence—how poorer countries are provided with the instruments for catching up to their richer neighbors. Classifying countries in line with their political proximity to the EU (EU12, EU candidates, EU eastern partnership countries) proves to be instructive.<sup>7</sup>

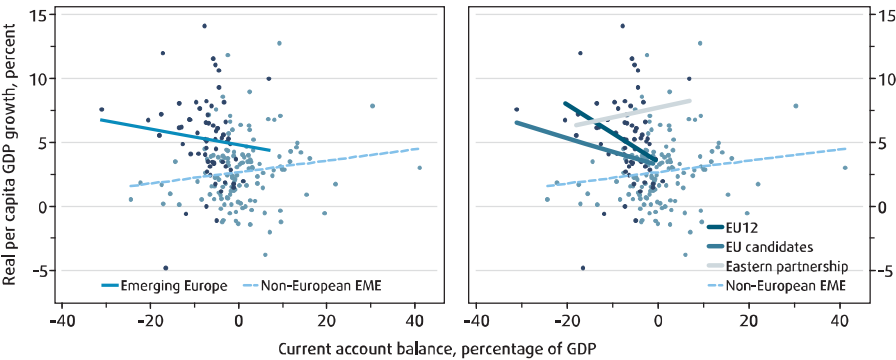
**Figure 3.4: In Europe, capital flows to countries with lower incomes**



Source: World Bank staff calculations, based on IMF WEO.

**Figure 3.5: In Europe, capital also flows to high-growth countries**

(current account deficits and per capita income growth, 1997-2008)

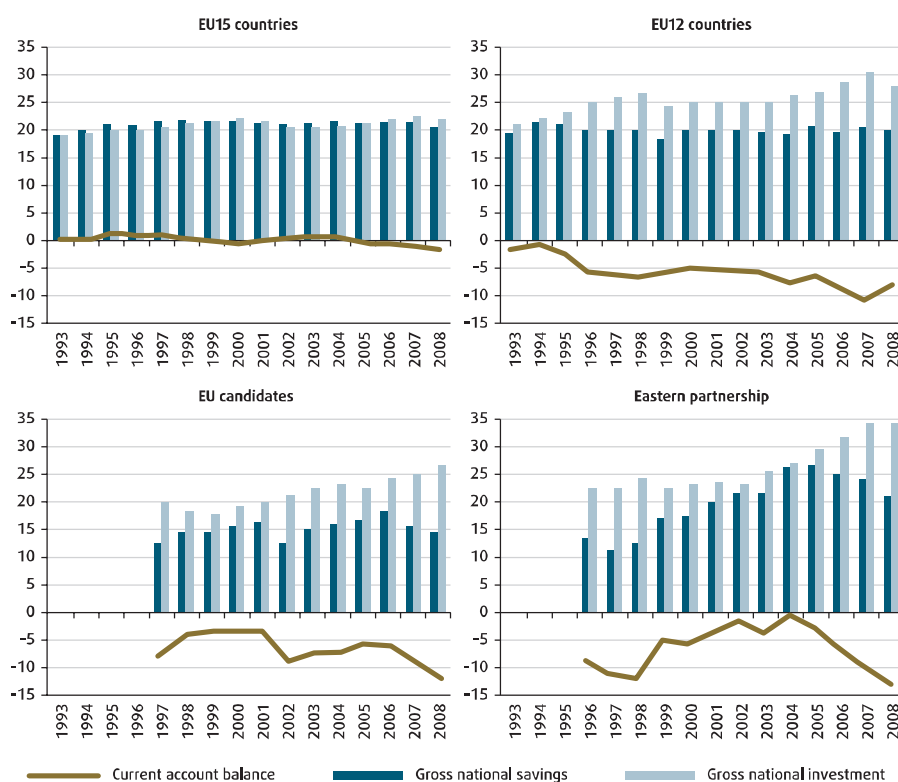


Note: Average values calculated using 3 four-year periods in 1997-2008 are shown.  
Source: World Bank staff calculations, based on IMF WEO.



To draw lessons from emerging Europe's financial integration experience and its links to growth, it is necessary to understand the role of foreign savings, which provide a composite measure of net foreign capital flowing into a country. The empirical work in this section draws on Stojkov and Zaldueño (2011) which shows that foreign savings support growth in many—but not all—emerging European countries (table A3.1). The varying strength in the relationship between the EU12 countries and EU candidate countries reflects a combination of early EU accession and faster transition to a market economy. And, countries where EU membership prospects are still distant—the EU eastern partnership—behave much like emerging markets outside Europe. So far, foreign savings have not supported their growth.

How can the foreign savings-growth link be explained? The evidence shows that foreign savings in the EU12 and EU candidate countries seem to have enabled the pursuit of investment opportunities that would otherwise have remained unfunded. Emerging Europe experienced a notable rise in investment as external imbalances increased in the decade before the crisis (figure 3.6). Adding investment as an explanatory variable makes the EU-specific foreign savings and growth link no longer important. Including savings, however, does not have such an effect among the EU12 and EU candidate countries. In contrast with results from a range of other developing economies (for example,



**Figure 3.6: Investments rose strongly in Europe as external balances improved**

(saving-investment balances, unweighted averages as percentage of GDP, 1993–2008)

Note: The averages are not presented for some years in the early 1990s because at least one observation is missing.

Source: World Bank staff calculations, based on IMF WEO; and WDI.

Aizenman, Pinto, and Radziwill 2007), foreign savings do not seem to substitute for domestic savings in some of the countries in emerging Europe. For countries in or close to the European Union, investment is no longer resource-constrained.

### The European Union as a “Tractor Beam”

There is no doubt that financial intermediation is crucial for foreign savings to support growth. Households borrow from future income streams for consumption smoothing and firms borrow to pursue investment opportunities. In either case, the financial system needs to intermediate the foreign financing that makes consumption smoothing and investment possible.

Two alternative explanations exist as to what makes financial intermediation effective. One relates to “thresholds in financial development” that improve the flow and quality of information and enhance a country’s absorptive capacity (Blanchard and Giavazzi 2002). Another relates to “financial frictions” and how they affect intermediation. These frictions are, in turn, linked to the institutional development of individual countries. Both insufficient financial development and weak institutions can reduce absorption and cause capital inflows to boost unsustainable private and public consumption or asset-price bubbles that weaken the link to growth.<sup>8</sup>

To examine why the EU12 and the candidate countries have largely avoided these drawbacks, indicators of financial and institutional development are added by Stojkov and Zalduendo (2011) to a growth equation to explore their impact on the underlying foreign savings–growth link among EU-specific country groups.<sup>9</sup> The results suggest that there are EU-specific factors at play. The importance and magnitude of the EU-specific foreign savings interaction remain unchanged when financial development is used to construct a threshold variable on financial development, suggesting that it is not the driver of the foreign savings–growth link (table A3.2). Slightly different is the conclusion reached using measures of institutional development. The impact of the EU-specific foreign savings interactions weakens as institutional development increases, suggesting that institutional development features might be operating. But the weakening is limited, and the EU-specific foreign savings interactions remain important. That institutional development indicators do not eliminate these EU-specific effects might reflect that EU membership (actual or potential) acts as an anchor for expectations of improved institutional quality, even if actual improvements materialize slowly.

The European Union behaves much like a space station, with its rules of accession acting as a “tractor beam” as it exerts a powerful institutional pull, while countries like Germany may have the pulling power of big spaceships.<sup>10</sup> Disentangling these pull factors is a subject for future research. Even so, European integration appears to be a determinant of growth for countries in and near Europe when they begin their transition toward the European Union.

### Benefits for many, excesses for some

With the benefit of hindsight, excess financing was a problem before the global crisis, and it hurt some emerging European countries. The abrupt declines in real GDP must be recognized and included in any assessment of the effectiveness of

financial integration. These declines raise the question of whether the positive dynamics described above are inherently unsustainable.

Reassuringly, even when episodes of “excessive growth” are excluded from the analysis, the association between foreign savings and growth remains (see Stojkov and Zalduendo 2011).<sup>11</sup> The results are not linked to the unusually high growth rates—or to the unsustainable external imbalances—of the precrisis period. A key challenge for policymakers is thus not to avoid financial integration, but to understand which policy mix contributes to turning this opportunity into a sustained growth dynamic and how the tail risks can be effectively mitigated. This is the focus of the next section. Because the lessons of prudence apply to all countries, the next section covers not only emerging Europe but also, albeit less thoroughly, the EU cohesion countries.

## Prudence when finance is plentiful

Macroeconomic outcomes in emerging Europe improved in the late 1990s. After many years with large fiscal imbalances and high and volatile inflation, economic stability was reestablished.<sup>12</sup> In turn, financial integration in the early 2000s increased economic interdependence and raised the credibility of policymakers by anchoring institutional development to structures known in Western Europe. In the eurozone, the elimination of currency risks led to a sharp fall in borrowing costs for the EU cohesion countries and a corresponding acceleration of foreign borrowing by private and public sectors. In some emerging European countries, there was also an acceleration in credit growth to the private sector, albeit from low initial levels.

## Emerging Europe is not the same everywhere

Against this general background, important differences emerged across countries in the region. To examine these differences, emerging European countries can be classified along two dimensions. The first is institutional: EU12, EU candidates, and the EU eastern partnership. The EU cohesion countries are identified separately, because they are the subject of current interest. The second dimension is monetary, using the exchange rate regime of each country (based on the IMF’s Annual Report on Exchange Arrangements and Exchange Restrictions [AREAER] classification): flexible (group 1), intermediate (group 2), and fixed (group 3).<sup>13</sup> The analysis distinguishes two four-year periods prior to the crisis: 2001–04 and 2005–08 (table 3.1, bottom panel, shows the changes in savings–investment balances between these two periods and includes a sample of emerging markets outside Europe).

Three broad conclusions emerge from this comparison:

- External imbalances in emerging Europe were largely private. Public sector imbalances declined in most countries. This is also the case among EU cohesion countries with the notable exception of Greece and Ireland. However, the improvement in public savings–investment balances is also misleading, as it also reflects buoyant tax revenues during the boom.

**Table 3.1: Private imbalances in the East, a more complicated story in the South**

(saving–investment balances, average of median values, 2001–04 versus 2005–08)

	Emerging Europe						EU Cohesion				East Asia	LAC
	Regional classification			Exchange rate regime classification			Greece	Ireland	Portugal	Spain		
	EU12	EU candidates	EU eastern partnership	Flexible (group 1)	Intermediate (group 2)	Fixed (group 3)						
2005-08												
National savings (S)	20.1	15.4	30.5	21.1	21.1	18.2	9.4	21.4	15.4	21.1	29.0	18.0
Public	3.0	3.3	7.1	4.3	3.0	3.7	-2.6	1.4	12.5	4.0	6.3	4.9
Private	17.1	12.1	23.4	16.7	18.2	14.5	12.0	20.0	2.9	17.1	22.8	13.1
National investment (I)	28.5	24.7	32.9	27.2	26.1	31.8	21.3	26.2	21.6	30.2	28.8	22.9
Public	4.3	3.8	4.8	4.5	3.7	4.6	2.9	4.4	2.4	3.8	6.9	5.3
Private	24.2	20.9	28.1	22.7	22.4	27.2	18.3	21.8	19.2	26.4	21.9	17.6
(S-I) public	-1.2	-0.5	2.3	-0.1	-0.8	-0.9	-5.5	-3.0	10.1	0.2	-0.6	-0.4
(S-I) private	-7.2	-8.9	-4.7	-6.0	-4.2	-12.7	-6.3	-1.8	-16.3	-9.3	0.9	-4.5
Current account	-8.4	-9.4	-2.4	-6.1	-4.9	-13.6	-11.9	-4.8	-6.2	-9.1	0.3	-4.8
Δ (2005-08 minus 2001-04)												
National savings (S)	0.6	-0.6	10.0	2.3	1.7	-1.2	-7.3	-2.0	-1.4	-2.1	2.0	2.5
Public	1.9	2.6	2.8	3.0	1.9	0.6	-1.3	-3.1	1.0	0.9	1.1	2.8
Private	-1.3	-3.2	7.2	-0.6	-0.2	-1.8	-6.0	1.1	-2.3	-3.0	1.0	-0.4
National investment (I)	3.2	3.6	9.5	5.2	1.9	8.6	-1.9	3.0	-2.2	3.0	3.9	3.6
Public	0.9	-0.2	0.5	0.1	0.1	1.6	-0.6	0.5	-0.9	0.3	0.2	0.4
Private	2.3	3.7	9.0	5.1	1.8	7.0	-1.3	2.5	-1.2	2.7	3.6	3.3
(S-I) public	1.0	2.7	2.3	2.9	1.7	-1.0	-0.6	-3.6	1.9	0.6	0.8	2.5
(S-I) private	-3.6	-6.9	-1.9	-5.8	-2.0	-8.8	-4.8	-1.4	-1.1	-5.7	-2.7	-3.6
Current account	-2.6	-4.2	0.5	-2.9	-0.3	-9.8	-5.4	-5.0	0.8	-5.1	-1.8	-1.2

Note: The exchange rate classification is based on three groups of countries: group 1 (flexible or independent floating; Albania, Armenia, Czech Republic, Moldova, Poland, and Turkey); group 2 (intermediate, including basket, peg within bands, crawling peg, crawling band, and managed floating; Azerbaijan, Belarus, Croatia, Georgia, Hungary, FYR Macedonia, Romania, Serbia, Slovak Republic, and Ukraine); and group 3 (fixed, which includes countries with no legal tender, currency boards, and conventional pegs; Bosnia and Herzegovina, Bulgaria, Estonia, Latvia, Lithuania, Montenegro, and Slovenia). LAC stands for the Latin American and the Caribbean region.

Source: World Bank staff calculations, based on IMF 2010; and IMF WEO.

- Countries in emerging Europe with fixed exchange rates recorded a sharper decline in their current account and private savings–investment balances, due to lower private savings and a rapid increase in public and private investment.
- Institutional characteristics, as argued in the previous section, influence the observed evolution of public and private sector balances. The EU cohesion countries are distinguished by a decline in national savings, much lower increases (or in the case of Portugal and Greece, declines) in national investment, and, with the exception of Portugal, substantial deterioration of their current accounts. EU12 and EU candidate countries by contrast show stable or moderately increasing national savings and increases in investment. EU eastern partnership countries display increases in both savings and

investment, and improvements in their current account positions despite a small deterioration in private savings–investment balances. These differences have consequences for assessments of solvency and liquidity as discussed in the next section.

Did rapid capital inflows cause excessive exchange rate appreciation in emerging Europe, as many skeptics feared? Real exchange rates appreciated gradually in most emerging European economies, consistent with the “Balassa-Samuelson” effect in developing countries (figure 3.7).<sup>14</sup> But, as noted by Bakker and Gulde (2010), in several European countries wage inflation exceeded productivity gains. The loss of competitiveness led to further capital inflows to cover resulting current account imbalances. Where this happened, sustainability was at risk.

Some have blamed fixed exchange rate policies for the loss in competitiveness precrisis and the sharply differentiated impact of the crisis on growth. On closer inspection, the inconsistency of fixed exchange rate regimes with other policies—fiscal policy in particular and generally complacent policies in the presence of massive external imbalances—are more important drivers of the boom-bust cycle that some emerging European countries experienced.

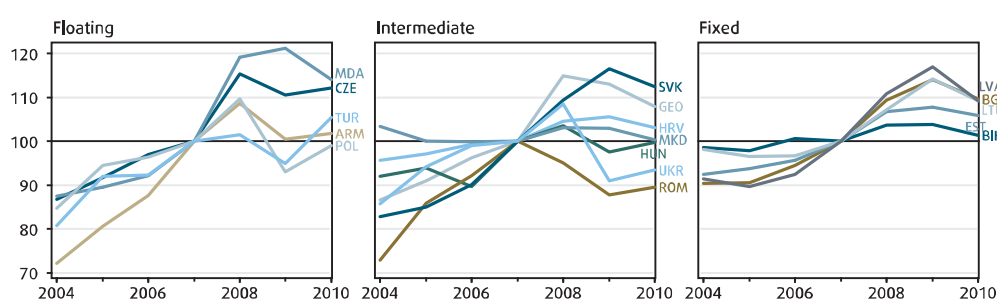


Figure 3.7: Emerging Europe's real effective exchange rates appreciated

(2007=100)

Source: World Bank staff calculations, based on IMF 2010; and IMF IFS.

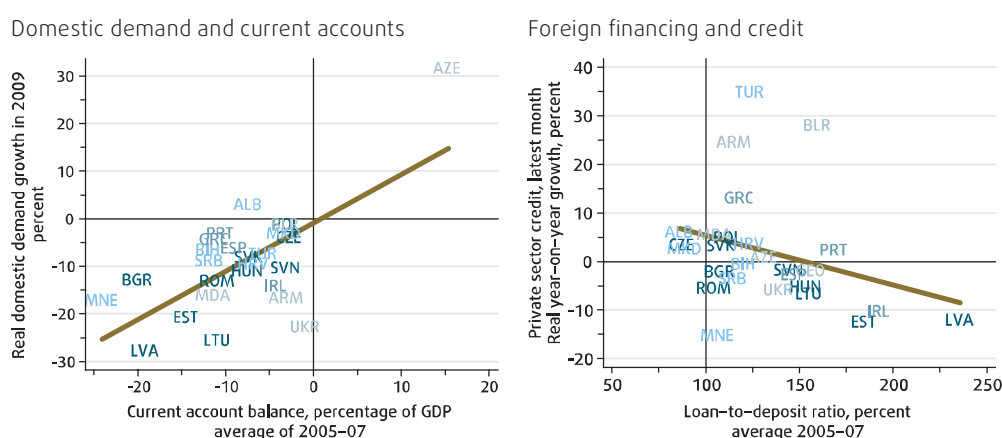


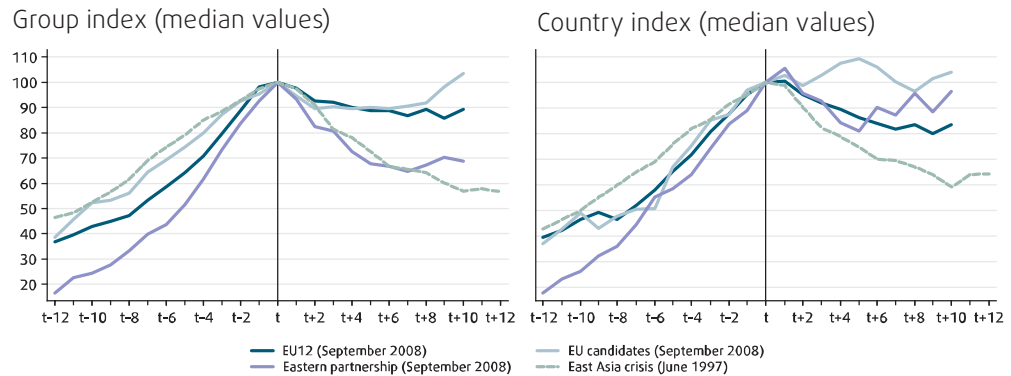
Figure 3.8: Emerging Europe showed rapid economic adjustment but slow economic recovery

Note: The label colors reflect the EU12, EU candidate, and EU eastern partnership country groups. Also included for reference are EU cohesion countries. Data on credit include the domestic banking system only, and for most countries, are for May 2011.

Source: World Bank staff calculations, based on IMF IFS; and IMF WEO.

**Figure 3.9: The closer a country gets to the European Union, the more stable its bank financing**

(banking flow stocks to emerging markets, quarterly data;  $t = 100$ )



Note: The figures are based on quarterly data released on July 2011. Values are exchange rate adjusted. Crisis timing date is defined in parentheses. Asian crisis countries are Indonesia, the Republic of Korea, Malaysia, the Philippines, and Thailand. The group index is based on aggregate group values, and the country index is the median value of the values of individual countries within the group.

Source: World Bank staff calculations, based on BIS Locational Banking Statistics.

Unusually liquid global markets during the precrisis period certainly would have strained the toolkit of any government authority. But the presumption that a convergence-driven “new Europe” was at hand resulted in complacency on the part of bankers and bureaucrats in some emerging European countries.

There are also differences in private credit developments—the engine fueling large private imbalances—and the corresponding external imbalances. The countries most affected by the crisis in terms of declines in domestic demand were also those with the largest precrisis external imbalances (figure 3.8, left panel). In addition, countries that heavily depended on foreign funding to extend credit (for example, those with high loan-to-deposit ratios) are also those where private sector credit growth was slowest during the recovery (figure 3.8, right panel). This suggests that excesses left unmanaged caused the crisis to have a deeper and potentially more lasting impact.

Against this background, three small European economies faced similarities before the crisis, but policy responses were dictated by differences in initial conditions, such as the choice of exchange rate regime, the feasibility of introducing capital controls (for example, Ireland is precluded from doing so as an EU member), and the existence of a lender of last resort (box 3.1).

So indeed some of the precrisis developments increased vulnerabilities, in particular in the years immediately preceding the crisis. At the same time, bank ownership structures in emerging Europe proved to be a source of stability. While some foreign banks took too many risks in the precrisis period, the crisis did not lead to a sharp reversal in cross-border flows; in fact, banking flows linked to Western European banks have been more stable than during the East Asia crisis (figure 3.9). More precisely, cross-border flows came to an abrupt stop, but did not go into reverse as in Asia in 1997–98. The one exception is the EU eastern partnership (driven by developments in Ukraine), where foreign banks had a less dominant position and short-term wholesale funding sources, mostly delinked from ownership structures, were not renewed.<sup>15</sup>

### Box 3.1: Economic adjustment in three small European economies

Iceland, Ireland, and Latvia, with populations of 0.3 million, 4.4 million, and 2.3 million, respectively, got into trouble during the global crisis as a result of rapid growth in credit and other banking activities financed by precrisis international borrowing. Credit booms led to property price booms, peaking in 2006 or 2007 (box figure 1). The construction sector was slightly over 10 percent of GDP in each of these countries. During the crisis, property prices collapsed. All three countries had to turn to the IMF and their European partners for help.

Fiscal austerity programs coupled with structural reforms were central to these countries' economic adjustments. Although saving–investment imbalances in the high-growth years were largely of a private origin, public spending kept up with the revenue overperformance, but it had to be clawed back (more so in Latvia than the other countries). The three countries also faced banking problems (over half of bank assets were foreign-owned in Latvia, but domestic owners dominated in Iceland and Ireland). Such differences meant that the policy responses and economic outcomes varied.

#### Policy responses

**Exchange rates.** Adjustments in real exchange rates form the clearest difference across these countries. Ireland is a member of the euro area, so changing the exchange rate was not an option. Latvia had pegged its exchange rate to the euro, and chose not to devalue. For Iceland devaluation was the only option given the size of the country's obligations and available financing. Accordingly, the krona fell by about 50 percent and the country introduced capital controls to limit further depreciation. While the depreciation-induced inflation eroded some of the competitiveness gain, the krona is still weaker by about a third relative to its precrisis level in real terms. Ireland and Latvia have seen small declines in their real effective exchange rates, but Latvia's is still well above its precrisis value (box figure 2).

**Lender of last resort.** In Iceland, with obligations exceeding the country's GDP several times over, the central bank could not fulfill this role. It had no choice but to let the banks default. Domestic deposits were fully guaranteed, but foreign creditors of Icelandic banks faced a €47 billion loss in 2007—three times Iceland's precrisis GDP (Benediktssdottir, Danielsson, and Zoega 2011). The central bank suffered losses because of the liquidity support it provided to banks.

Irish banks' balance sheets reached eight times GDP. The Eurosystem and the central bank provided liquidity (Buiter, Michels, and Rahbari 2011a and 2011b). The Irish government guaranteed all liabilities of Irish banks and

covered banks' losses with taxpayers' money.

In Latvia, about two-thirds of bank assets were held by foreign (mostly Scandinavian) banks, which assumed most of the losses. The exception was the domestically owned Parex Bank, which was nationalized. Total bank losses in 2009 and 2010 were 9 percent of GDP. Financial support from official sources helped stem the risk of a run on deposits.

**Capital controls.** Only Iceland applied capital controls—and only Iceland could. This had a lock-in effect on nonresident deposits; it also locked out krona assets outside the country. The IMF (2011) estimates that offshore krona holdings imply a high spread between onshore and offshore exchange rates. Capital controls have so far been effective.

#### Economic outcomes

Precrisis vulnerabilities shaped these outcomes. Both Latvia and Iceland had unusually large current account deficits of over 20 percent of GDP. Ireland's deficit was more moderate, at 5 percent. The improvements in the external accounts had knock-on effects on all components of demand, employment, and public finance:

- From peak to trough, Latvian GDP collapsed by 25 percent—twice as much as in Iceland (11 percent) and Ireland (13 percent).
- All three countries saw a comparable collapse in investment. Private consumption went into free fall in Iceland and Latvia (the adjustment in Ireland was smaller).
- Public consumption fell furthest in Latvia (20 percent), in line with reliance on internal devaluation, and the onus on clawing back public spending.
- In Iceland, export growth fostered the massive adjustment of the current account. Exports of goods and services rose by 7 percent in 2009, against an average fall of 12 percent in the European Union.
- Imports collapsed by about 40 percent in Iceland and Latvia, in line with the fall in investment and private consumption, while the Irish import decline (14 percent) was similar to the EU average.
- Iceland experienced a modest (6 percent) fall in employment from 2007 to 2010. The labor market impact was sharper in Latvia (17 percent) and Ireland (13 percent).
- The differences in output and employment between Iceland and Latvia are likely due to real exchange rate developments. Less clear is why Ireland's employment contracted more than Iceland's, given the similar GDP developments and a similar fall

in construction.

- Precrisis gross government debt was 40 percent of GDP or less in all three countries. But the fall in output, the large budget deficits accumulated during the crisis, and banking sector support—about 40 percent of GDP in Ireland, and 20 percent in Iceland—all contributed to sharp increases in public debt. Despite similar public debt-to-GDP ratios, in the summer of 2011, 5-year credit default swaps on sovereign debt were high (above 1,000 basis points) in Ireland, but had fallen to a moderate level (around 250 basis points) in Iceland and Latvia.

#### The moral

Although similar before the crisis, the economic recovery of each country is proceeding at a different pace.

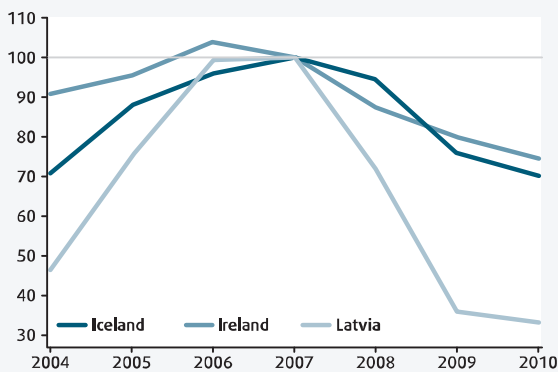
- Latvia suffered a sharper decline in GDP (and thus incomes) than Iceland and Ireland. It has stabilized its public finances, returned to growth, and tapped international bond markets again, but will take a long time to catch up with Iceland in employment and output recovery.
- Iceland emerged from the crisis with the smallest fall in employment and a fast expansion of tradable production despite the largest shock to the financial system and a collapse of the exchange rate. Yet it will have to lift capital controls (Gylfason 2011; IMF 2011).
- Ireland did not have the option of devaluing its currency nor of introducing capital controls. But the external imbalance was the smallest and the tradable sector was competitive (Darvas, Pisani-Ferry, and Sapir 2011). Ireland's problem was its banks, whose losses were largely charged to Irish taxpayers.

One main lesson from the crisis is that when debts are commercially held, the state should avoid loading itself with debts to save the financial system. The costs to Ireland are clear: public debt exploded, necessitating a sharp fiscal adjustment that has hampered confidence and recovery.

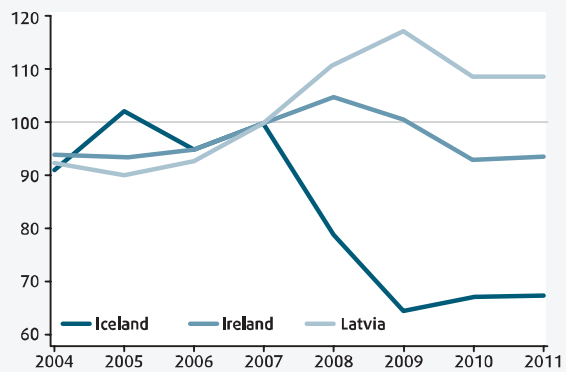
The other main lesson is that a sharp adjustment in the real exchange rate through nominal devaluations comes about more rapidly and thus is helpful when the saving–investment balance needs a drastic improvement. Iceland did much better than Latvia in this regard. However, domestic borrowers also suffered heavily from the collapse of the exchange rate.

Source: Darvas (2011).

Box figure 1: Real housing prices (2007=100)



Box figure 2: Real effective exchange rates (CPI-based, 2007=100)



Source: World Bank staff calculations, based on data collected by the Global Property Guide; and IMF IFS.

That foreign ownership could have been a source of stability is somewhat perplexing. Cross-border flows are supposed to protect countries from domestic shocks and exacerbate exogenous shocks. Several factors might explain this, including the moral suasion role of international financial institutions through the Vienna Initiative and the provision of liquidity and public financial support in Western Europe to parent banks at the peak of the crisis.<sup>16</sup> But the “lock-in” of resources in banks’ subsidiaries due to the long-term nature of their loan portfolio must be remembered.<sup>17</sup> Deleveraging is likely to be limited and gradual. However, downside risks remain high and originate in the problems faced by the EU cohesion countries and their impact on Europe’s economic outlook; indeed, the overall balance sheet strength of Western European banks that are active in emerging Europe is being challenged by the exposures to sovereign debts within the eurozone. This is a risk that could have spillover effects on emerging Europe.

The experience described points to heterogeneity in the regional buildup of external and domestic vulnerabilities. Some countries sustained high growth rates without growing imbalances, while others experienced growth with increasing vulnerabilities. But what defines a high-reward, low-risk outcome? Research since the crisis highlights some of the economic characteristics and policies that would strengthen Europe’s financial integration model. Ghosh, Sugawara, and Zalduendo (2011b) identify some drivers of the tradeoff between growth and vulnerability (box 3.2). The main policy conclusion for emerging Europe is to manage external imbalances,<sup>18</sup> which requires boom-proofing public finance and crisis-proofing private finance.

### Boom-proofing public finance

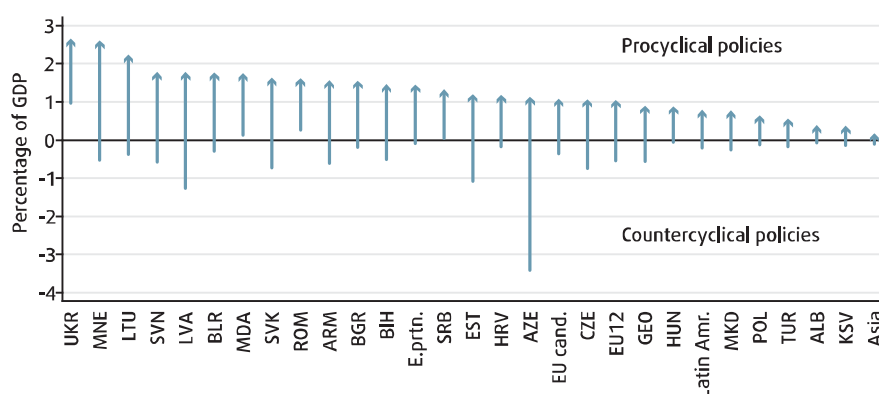
How policymakers boom-proof public finance is critical. Fiscal deficits were not the cause of the saving-investment imbalances in emerging Europe (nor of the resulting boom-bust cycles these countries experienced). But a distinction has



to be drawn between the cause of these imbalances and the policy stance that should be put in place in their presence. There was a shift toward a procyclical fiscal stance across emerging Europe from 2004 to 2008 (figure 3.10). More precisely, the difference between fiscal balances and cyclically adjusted fiscal balances shifted from negative (countercyclical) to positive (procyclical) territory for many countries, and in some countries the shift was quite marked. This implies that countries entered the crisis with weakening fiscal positions. Other developing regions experienced less fiscal deterioration.

The explanation for this fiscal deterioration is simple. As noted by Bakker and Gulde (2010) and Islam (2010), real expenditures rose sharply in the decade before the crisis, especially after 2004. While fiscal deficits for the most part did not deteriorate, the revenue overperformance before the crisis masks actual developments in public finances. In Latvia, for example, additional budget allocations were authorized in the middle of every fiscal year after 2005 (Åslund and Dombrovskis 2011). Also, some countries (such as Latvia and Serbia) approved wage and pension increases, as well as new capital spending, just a few months before the crisis broke.

How should integrating countries boom-proof public finances? For some economies, following an acyclical fiscal policy might suffice; if economic growth leads to revenue overperformance, these resources should be saved. The fiscal policies of Bulgaria and Estonia in the precrisis period were, with hindsight, enlightened (figure 3.11). But even there fiscal positions were excessively procyclical.<sup>19</sup> In fact, a more determined countercyclical fiscal policy stance—using both revenue and spending measures—would have been needed in many countries to counterbalance private behavior. The unusually large size of private sector imbalances in some countries could not (and should not) have been fully matched by fiscal surpluses, but many authorities shied away from the signaling that was required by the overheating that was apparent even then.



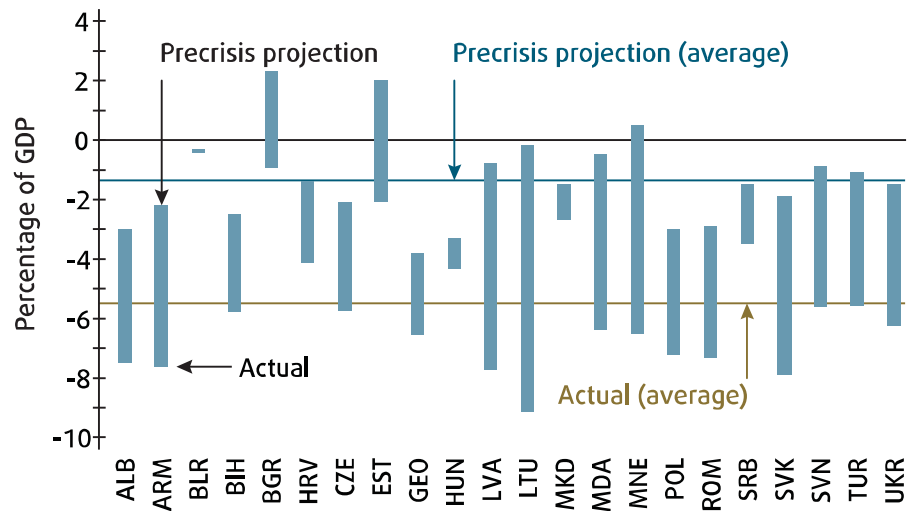
**Figure 3.10: Fiscal positions became procyclical in 2004–08**

(difference between unadjusted and cyclically adjusted fiscal balances)

Note: The figure depicts the difference between fiscal balances and cyclically adjusted fiscal balances. Arrows begin in 2004 and end in 2008. Group median values are presented for EU12, candidate countries (EU cand.), and eastern partnership countries (E. prtn.).

Source: World Bank staff calculations, based on IMF WEO.

Figure 3.11: Revenues lost to the Great Recession, 2009



Source: World Bank staff calculations, based on IMF WEO.

### Crisis-proofing private finance

Financial integration has benefits and risks. De Larosi re (2009, p72) puts it well: "Integration increases contagion risks, and thereby jeopardises financial stability; integration makes it more difficult to ensure a level playing field if rules and supervisory practices differ; integration means the development of large cross-border groups, which will require more streamlined and cost-effective supervisory organisation."

The global crisis also revealed weaknesses in financial architectures. The emerging market countries in Europe were hit hard, but few experienced a collapse of their banking system. By contrast, in Ireland, the banking crisis became a sovereign debt crisis, in turn revealing weaknesses in the European Union and euro area precrisis economic policy and regulatory frameworks, surveillance arrangements, and governance mechanisms.

Financial developments in Europe highlight the difficulties of concurrently pursuing financial integration, financial stability, and national sovereignty. Typically, only two of these objectives can be attained concurrently (Allen and others 2011). Just as the precrisis experience showed that financial integration is key to Europe's income convergence, the financial crisis showed the importance of financial stability. To some degree, sovereignty appears to be the casualty of an integrated world. Yet, countries will always need to tailor their policy responses to country-specific developments. At a national level, macroprudential policies play a useful role, and will have to be tailored to a country's initial conditions and, in particular, to cyclical developments that might differ across Europe. And of course supranational approaches are also needed. Policy coordination is paramount in such a context to achieve the correct balance between sovereignty and country specificity. The alternative, not worth pursuing, is to give up on financial integration, a big part of what fuels Europe's redoubtable convergence machine. Nor should financial stability be compromised.

### Box 3.2: Understanding the growth–vulnerability tradeoff

Ghosh, Sugawara, and Zalduendo (2011b) analyze economic policies and other conditions that are favorable for countries to achieve growth without building macroeconomic vulnerability, using data for countries in the World Bank's Europe and Central Asia region.

What are their main conclusions from? First, trade supports growth, but could also lead to vulnerability. Vulnerability is less likely to occur, however, if a dynamic export sector is part of the equation. Second, the type of capital coming into a country matters. Financial openness might support growth, but also contributes to vulnerability. As this chapter argues, foreign capital is an enviable development opportunity with tail risks. However, if FDI (and to a degree this must also apply to financial FDI) is one of the elements of the capital flowing into the country, then it is less likely to increase a country's vulnerability and more likely to support its growth. Third, fiscal policy is a key element in the toolkit to reduce vulnerability. It might slow down economic activity, but it also shifts countries into a less vulnerable development path when risks are mounting. In this regard, when private finance is the engine of growth—but also of growing vulnerabilities—fiscal policy can play a signaling role on the need to avoid excesses. In such a

case, governments should not shy away from signaling their concerns with private behavior. Fourth, capital account openness appears to increase vulnerability. However, given the many benefits that have been derived from foreign capital in parts of emerging Europe, the correct lesson is to manage external imbalances more proactively.

What was the policy stance of countries in emerging Europe in the years preceding the global crisis? A snapshot of policy stances for 2004 and 2008 offers lessons on what countries could have done differently.

- *Fiscal policy did not play enough of a countercyclical role.* It is well known that public imbalances were limited in much of emerging Europe, and they were not the drivers of external imbalances. Fiscal policy, however, became looser before the crisis—the opposite of what was advisable for overheating economies. Also, countries with fixed exchange rate regimes had, on average, looser fiscal policies than other emerging European countries, contrary to what was expected given the exchange rate regime of these countries. In conclusion, the revenue windfalls of high growth were spent, not saved, in most

countries in emerging Europe.

- *Monetary policies should have played a counter-credit role.* Countries in emerging Europe had loose monetary conditions at the outset of the credit boom in 2004. Monetary conditions were tightening by 2008, but credit growth rates suggest that monetary policy should have been tightened further.
- *Capital controls may play a role in the future.* Measures of capital account openness changed little between 2004 and 2008 (right panel), but the Chinn-Ito index (Chinn and Ito 2006 and 2008) suggests that emerging Europe's capital account was more open than that in other emerging markets. Work by the IMF suggests that capital controls may have a role under certain conditions (Ostry and others 2010). For EU members the options are limited (that is, capital controls can be against the freedom of capital movement), but others in Europe could consider such measures. Alternatively, these results could suggest that there is room to develop policies that might affect capital inflows, for example macroprudential policies.

Source: Ghosh, Sugawara, and Zalduendo (2011b).

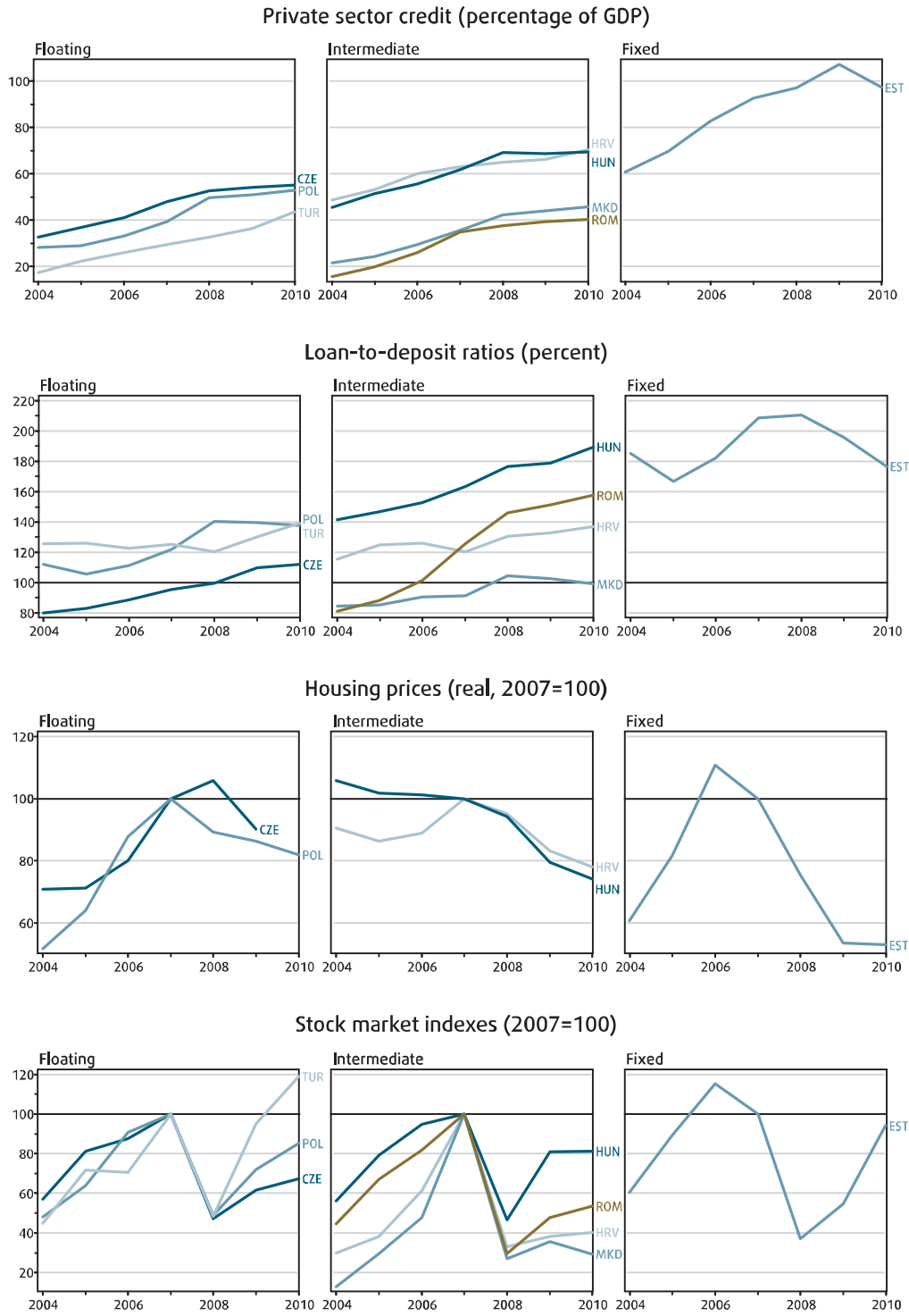
### Macroprudential policies

Prudential regulations are traditionally used to mitigate risks in individual institutions. But they are also central to strengthening financial system stability, particularly against the systemic risks that arise from the externalities associated with individual institutions' actions. In this context, macroprudential policies are those that are adjusted to turns in the economic cycle.

Examples of macroprudential regulations include policies that increase buffers, contain credit growth, and directly improve individual credit quality during good times. Some traditional prudential policies, such as capital-adequacy ratios for banks, may be intended to hedge risks by creating buffers or slowing credit growth (or both). But they become macroprudential only when adjusted in response to macroeconomic developments. Ratios may, for example, be increased when credit growth is high—either for the whole financial system or for systemic banks—or may include larger capital buffers for certain types of lending, such as changing risk weights on mortgage loans.<sup>20</sup>

Liquidity-related regulations are intended to curtail (or promote) credit growth by increasing the cost of extending credit without using (or in addition to) monetary policy instruments. These measures can be targeted to all or to specific business lines. For example, Croatia applied additional liquidity requirements that increased the cost of credit across all business lines. By contrast, FYR Macedonia targeted credit card and consumer loans. Quantitative

Figure 3.12: Countries showed varying experiences with credit growth and asset prices



restrictions or direct credit controls (sectoral or aggregate) are also possible, but it should be noted that acting through quantity-based measures rather than price-based measures potentially has more severe distortionary effects.

Regulations to improve the quality of new loans take the form of more stringent eligibility requirements on certain types of lending and may be viewed as reducing systemwide financial risks one transaction at a time. Polgár and Zdzienicka (2010) classify these regulations into “hard” and “soft” restrictions. The first includes tighter loan-to-value ratios and debt service-to-income ratios. The second refers to qualification requirements, such as a checklist of requirements that household borrowers must meet in order to borrow in foreign currency.<sup>21</sup>

What, then, was the experience with macroprudential policies in emerging Europe before the crisis? For Croatia, the Czech Republic, Estonia, FYR Macedonia, Hungary, Poland, Romania, and Turkey this report asked for written accounts from staffs at the central bank or financial supervision agencies of these countries. It is worth noting that financial sector developments in the run-up to the crisis differed substantially in these eight countries (figure 3.12). This influenced both the type of and scope for macroprudential tools.

These eight countries had varied experiences with macroprudential policies before the crisis (table 3.2 and box 3.3), but many are deploying these policies more proactively during the recovery. A range of factors affected policymakers’ choices, including the monetary policy and exchange rate regime in place, the historical context of financial sector development (such as the convergence process and the presence of foreign banks), the distributional implications of various policies, the legal implications of policies (such as whether the authorities were legally permitted to vary regulations according to the size of the institution), and the ability of regulated entities to circumvent regulations. External factors also played a role. Countries that adopted these policies had to adapt them as agents changed their economic behavior, loopholes emerged, and side effects became more apparent.

Overall, the impact of macroprudential policies had the intended effect though sometimes only a transitory one. The first lesson is that policymakers need to consider the implications of prudential regulation across all financial intermediaries. They should be aware, for instance, that tightening regulation might not always be effective because it could encourage a shift to less regulated institutions or countries, such as through direct cross-border lending to corporations by parent banks with subsidiary operations. Second, the macroprudential toolkit deployed emphasized creating buffers and slowing credit growth, but few countries introduced measures to strengthen credit quality before the crisis, an area deserving greater attention going forward.<sup>22</sup> Third, even if the effect of these policies might at times be transitory, supervisory authorities should assess what works and aim to adjust these policies when undesired developments take place or loopholes emerge in the macroprudential toolkit. A wait-and-see strategy is too costly, as the 2008 crisis has shown.

**Table 3.2: Precrisis use of macroprudential policies in eight emerging European countries**

	CZE	EST	HRV	HUN	MKD	POL	ROM	TUR
<b>Buffers and credit growth containment</b>								
Capital-adequacy ratios		•	•		•	•		•
Risk weights		•	•		•	•	•	
Liquidity requirements			•		•	•	•	•
Constraints on total credit growth			•		•			
Regulations on lending in foreign currency			•		•		•	
Other		•	•			•	•	
<b>Credit quality</b>								
Loan-to-value ratios							•	
Debt service-to-income ratios							•	
Eligibility criteria							•	
Other		•			•	•		

Note: The table reflects changes during 2004-08.

Source: Background papers prepared by country officials for this report.

### Supranational policies

Financial system frameworks before the crisis let market discipline and official oversight work in tandem to provide checks and balances to prevent systemic threats to financial stability.<sup>23</sup> The global crisis revealed that this approach was wrong. Neither market discipline nor official oversight performed their functions as envisaged. The strategy tilted too heavily toward allowing the market to discipline itself, which proved to be elusive until it was too late—at which point market-disciplining behavior led to widespread uncertainty and severe market dysfunctions. Too little official oversight—the corollary—failed to spot the buildup of systemic weaknesses.

Similar to other advanced economies, the European Union introduced on January 1, 2011, a new architecture for safeguarding financial stability, collectively referred to as the European System of Financial Supervision. It includes three new microprudential European Supervisory Authorities (ESAs) and a new macroprudential body—the European Systemic Risk Board (ESRB).<sup>24</sup> The goals are to improve the microprudential supervision of financial institutions and the regulation of capital markets at national and supranational levels, assess systemic risks, and recommend risk-mitigation measures. This is complemented by changes still being introduced in the role and mandate of the European Financial Stability Facility and its programmed successor to be introduced later in this decade.

Even if used as envisaged, these reforms have limitations (box 3.4). The ESAs are more than a group of coordinating mechanisms in “crisis” situations, but they must defer to national authorities. Similarly, although the ESRB can identify countries that pose systemic risks and make recommendations, it has

### Box 3.3: Country experiences with macroprudential policies

Classifying countries into four groups serves to represent these experiences: countries that were proactive in the use of macroprudential policies, countries that relied somewhat on macroprudential policies, countries that relied on moral suasion, and countries that did not use these policies.

#### Proactive use of macroprudential policies

FYR Macedonia, Croatia, and Romania were perhaps the most proactive in applying macroprudential tools before the crisis. FYR Macedonia introduced regulations to limit the growth of lending in foreign currency and in household lending in early 2008. In the view of Celeska, Gligorova, and Krstevska (2011), the regulations were beginning to have an impact when the crisis hit. This partly reflected FYR Macedonia's late exposure to the process of high credit growth that characterized emerging Europe, and it is unclear how much the crisis slowed credit growth.

In Croatia, the authorities adopted various prudential measures to limit credit growth and to safeguard the financial system against an accumulation of systemic risks, particularly from lending in foreign currency. They introduced the new regulations relatively early, in 2003. Because banks attempted to circumvent the new regulations, they were improved simply through "trial and error." A combination of prudential regulations and complementary monetary policies reduced credit growth, though the tools were sometimes circumvented by direct cross-border lending by parent banks (Kraft and Galac 2011).

Romania is a case of proactive monetary policy and prudential tools aimed not only at securing a low inflationary environment, but also at strengthening financial stability (Popa 2011). Although monetary authorities were proactive in the use of policy rates, their approach was accompanied by a large set of administrative and prudential measures, including differential reserve requirements on domestic and foreign currency liabilities, changes to risk weights in some business lines, and adjustments over time to the level and coverage of debt service-

to-income ratios.

#### Limited macroprudential action

Turkey experienced a more gradual credit boom cycle in the precrisis period. Perhaps for this reason the authorities acted in a limited fashion on the macroprudential front, with the most visible intervention related to higher capital-adequacy ratios for banks that wished to expand (measured by authorizations for opening new branches). Turkey did not allow foreign currency lending to households before the crisis. Since witnessing a rapid pickup in credit in late 2009, the authorities have firmly applied macroprudential policies, including measures to improve credit quality (such as lower loan-to-value ratios) and to preclude lending in lira indexed to the exchange rate (Kenc, Turhan, and Yildirim 2011). These policies' success remains to be seen.

#### Moral suasion

In Estonia and Poland much of the initial intervention centered on moral suasion efforts (Sutt, Korju, and Siibak 2011). Only a few policy actions were taken as credit booms emerged. In Estonia, the initial policy response was to reduce the tax deductibility of mortgage interest payments; it was reduced by half in 2004. This move was followed in 2005 with changes to risk weights on mortgage lending. Capital buffers were maintained at higher levels than in advanced economies and accompanied by high reserve requirements.

Poland applied stricter rules on capital-adequacy ratios for new banks and used moral suasion to build capital buffers through retained earnings. It also increased the emphasis on credit eligibility criteria. Until the crisis, its prudential toolkit took the form of recommendations. Recommendation S, for example, sets guidelines on mortgage loans, ranging from rules for evaluating creditworthiness in foreign currency loans to standards for disclosing information to customers on exchange rate risks. These recommendations led to some action in the banking sector before the crisis (by all accounts, supervisory authorities emphasized

compliance with what legally were only recommendations), but they became stricter after the crisis (Kruszka and Kowalczyk 2011). They now include quantitative standards to evaluate creditworthiness (Recommendation T) and more specific loan-to-value and debt service-to-income ratios (in a revised Recommendation S, scheduled to come into effect in December 2011).

#### No use of macroprudential policies

Hungary and the Czech Republic did not take any macroprudential steps before the crisis. In Hungary, the authorities deemed fast credit growth to be sustainable given the country's convergence to EU incomes. Although they had some concerns over foreign currency lending and fast growth in mortgage loans, they did not impose restrictions for political and social reasons. The banking authorities have recently imposed several lending restrictions to reduce systemwide risks in household lending (Banai, Király, and Nagy 2011). Since late 2010, for example, mortgages may not be denominated in foreign currency, and tight loan-to-value limits have been adopted.

Judicious macroeconomic policy with a flexible exchange rate helped the Czech financial system avoid some of the pitfalls of other countries. Although credit growth, especially household credit, was high in some years, the authorities for the most part viewed it to be in line with the country's convergence process (Frait, Geršl, and Seidler 2011). What makes the Czech banking system special is that it did not accumulate lending in foreign currency. Perhaps because the country had established macroeconomic management credibility well before high global liquidity emerged, and thus had low inflation and interest rates, carry-trade opportunities that fueled foreign currency lending elsewhere were simply nonexistent (Mitra, Selowsky, and Zalduendo 2010).

Source: Background papers prepared by country officials for this report.

no authority other than moral suasion. Looking ahead, three challenges are important for emerging European countries: regulatory requirements, a large foreign presence, and liquidity management during a crisis.

- **Regulatory requirements for capital, liquidity, and leverage.** The crisis showed that microprudential regulations for ensuring the safety and soundness of individual financial institutions were inadequate. Many aspects contributed to the buildup of risks, such as misunderstood management of



liquidity risks, inadequate and unbinding leverage limits, and a flawed Basel framework for determining capital requirements for on- and off-balance sheet credit exposures. The Basel Committee on Banking Supervision and the Financial Stability Board—each with European leadership and representation—are considering reforms to tackle these weaknesses, which will be phased in over time. As discussed in Ghosh, Sugawara, and Zaldueño (2011a), emerging Europe is the region most likely to be negatively affected

### Box 3.4: The new European architecture for financial stability

The precrisis EU architecture for financial stability evolved into an institutional framework with three characteristics that the crisis revealed needed to be strengthened:

- *Decentralization.* Before the crisis, financial stability functions were decentralized, based on the exercise of national responsibilities by banking supervisors, central banks, treasuries, and deposit insurance schemes (despite the integration of European finance).
- *Segmentation.* Precrisis financial stability functions were segmented across sectors and countries; for example, supervision of banks and financial conglomerates was conducted separately by the supervisors that licensed each entity.
- *Cooperation.* Voluntary cooperation structures were relied on to bridge the gaps between national responsibilities. These structures ranged from legal provisions (for example, consolidated supervision) to voluntary memorandums of understanding.

Since the crisis, the European Union has undertaken institutional reforms aimed at enhancing the effectiveness of economic, financial, and financial sector policymaking and policy coordination. The two elements of the response are:

- The creation on January 1, 2011, of the European System of Financial Supervision, a framework for coordination of microprudential supervision and for a macroprudential organization for assessing Europe-wide systemic financial risks.
- The creation of a new—and still evolving—sovereign crisis resolution and European economic surveillance mechanism comprising the European Stability Mechanism, a permanent crisis resolution tool, to replace in July 2013 the European Financial Stabilization Mechanism in EU member states and the European Financial Stability Facility in euro area countries facing sovereign debt problems; the Euro

Plus Pact, to strengthen the economic pillar of the euro area; a strengthened economic surveillance framework; and the European Semester, an integrated annual surveillance cycle.

#### The new microprudential framework

Three microprudential supervisory authorities (ESAs) were created: the European Banking Authority, the European Insurance and Occupational Pensions Authority, and the European Securities and Markets Authority. The ESAs should be seen as the next step in the evolution of effective cooperation between national authorities rather than as a centralization of power. Each of the ESAs has the following responsibilities in their respective competencies: establishing a single set of harmonized rules; ensuring consistent application of EU rules; managing disagreements between national supervisors; making recommendations if there is a manifest breach of Community law; creating a common supervisory culture as well as supervisory practices; having full supervisory powers for some entities; ensuring a coordinated response during crises; and collecting microprudential data.

The three new authorities are responsible in these areas for coordinating with the respective national supervisory or regulatory authorities. But the legal and regulatory authority for conducting everyday supervision remains with national authorities. The mandates of the new ESAs therefore do not provide much scope beyond an enhanced coordination role. An important part of the legislation is a safeguard clause specifying that no decision by the ESAs may impinge on the fiscal responsibilities of member states.

#### The new macroprudential supervisor

The European Systemic Risk Board (ESRB) is the European Union's coordinating organization to monitor and assess Europe-wide systemic risks and vulnerabilities. One of the shortcomings of the precrisis architecture was an overemphasis on supervising individual financial institutions

and a lack of attention to systemwide risks. The ESRB will assess and prioritize sources of systemic financial risks and vulnerabilities and will make recommendations for change. To achieve its objectives, the ESRB will collect and analyze relevant information; identify and prioritize systemic risks; issue warnings where risks are significant and make those warnings public; issue recommendations for remedial action and, where appropriate, make those recommendations public; issue confidential warnings of emergency situations to the Council and provide the Council with an assessment of the situation; monitor the follow-up to warnings and recommendations; and cooperate closely with all the other parties to the European System of Financial Supervision, providing the ESAs with information on systemic risks that is required for the performance of their tasks, and developing in collaboration with the ESAs a common set of indicators to identify and measure systemic risk.

The decisionmaking body of the ESRB, the General Board, will have voting members who are also top-level policymakers: the governors of the 27 EU national central banks, the president and vice president of the European Central Bank, a member of the European Commission, and the chairpersons of the three ESAs. There are also nonvoting members. But there is uncertainty about whether this decisionmaking structure is sufficiently empowered and independent. First, because of the size and composition of the board, it will be difficult to reach consensus on risks and mitigation response. Second, the ESRB's recommendations are nonbinding and subject to influence. National authorities are responsible for taking action, but are not obliged to do so. Although the ESRB does have the authority to follow up on its recommendations, its only recourse is to go public. Third, the board is constrained in assessing risks and making recommendations because it does not have uninhibited access or independent authority for obtaining information on financial institutions.

Source: Schinasi (2011).



by the capital requirements proposed in Basel III. Yet these effects are still manageable, and the benefits of greater financial stability are likely to outweigh transitional costs.

One possible area of disagreement between EU members relates to the discussions on capital, liquidity, and leverage regulations. The source of conflict is whether these requirements should be viewed as a minimum standard or as a target to be applied equally by all countries. Bulgaria, Estonia, Lithuania, the Slovak Republic, Spain, Sweden, and the United Kingdom recently argued that EU member states should be allowed to apply more stringent regulations.<sup>25</sup> Given that countries in the European Union might face different initial conditions and different economic cycles, it would seem sensible to allow for differential practices as long as these are not discriminatory and meet the agreed minimum standards. This approach is further supported by the fact that the fiscal implications of bank resolution remain in the purview of national fiscal authorities.

- **Dealing with a large foreign presence:** the home and host challenge. Despite financial integration and the emergence of pan-European financial institutions, supervision of EU groups remains segmented. Where cross-border groups have set up subsidiaries under local host country laws, these subsidiaries are subject to host country supervision and regulation. By contrast, where cross-border branches have been set up, these are supervised by home country authorities. EU laws provide safeguards for the host country supervisors to act only under certain conditions (for example, to protect depositors in emergencies). Moreover, these supervisors retain control of liquidity even in branches (as is the case with domestic institutions, be these domestically owned or subsidiary operations from other countries), and are entitled to being informed by home authorities of relevant information on the whole group.

But this supervision structure, largely unchanged from before the crisis, is complex, with multiple lines of reporting between home and host country supervisors. Nor does it address the misaligned incentive structures of cross-border supervision: it creates supervisory gaps, especially in emerging Europe, and has been associated with a level of mistrust that does not encourage effective cooperation. Host country supervisors depend heavily on the effectiveness of home country supervisors.

Problems to be addressed include:

- Host country supervisors do not have comprehensive means to challenge the home state supervision of a group with branches in its territory. Home state supervisors tend to protect their own domestic banking system, not the host country's.
- There is no binding mediation mechanism arbitrating between home and host supervisors. If a national supervisor fails to take a necessary step, no quick mechanism allows for a collaborative decision on the liquidity or solvency of a group.
- Effective cross-border crisis-management arrangements are lacking.

- There are no mechanisms to facilitate sharing the costs of liquidity support between home and host country authorities, or the costs of recapitalizing or winding down an institution in the host country.

Unless Europe deals with this policy failure on cooperation between home and host supervisors, emerging Europe will continue to struggle in managing the financial implications of foreign banks' operations as their activities ebb and flow with economic and credit cycles.

- **Managing liquidity during a crisis.** A sudden restriction of access to euro and dollar liquidity hurt emerging Europe. Prior to the crisis, domestic and foreign banks in the European Union (but outside the eurozone) relied heavily on the pan-European money markets for managing liquidity. These markets work through a hub-and-spoke system in which large (or money center) institutions gather liquidity at European Central Bank (ECB) auctions and then act as conduits to provide and gather liquidity from small and medium European banks engaged in retail finance.

During the repeated bouts of liquidity crisis since late 2007 and until late 2009, large money center banks became risk-averse and curtailed their lending to what they viewed as higher-risk countries and banks. This lending "triage" led to severe euro liquidity shortages in emerging Europe. While some parent banks of dominant foreign branches and subsidiaries operating in the EU12 provided liquidity, the subsidiaries operating there did not have direct access to ECB liquidity facilities because of the ECB's collateral arrangements and policies. The ECB relaxed its collateral requirements during the crisis, but it did not expand eligibility to securities denominated in non-euro currencies (other than a handful of reserve currencies), though it should also be said that the ECB did support non-euro area countries indirectly by providing liquidity to parent banks in the euro area. Developments since mid-2011 are once again threatening the liquidity needs in Europe's banking system, though central banks are also showing signs of being better prepared to intervene swiftly to address liquidity problems as they arise.

Because of these liquidity problems, IMF-supported programs (in some cases with European Commission and World Bank support) became necessary. Although recent reforms to IMF facilities are likely to help by providing precautionary liquidity to eligible countries through flexible credit lines, the sovereign debt crises in the euro area suggest that no amount of funding can resolve economic and financial stability challenges when the policy environment itself produces indecision and uncertainty. Perhaps the ECB could take on this responsibility in the future; for instance, it could extend swap lines to central banks of noneuro countries in the European Union, akin to what the U.S. Federal Reserve did with Brazil, Korea, and Mexico at the peak of the 2008–09 crisis.

### Manage external imbalances, don't eliminate them

Europe's financial integration represents an enviable development opportunity but with large tail risks. While there is no doubt that unusually liquid global markets during the precrisis period would have strained the toolkit of any government authority (Mitra, Selowsky, and Zalduendo 2010), policymakers

across emerging Europe often did not use all the tools at their disposal. The presumption that a convergence-driven “new Europe” was at hand led to complacency among bankers and bureaucrats. In several countries, deep output falls and a slow climb to recovery are the result. What lessons can be learned?

First, fiscal policy should have done more to counterbalance private sector behavior, even though it was not the source of the imbalances across emerging Europe. To this end, boom-proofing public finance will require more determined action going forward, ranging from the discipline to save the revenue over-performance of boom cycles to, in some cases, a more deliberate effort to counterbalance private sector behavior—if not one-to-one, at least as a signaling device to avoid a buildup of vulnerabilities.

Second, private finance has to be crisis-proofed. Macroprudential tools must play a greater role in the future, and nationally, they should be deployed to limit the buildup of vulnerabilities (even though the experience of countries that used these policies suggests that their effects are transitory, and thus might require frequent modifications). For example, many countries are now taking steps to improve credit quality, an area in which most countries did little in the years preceding the global crisis. In addition, at a supranational level, countries that are less financially and institutionally developed must have recourse to measures that could require special treatment within the single market—and still in conformity with the single market principles. The newer elements of the European financial architecture are, as a result of the current sovereign debt crises, likely to strengthen financial stability. But the initial conditions in the small, open economies at income levels much below the EU average may occasionally call for more proactive interventions. This remains an area for further discussion among EU members.

## Helping markets deal with overindebtedness

The debt challenges faced by Eastern Europe are different from those in the EU cohesion countries, yet the future of these countries is interconnected. Indeed, while at the time of writing the center of gravity has shifted toward Greece, Italy, Portugal, and Spain, spillover effects could still reach east given the interlinkages in Europe’s financial system. It is against this background that policymakers in emerging Europe have to assess whether a debt overhang threatens the recovery. This requires assessing how widespread the use of debt is, in particular among firms and households.

It is worth noting that a debt overhang does not necessarily mean that governments should take over this debt. Removing institutional and structural bottlenecks that act as a disincentive to private debt restructuring efforts is the logical first step (even with no debt overhang). But in extreme cases, debt relief with public resources might be needed to strengthen coordination between debtors and creditors.<sup>26</sup> These public actions, however, are not costless. By intervening, the public sector internalizes the economic implications of default that, in turn, could eventually weaken growth prospects.<sup>27</sup> Moreover, just the hint of a debt relief intervention could lead to a lack of payment discipline (“debtor moral hazard”) or excessive risk-taking (“creditor moral hazard”; box 3.5).

How can one assess if a debt overhang exists? The first step is to carry out what can be viewed as a macroeconomic analysis of balance sheets. This involves both an assessment of external solvency and liquidity indicators, as well as an examination of domestic public and private aggregate exposures.<sup>28</sup> Two questions need answers: Is the country solvent or illiquid? Do the debt overhang risks originate in public or private balance sheets? As a benchmark against which to compare developments in emerging Europe, this chapter uses aggregate external and domestic indicators from emerging markets in East Asia, Latin America, and the EU cohesion countries.<sup>29</sup>

In doing so, one must keep in mind a number of factors that impact debt sustainability. For example, countries with better institutions can sustainably accommodate higher debt levels. In addition, underlying debt dynamics depend closely on growth and interest rates. Thus, the aggregate assessment of debt levels that follows should be looked at as a first approximation, not least because the uncertain economic outlook in the eurozone and the global economy make debt sustainability across emerging Europe more challenging.

But aggregate balance sheets can only take you so far, as they provide no more than a general idea of debt risks. As argued by Albacete and Fessler (2010, p89), “macrodata is of limited use in the analysis of the risks to financial stability ... as it is neither possible to differentiate between households that hold debt and those that do not, nor is it possible to combine data on ... debt with data on ... assets.” The same applies to firms. In this regard, data originating in surveys of firms and households provide a fuller picture of the debt risks faced by a country. What is novel about this chapter is that it also looks at the microeconomic dimensions of debt in emerging Europe: first, by examining the debt incidence among firms and households, as well as the characteristics of those with debt; second, by assessing the combination of risk and shock factors to which firms and households with debt have been exposed during the crisis; and third, by stress-testing the resilience of households’ balance sheets to economic shocks.

This section concludes that much of emerging Europe is different from the worst-off among the EU cohesion countries. At a macroeconomic level, external and domestic public and private balance sheets seem manageable, although a prolonged economic downturn in the European Union and a lagging recovery of the global economy could have significant negative spillover effects. At a microeconomic level, indebted firms and households are a small share of all firms and households, so direct effects on aggregate consumption and investment are likely to be small. This does not mean that the firms and households that borrowed heavily and the banks that lent them money will not face financial distress. (They might.) But the aggregate direct effect on economic activity is unlikely to be large.

This conclusion, sanguine at first sight, must be qualified due to developments in the banking sector. Ratios of nonperforming loans to total lending in the range of 10–20 percent are a serious concern, and the need to husband resources back home could force some foreign banks to retrench their operations in emerging Europe. So far this has not happened, and foreign bank ownership has been a source of stability in emerging Europe in contrast to previous crisis episodes in emerging markets. Since emerging Europe has debt

### Box 3.5: The pros and cons of debt-relief interventions

#### Macroeconomic

A debt overhang affects growth through multiple channels. If the debtor is the public sector, the overhang could require higher taxes to service these debts, which in turn would weaken economic incentives and undermine growth prospects (Sachs 1989). It might also turn funding markets more fragile. Specifically, if rollover risks increase, creditors might want to limit their exposure, concerned that liquidity problems may generate market disruptions.

Further, when the debts are external, the financial integration process that created these obligations might also alter the economic adjustment process. Large external obligations require trade surpluses that are more easily achieved with exchange rate depreciations, but while depreciations help to bring in the necessary foreign exchange, they also have valuation effects. Import compression might generate the necessary foreign exchange resources, but at the expense of limiting domestic demand and deepening a recession. Thus the resulting social and economic costs might require either a debt restructuring or increased access to official financial assistance to mitigate the economic adjustment.

The positive aspect of financial integration, as in Europe, is that it allows countries to spread the adjustment across borders. Foreign investors, for instance, see a decline in profits on their equity holdings. Another feature of emerging Europe is that the foreign financing, which enabled high credit growth, is also the main source of external account adjustment (that is, no change in relative prices through

nominal exchange rate changes is needed).

#### Microeconomic

Evaluating whether there is a debt overhang requires balance sheets to be assessed. Myers (1977) argued that a link exists between debt levels and firms' decisions: if profits from new investments are likely to be used to pay existing creditors, shareholders might choose to pass up what would otherwise be profitable investment opportunities. Similar arguments apply to household investment in home improvement (Melzer 2010), reduced labor supply owing to the wedge imposed on incomes by debt-service obligations (Mulligan 2008), and limited consumption (Olney 1999). Equally, banks that have overleveraged balance sheets and are facing losses might limit new lending. In sum, balance sheet factors might become a drag on banks' ability to restore credit and support the recovery.

The extent to which the balance sheets of firms, households, and banks undermine economic activity also relates to their aggregate impact on the economy. Other firms, households, and banks might pursue investment, consumption, and lending opportunities that economic agents with overleveraged balance sheets cannot. But as seen, debt incidence in emerging Europe is not widespread and thus unlikely to become a drag on economic activity.

Given that the public sector in emerging Europe is not highly leveraged, it is often argued that governments can share the burden imposed by existing debts on firms and households. For several reasons, such

decisions should not be taken in haste.

First, it is important to assess if a debt overhang actually exists and that, absent public financial support, social welfare will decline. In emerging Europe, the case for such debt relief does not appear to be compelling. Even in the countries most at risk, market-based approaches appear adequate to address the borderline debt-overhang cases discussed in this chapter. Also, although the strength of banks' balance sheets in emerging Europe is uncertain, these banks depend heavily on their Western European parent institutions' strength. The provision of public money by emerging Europe's governments is not easy to justify.

Second, the debtor and creditor moral hazard risks need to be gauged. From a borrower perspective, just talk of debt relief weakens payment discipline. From a lender perspective, bailouts might encourage excessive risk-taking. Debt-relief interventions also risk creating opportunities for politicization and capture by special interest groups on a matter that, so far, remains a largely private affair in much of emerging Europe.

Third, the premise that households should be compensated for an increase in debt-service burden due to external economic shocks is not easily justified given the distribution of debt across income quintiles. The analysis suggests that most households have room to tackle economic shocks. If, for political reasons, it is necessary to introduce such programs, it would seem sensible to target scarce public resources by loan size and household income.

concentrated in few firms and households, there is at least the potential for other actors (that is, new banks) to consider entering the financial sector. Given the challenges faced by Europe as a whole, however, there is no question that downside risks remain unusually high. Deleveraging has so far been limited and orderly, but in large measure because growth prospects in emerging Europe remained strong. The challenges within the eurozone are calling into question this assessment and could force parent banks to retrench in noncore markets.

### Economies—solvent and liquid

Several studies have recently analyzed the level of external indebtedness beyond which a country is likely to suffer slower growth and sustainability risks (Reinhardt and Rogoff 2010; Imbs and Rancière 2007). They point to a gross external debt-to-GDP ratio above 60 percent as a vulnerability threshold, although this varies with a country's level of financial development and

institutional strength. For emerging Europe, and in particular new EU members, the sustainable threshold is likely to be above that for a typical developing country. Moreover, it may be more appropriate to look at net external liabilities than at gross external debt as an indicator for a country's external solvency, explicitly taking a country's foreign assets as well as the structure of its liabilities (debt or equity) into account. As noted, any assessment of underlying debt dynamics depends closely on growth and interest rates, all of which currently face high degrees of uncertainty.

Against this background, and compared with emerging markets in past crises that had average net foreign asset positions of -36 percent of GDP, equivalent group positions in 2009 of the EU12 (-70 percent), EU candidates (-57 percent), and EU eastern partnership countries (-62 percent) were weaker (figure 3.13, left panel; these have changed only marginally since 2009). But they compare favorably with EU cohesion countries (-99 percent of GDP). Countries vary of course: net foreign asset positions were -129 percent of GDP in Hungary and -87 percent of GDP in Latvia, but less than -50 percent of GDP in the Czech Republic and Turkey.

While overall external liabilities seem large, net debt positions are not too weak in emerging Europe. With one exception, such positions are better than -60 percent of GDP, reflecting the substantial FDI inflows that characterize emerging Europe (figure 3.13, right panel). Net equity positions decline much more than net debt positions between 2002 and 2009 (figure 3.14). By contrast, net debt positions are the sole source of increase in external obligations among EU cohesion countries. The same is true for Estonia, Lithuania, Slovenia, and, to a lesser extent, Latvia and Hungary, though their net debt positions are not as large as those of EU cohesion countries.

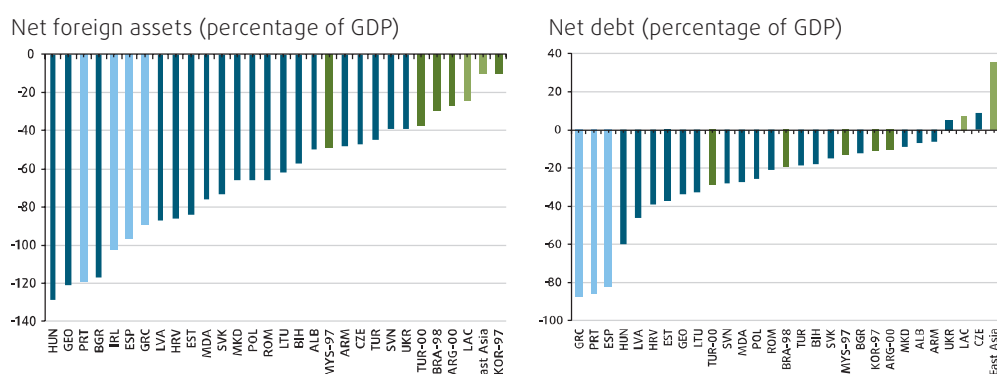
Why is the distinction between net debt and net equity positions important? The distinction matters because different types of liabilities have different burden-sharing features. In good times, the upside from growth accrues to foreign investors (Lane and Milesi-Ferretti 2007). Conversely, the value of equity liabilities falls as the economic performance of capital-recipient countries weakens.

Emerging Europe has another unique feature: a large share of its net debt positions originate in parent banks and firms extending credit lines to their subsidiary operations, due to the tax and regulatory advantages of such credit lines. When subsidiaries in emerging Europe are confronted with financial difficulties, however, not only is the capital base of their subsidiaries able to provide a buffer against negative shocks, but also parent banks and firms have been willing to convert these credit lines into capital. This is, for instance, the experience of banks in the Baltic countries. In sum, support by parent institutions to their subsidiaries in emerging Europe is a long-term strategic decision that depends on the European Union's growth outlook; thus, an integrated region where foreign ownership structures are important cannot be looked at through the metric used in other emerging markets.<sup>30</sup>

What about external liquidity positions? Emerging Europe has large foreign exchange positions that should serve to cushion the risks of external shocks.<sup>31</sup> Apart from the Baltic states, most countries have a ratio of total gross debt liabilities to foreign exchange assets of 3.5 or less—a sizable buffer. Countries

that suffered capital account crises in the past had weaker foreign exchange liquidity positions a year before such crises (figure 3.15). On this metric, the countries most at risk are the Baltic states (though Estonia must now be excluded as it joined the euro in January 2011), but their dependence on one country for most of their foreign exchange liquidity needs (Swedish banks dominate their banking sectors) likely lessens these risks because such concentration facilitates debtor and creditor coordination.

In sum, emerging Europe's external solvency and liquidity positions are in some respects stronger than those of emerging markets that suffered balance of payments or debt crises in the past, particularly taking into account the strength of parent bank support, the particular role of FDI, and the sizable foreign exchange reserves many of these countries have. Institutional developments in

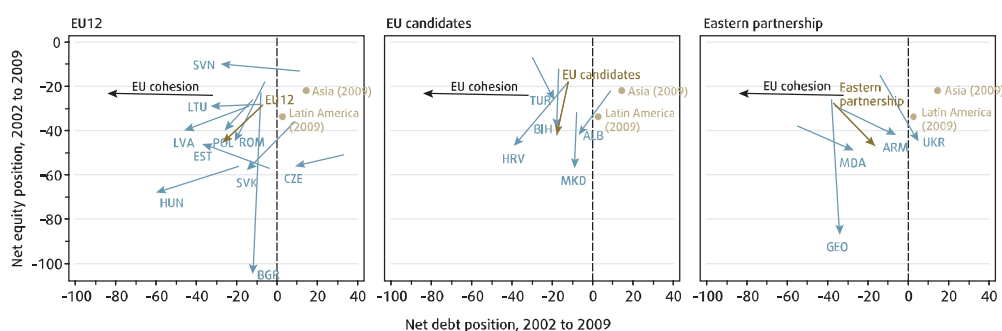


**Figure 3.13: Emerging Europe is solvent, the EU cohesion countries less so**

(net foreign assets and net debt, percentage of GDP, 2009)

Note: The right panel reports net debt, which is international debt assets plus foreign exchange reserves minus international debt liabilities as a percentage of GDP. Ireland is excluded from the right panel as its data are distorted because international mutual funds hosted by Ireland are recorded as positive net debt, even though these resources are not related to the domestic economy. The light blue columns in both panels represent the EU cohesion countries. Similarly, the dark green columns are capital account crises countries in East Asia and LAC (Latin America and the Caribbean) regions in the 1990s and 2000s as well as Turkey in 2000. The light green columns are the 2009 regional averages for East Asia and LAC.

Source: Updated and extended version of dataset constructed by Lane and Milesi-Ferretti 2007.



**Figure 3.14: Greater debt exposure in Southern Europe, more equity exposure in the east**

(aggregate external net equity and net debt exposures, percentage of GDP, 2002–09)

Note: Arrows begin in 2002 and end in 2009. The arrows for each region are median values. The dots are the median values for the reference groups. Ireland is excluded from net debt position (see note for figure 3.13).

Source: Updated and extended version of dataset constructed by Lane and Milesi-Ferretti 2007.

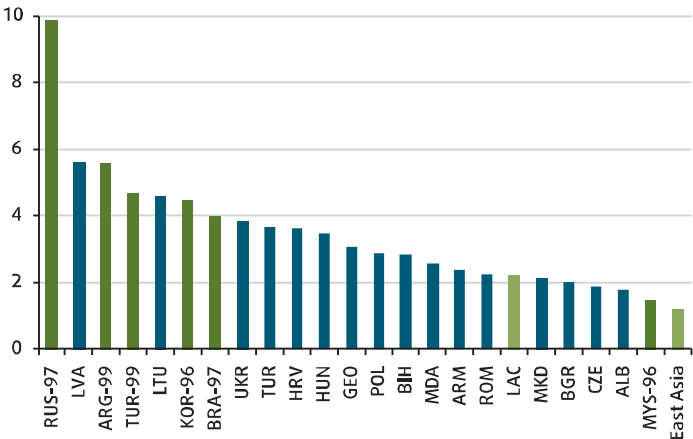
emerging Europe are also a positive aspect of their integration experience. This does not make emerging Europe immune to potential spillovers from troubles in the eurozone (such as a deleveraging on the part of parent banks), but the countries in the east and southeast of Europe would appear to be in more robust external health than their more advanced peers in Europe’s south. Still, concerns remain and debt dynamics are worrying given the lack of growth in the region and the many uncertainties that still affect the recovery of the global economy; in other words, downside risks remain high.

Governments—largely solvent

High public debts can adversely affect capital accumulation and growth by raising inflation, distortionary taxes, long-term interest rates, and policy uncertainty. Reinhart and Rogoff (2010) find that differences in median growth rates of GDP between low-debt countries (less than 30 percent) and high-debt countries (above 90 percent) amount to 2–3 percentage points a year. Kumar and Woo (2010) find that a 10 percentage point increase in public debt ratios is linked to a slowdown in annual real per capita GDP growth ranging from 0.15 in advanced economies to 0.25 in emerging markets. They argue that this difference might reflect less developed financial markets or fragile access to international markets. Emerging Europe is likely to be better off on both counts.

By these criteria, countries in emerging Europe are not generally at risk of a public debt overhang. Many have public debt levels only slightly above the lower threshold of 30 percent: the regional average was 37 percent of GDP at end-2009. Emerging Europe’s public debt ratios are, in most cases, lower than in Western Europe, EU cohesion countries, and countries that suffered economic crises in the recent past (figure 3.16, vertical axis). The one risk country is Hungary, where public debt ratios reached 78 percent of GDP at end-2009. While smaller than those observed among EU cohesion countries (the median

Figure 3.15: Most economies in emerging Europe are liquid (ratio of gross liabilities to foreign exchange holdings, 2009)



Note: Higher columns indicate greater risk of suffering foreign exchange liquidity problems. The dark green columns are capital account crises countries in East Asia and LAC (Latin America and the Caribbean) regions in the 1990s and 2000s as well as Russia in 1998 and Turkey in 2000. The data for capital account crises countries reflect liquidity ratios a year before the crisis. The light green columns are the 2009 regional median values for East Asia and LAC.  
Source: Brown and Lane 2011.



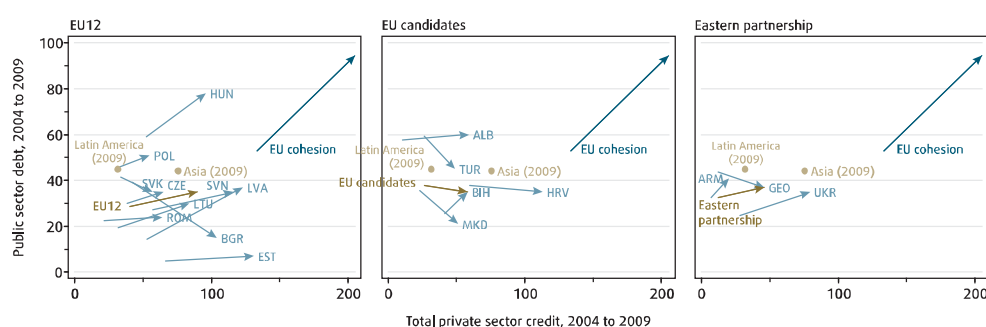
value of public debt among this latter group rose to 95 percent of GDP by end-2010), it remains too high for comfort. Albania and Poland also have borderline high levels of public debt.

In conclusion, even though very few countries are a concern, the capacity to add debt on public balance sheets is limited across most emerging European countries—and perhaps more so given the uncertain outlook for the global economic recovery. Most countries have accumulated debt since the crisis erupted, and a few already have to adopt debt-reducing policies. Fiscal prudence will thus need to be maintained and potentially even strengthened (see also chapter 7).

### Private aggregate debt—mostly manageable

Private sector credit developments reveal the growing financial depth of emerging Europe as it integrated with Western Europe, greater dependence on direct cross-border loans, and the dominant role of relationship-based financing that characterizes Continental Europe. Specifically, the private debt obligations of emerging Europe's countries—as credit through the domestic banking system and direct cross-border loans to the nonfinancial sector—are in some cases larger than in other emerging markets (figure 3.16, horizontal axis). Private sector debt in, for instance, the Baltic states, Bulgaria, Croatia, and Slovenia is higher than in East Asia, though lower than in the EU cohesion countries and other countries in Western Europe. The high credit growth between 2004 and 2009 stems mainly from growing credit to firms (figure 3.17, vertical axis). The countries with the most rapid increase in firm credit are Albania, Bulgaria, Slovenia, and Ukraine.

Total household debt in emerging Europe is below the EU15 average (figure 3.18). At 25–30 percent, the ratios correspond to those in the United States when this country had similar incomes per capita (in real purchasing power parity terms).<sup>32</sup> Overleveraged households are a potential risk, but only in a handful of countries: Croatia, Estonia, and Latvia, and perhaps also in Bosnia



**Figure 3.16: EU cohesion countries have higher levels of public and private debt than emerging European countries**

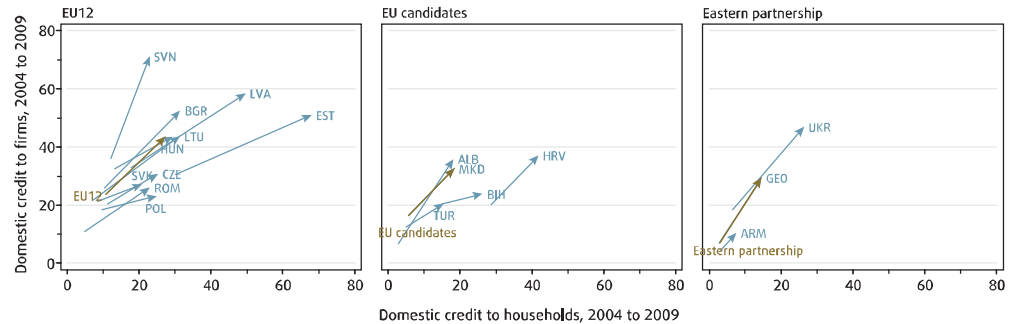
(aggregate exposure of the public and private sectors, percentage of GDP, 2004–09)

Note: Arrows begin in 2004 and end in 2009. The exception is the EU cohesion countries where the data for public debt corresponds to end-2010. The arrows for each region are median values. The dots are the median values for the reference groups. Total private sector credit is the combination of credit through the domestic banking system and credit through direct cross-border flows.

Source: World Bank staff calculations, based on Abbas and others 2011; Beck, Demirgüç-Kunt, and Levine 2000 and 2010; BIS Locational Banking Statistics; European Commission 2011; and IMF WEO.

**Figure 3.17: Credit to firms grew faster than to households in most emerging European countries**

(change in aggregate exposure of firms and households, percentage of GDP, 2004–09)



Note: Arrows begin in 2004 and end in 2009. The arrows for each region are median values.

Source: World Bank staff calculations, based on EBRD Structural Change Indicators; and Beck, Demirgüç-Kunt, and Levine 2000 and 2010.

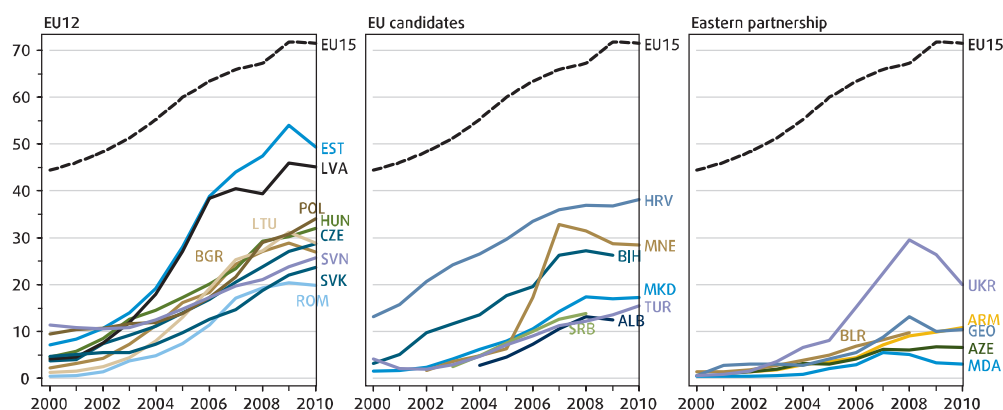
and Herzegovina, Montenegro, and Ukraine (these three countries on account of their lower income levels). Still, margins for additional private debt accumulation are more limited than in the early 2000s.

To conclude, even though emerging Europe's countries have high aggregate private debt exposures, benchmarking financial sector development shows that only a handful have private sector credit-to-GDP ratios above what corresponds to countries at similar levels of economic development.<sup>33</sup> More important, they have much less developed stock and bond markets. This suggests that emerging Europe's experience with high credit-to-GDP ratios might partly reflect the relationship-based financing features of Continental Europe (Wolf 2011). In this context, examining the debt features at the level of firms, households, and banks using microeconomic level data (surveys) can provide useful insights.

### Firms—the stressed are sophisticated

The Business Environment and Enterprise Performance Survey (BEEPS), conducted by the European Bank for Reconstruction and Development (EBRD) and the World Bank every three years, can be used to assess potential debt overhang among firms. The 2008–09 BEEPS was carried out at the onset of the crisis, and provides data on a representative sample of 9,098 firms in emerging Europe.<sup>34</sup> The survey defines use of bank credit as firms that have loans or overdraft facilities.<sup>35</sup>

The survey offers several findings. First, the firms that are most indebted are also more likely to be financially sophisticated. Specifically, in line with the evidence on information asymmetries and credit access (for example, Brown, Jappelli, and Pagano 2009), large firms (with more than 50 employees), firms with audited financial statements, and firms with an export orientation are more likely to use bank credit (table 3.3). The difference is also economically important: about 60 percent of large, audited, and exporting firms rely on bank credit, while only about 40 percent of small, nonaudited, and nonexporting firms do. Also, old and manufacturing firms are more likely to use bank credit, but the difference relative to firms with the opposite characteristics is not large.



**Figure 3.18: Household indebtedness rose in emerging Europe, but remains below EU15 levels**

(total household debt, percentage of GDP, 2000–09)

Note: All types of household debt are included.

Source: World Bank staff calculations, based on data from the European Credit Research Institute (Lending to Households in Europe, 1995–2010); and EBRD Transition Indicators.

**Table 3.3: Firm characteristics and use of bank credit in emerging Europe**

Note: The sample tests report the results of linear independent tests that examine whether credit incidence differs for firms with and without each firm characteristic. \*\*\*, \*\*, and \* denote significance at the 1, 5, and 10 percent levels, respectively.

		Share of firms (percent)	Bank loan (share of firms within category)	Overdraft (share of firms within category)
Small firm	yes	74	0.40	0.44
	no	26	0.60 ***	0.61 ***
Young firm	yes	62	0.42	0.47
	no	38	0.48 ***	0.52 ***
Audited	yes	44	0.55	0.55
	no	56	0.38 ***	0.43 ***
Manufacturing	yes	34	0.49	0.45
	no	66	0.42 ***	0.53 ***
Exporter	yes	26	0.58	0.60
	no	74	0.41 ***	0.44 ***
State-owned	yes	5	0.47	0.49
	no	95	0.44	0.47
Foreign-owned	yes	1	0.40	0.64
	no	99	0.44	0.47 *

Source: Brown and Lane 2011.

Second, emerging Europe's firms still rely heavily on internal financing or retained earnings. The share of fixed investment financed by bank credit during 2007 is small (table 3.3). Seventy-four percent did not rely on debt, either because they did not invest (40 percent) or because they financed their investments without use of bank credit (34 percent). Among the firms that use external financing for investment, the amount of financing (that is the amount of "leverage") increases as firms get more sophisticated. Leverage is moderate to high (meaning that more than 34 percent of investments are externally financed) in large (25 percent), audited (24 percent), and exporting (26 percent) firms. Other characteristics also matter (for example, age and ownership), but

the differences are not as important economically. With this as background, two approaches assess the existence of a debt overhang among firms: a level approach and a risk-shock approach.

The level approach relies on the findings of the literature on aggregate leverage. Coricelli and others (2009) examine balance sheets and income statements for 8,000 manufacturing firms in emerging Europe and establish a leverage threshold—40 percent—above which debt reduces firm productivity.<sup>36</sup> They find that the share of firms with leverage exceeding this threshold is higher in Bulgaria, Latvia, and the Russian Federation (15 percent of all firms in these countries). Taking this threshold as given, the BEEPS data suggest that the share of firms with excessive leverage (moderate to high leverage ratios) has, at about 19 percent, increased only marginally from the Coricelli and others sample (table 3.4).<sup>37</sup> Even among the larger firms, only one in four had either large or moderate leverage, and these firms are more likely to withstand economic shocks. The level approach thus presents a largely reassuring picture: debt incidence among firms is a limited phenomenon and is unlikely to be important in limiting economic activity.<sup>38</sup>

**Table 3.4: Firm debt is held by the financially sophisticated in emerging Europe**

Note: The table reports the distribution of the variable investment loan for subsamples of firms that have and do not have a specific firm characteristic. Chi-square tests report whether the distribution is significantly different for firms with and without each firm characteristic. \*\*\*, \*\*, and \* denote significance at the 1, 5, and 10 percent levels, respectively.

		No investment	Investment share financed by loan (percent)				Chi <sup>2</sup> test
			0	1 - 33	34 - 67	67 - 100	
All firms		40	34	7	8	11	
Small firm	yes	48	32	5	6	10	***
	no	28	38	9	11	14	
Young firm	yes	42	34	6	7	11	***
	no	36	35	8	8	12	
Audited	yes	32	36	8	10	14	***
	no	46	34	6	5	9	
Manufacturing	yes	40	34	7	7	11	
	no	40	35	7	8	11	
Exporter	yes	30	36	8	11	15	***
	no	45	34	6	6	10	
State-owned	yes	27	49	6	8	10	***
	no	41	33	7	8	11	
Foreign-owned	yes	42	35	8	8	8	
	no	40	34	7	8	11	

Source: Brown and Lane 2011.

Combining risk and shock factors augments the level approach. High debt affects future operations and investment if firms are hit by a shock. Whether highly leveraged firms are at risk depends also on the macroeconomic environment in which they operate. Three sources of macroeconomic shocks and their potential impact on the balance sheets of firms are explored: a decline in GDP, a decline in exports, and a rise in exchange rates (which affects unhedged firms with foreign currency loans).

The main conclusion is that financial distress owing to these risk–shock combinations is limited in emerging Europe. Figure 3.19 plots the outcome of all three economic shocks.<sup>39</sup> The figure helps to identify endangered countries that face high risks (due to a large proportion of relatively highly leveraged firms or a large proportion of foreign currency loans) and suffer large macroshocks:

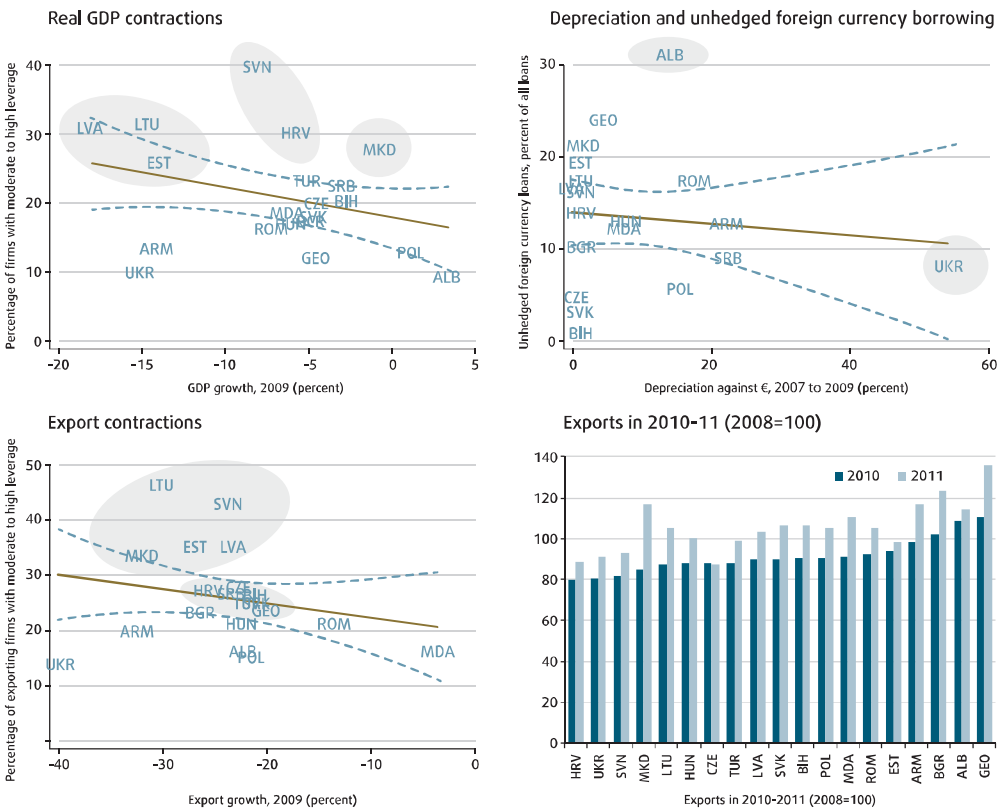
- The top-left panel shows the share of firms with moderate to high leverage ratios (the risk factor) and declines in real GDP in 2009 (the shock factor). The risk region is the upper left corner of the panel: countries that have a large share of overleveraged firms and face a sharp decline in real GDP. By this measure, only firms in the three Baltic states are likely to face financial distress. Firms in Croatia and Slovenia might face financial distress as well, though the income shock they experienced was not as large. As a counterexample, FYR Macedonia is a high-risk country on account of its high leverage levels, but financial distress is unlikely because this economy did not suffer a sharp GDP contraction.
- The top-right panel plots the share of unhedged foreign currency loans (the risk factor) against the depreciation (the shock factor) experienced by each country: the cumulative exchange rate change in 2007–09.<sup>40</sup> The debt overhang zone is at the upper-center and upper-right corner of the panel, showing countries that have a large share of unhedged firms and face a sharp depreciation. Albania seems to be the country most at risk, with a depreciation of more than 15 percent and more than 30 percent of all loans unhedged. Firms in Ukraine, which experienced the sharpest depreciation during the crisis (55 percent), are less likely to be affected due to the low shares of unhedged foreign currency loans.
- The bottom left panel shows the share of exporting firms with moderate to high leverage ratios (the risk factor) and declines in exports (the shock factor). The countries in the upper left corner of the panel are those most at risk, with a large share of overleveraged firms and a sharp decline in exports. Firms in Estonia, FYR Macedonia, Latvia, Lithuania, and Slovenia are the most likely to be experiencing financial distress. In each of these countries about a third of the exporting firms are moderately to highly leveraged, and the decline in exports is pronounced. But financial distress in the tradable sector affects a broader set of countries. For example, Croatia, the Czech Republic, Serbia, the Slovak Republic, and Turkey had a quarter of their export-oriented firms moderately to highly leveraged and faced export declines of about 20 percent of GDP. The speed with which export markets recover will be critical in determining the impact of these trade shocks. Developments in 2010 and 2011 (at least until July) are, in terms of export recovery, encouraging (figure 3.19, bottom right panel).

Households—few indebted and often wealthy

The 2010 EBRD-World Bank Life in Transition survey (LITS), which provides information on 23,525 households for the 21 emerging European countries examined in this chapter, is used to assess the extent of debt overhang among households.<sup>41</sup> This survey includes information on expenditures, household composition, current and past economic activity of respondents, and the incidence and type of bank debt held. Households that own the dwelling they inhabit are asked whether they have a mortgage and, if so, whether it is denominated in local or foreign currency. Households are also asked whether any member has a debit or credit card, and how they responded to the crisis, whether through cuts in consumption and investment or the sale of assets.

As with firms, debt incidence among households is limited. Just 6 percent of households living in a dwelling they own have a mortgage (table 3.5), and only a third of all mortgages are in foreign currency—that is, just 2 percent of the owner-occupied dwellings in the region have a foreign currency mortgage. By contrast, credit cards are used by a quarter of the population. This contrasts with around 40 percent of households in France, Germany, Italy, Sweden, and

Figure 3.19: A few firms in a few countries are at risk in emerging Europe



Note: Error bands (95 percent confidence intervals) are depicted with dashed lines. The shaded countries denote varying degrees of risk. Also, in Estonia's case, the adoption of the euro eliminates the exchange rate risk in euro-denominated loans.  
Source: Brown and Lane 2011; and IMF WEO.

the United Kingdom who have a mortgage, and 53 percent who have a credit card.

The countries naturally have differences. In the EU12 countries, 9 percent of all households have a mortgage compared with 4 percent in EU candidate and 2 percent in EU eastern partnership countries. Credit card use is less frequent in EU eastern partnership countries (10 percent) than in either the EU12 (31 percent) or EU candidate countries (30 percent). Even the EU12 countries reveal large differences in household use of credit. In Hungary, for example, 16 percent of households in owner-occupied dwellings have a mortgage and 55 percent of all households have a credit card. In Lithuania, the corresponding shares are 6 percent and 12 percent.<sup>42</sup>

Although household debt is limited to few households, it is still useful to ask how much they have been affected by the crisis. To answer this, two aspects of household vulnerability can be examined: how debt affects a household's consumption and investment (the level approach), and whether household debt is more prevalent in countries severely hit by the crisis (the risk-shock approach).

The 2010 LITS survey allows an assessment of household vulnerability by examining the impact of household debt on consumption and investment during the crisis (the level approach). The results of the econometric work carried out (Brown and Lane 2011) suggest that households with mortgage debt are more likely to reduce consumption and investment than households without mortgages. Specifically, households with mortgage debt were 3 percent more likely to reduce their consumption, 8 percent more likely to cut the use of services, and 2 percent more likely to sell assets. Interestingly, the impact of mortgage debt is comparable to a loss of income (job loss). Thus the impact of mortgage debt is economically relevant. But, as already noted, the incidence of debt is limited. By contrast, there is no impact of credit card use on consumption or investment, suggesting that credit cards are not used extensively for financing.<sup>43</sup>

When the risk-shock approach presented earlier for firms is applied to households with mortgage debts, the first conclusion is that mortgage debt does not appear to be much of a risk for economic activity (figure 3.20, left panel). Estonia is the only country that experienced a sharp contraction in GDP and has a high incidence of mortgages. But, at 17 percent of all households, even Estonia's debt incidence is low and unlikely to become a drag on aggregate household consumption and investment. Another endangered country is Hungary, but here too mortgage debt is limited (16 percent of all households), and the income shock has not been as sharp. Latvia, the Czech Republic, and the Slovak Republic are also moderately at risk.

The second conclusion is that for countries that experienced exchange rate depreciation, the use of foreign currency mortgages is limited (figure 3.20, right panel).<sup>44</sup> Countries that face a large depreciation and have a large share of households with foreign currency loans are at risk. This includes Ukraine, Hungary, Poland, Romania, and Serbia, although only Hungary has a large share of households with foreign currency mortgages (9 percent).

These conclusions hold even when a broader range of household debt (that is, not only mortgage debt) and economic shocks are considered. As in previous World Bank reports (for example, Mitra, Selowsky, and Zalduendo 2010; Sugawara and Zalduendo 2009; Tiongson and others 2010), the vulnerability of indebted households is assessed by stress-testing individual household balance sheets using economic shocks similar to the worst shocks that these countries experienced from 2007 to 2010. Using household budget surveys, households are tagged as vulnerable if they have to spend more than 30 percent of disposable income on debt service. This is done before subjecting these households to economic shocks. Specifically, the darker shaded areas in the columns represent households that are vulnerable in each income quintile

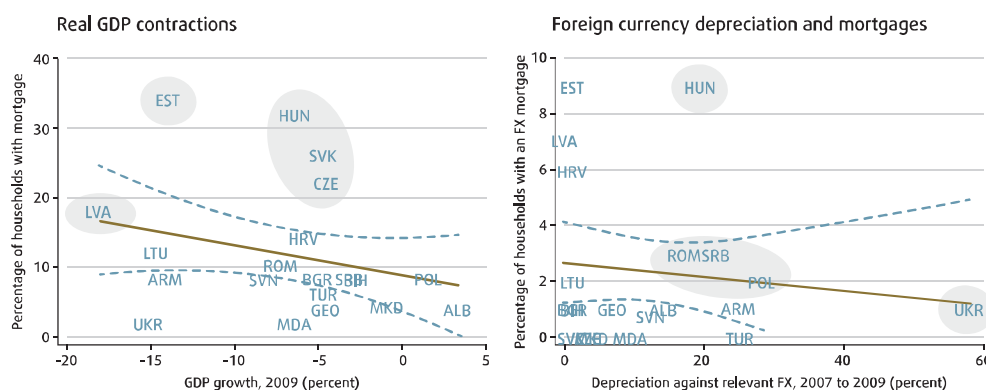
**Table 3.5: Few households in emerging Europe have debt**

	Percentage of Households with		o/w FX Mortgage-Holder (percent)
	Credit Card	Mortgage	
Bulgaria	14.9	3.7	30
Czech Republic	41.4	11.1	0
Estonia	31.0	16.9	50
Hungary	55.4	16.3	56
Latvia	33.6	9.2	80
Lithuania	12.4	5.6	41
Poland	19.0	4.5	37
Romania	12.9	4.8	73
Slovak Republic	40.5	12.8	0
Slovenia	46.9	3.9	19
EU12	30.8	8.9	39
Albania	17.8	2.4	39
Bosnia and Herzegovina	14.9	3.9	16
Croatia	37.5	7.0	85
Macedonia, FYR	33.1	1.7	11
Serbia	21.2	3.5	75
Turkey	57.6	3.2	6
EU candidates	30.3	3.6	39
Armenia	8.6	3.8	23
Georgia	6.7	1.7	58
Moldova	2.4	0.5	0
Ukraine	20.9	1.1	47
Eastern partnership	9.6	1.8	32
Average	26.4	5.9	37

Note: Observations are weighted to account for the varying size of the sampling units within countries. A household is said to have a mortgage if the household owns the dwelling in which it lives.

Source: World Bank staff calculations, based on Brown and Lane 2011.





**Figure 3.20: Only few households in few emerging European countries are excessively indebted**

Note: Error bands (95 percent confidence intervals) are depicted with dashed lines. Relevant foreign currency refers to the dominant currency in which household debt seems to be denominated. For all countries it is the euro, except the Swiss franc for Hungary, Poland, and Slovenia; and the U.S. dollar for Armenia, Belarus, Georgia, Moldova, and Ukraine. Also, in Estonia's case, the adoption of the euro eliminates the risk in all euro-denominated loans.

Source: World Bank staff calculations, based on Brown and Lane 2011.

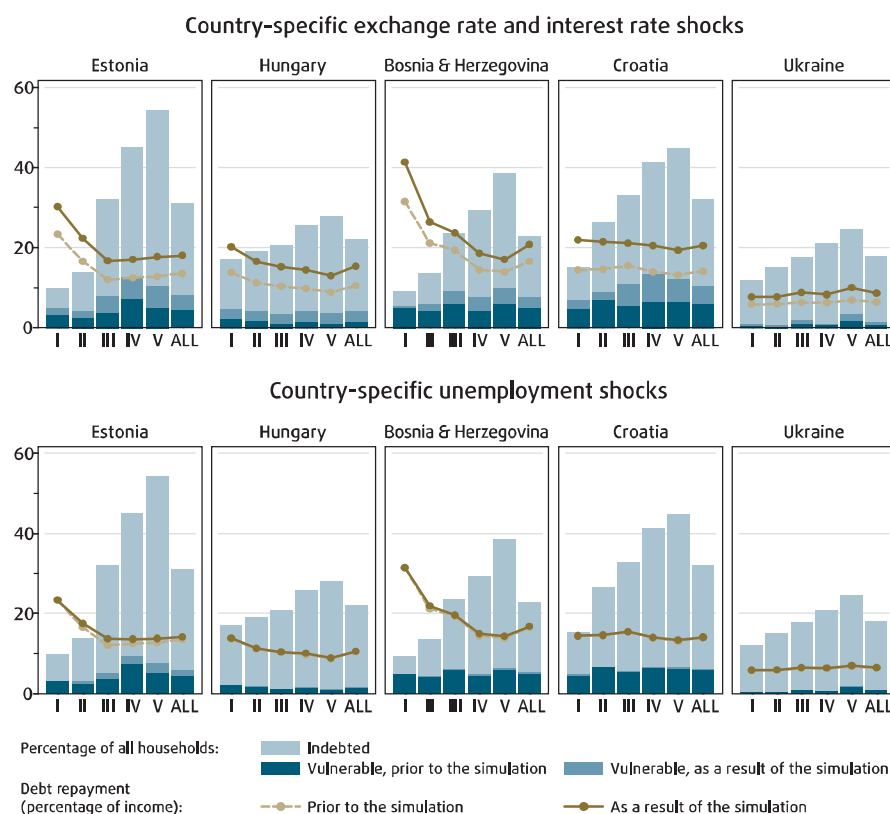
before a household is subjected to an economic shock simulation (figure 3.21).<sup>45</sup> The median debt service is the lower dotted line in the figure. Across all indebted Estonian households, for example, median debt service is 17 percent of income and only 4 percent of all households (or about 15 percent of households with debt) are vulnerable before an economic shock takes place.

Two findings stand out. First, debt service is concentrated in upper-income households. Second, few households have debt. In Estonia, for instance, about 30 percent of all households have some type of debt (the last column in figure 3.21). In other words, debt is not as widespread as it is in Western Europe and the United States.

Next, two shock combinations are introduced.<sup>46</sup> First, the effects of a simultaneous increase in interest rates and a depreciation of the local currency are examined (figure 3.21, top panel). The size of these shocks is based on the highest increase in interest rates together with the largest depreciation in each country over the four-year period from January 2007 through December 2010. Implicitly, countries with fixed exchange rates would not have such a shock (and, in addition, in Estonia's case the adoption of the euro eliminates this risk in euro-denominated loans). Second, the implications of unemployment are estimated by randomly selecting household members who become unemployed (figure 3.21, bottom panel).

The conclusion from these stress-testing scenarios is that households are affected by the shocks, but that debt burden remains manageable. For example, while 4 percent of all households were vulnerable in Estonia before an economic shock is applied, this increases to about 8 percent of all households after the shock. This represents 20–25 percent of all loans to households. Although this is not a figure to be dismissed lightly, the shocks affect only one in every 13 households. In short, this low frequency suggests that household debt is unlikely to become a drag on aggregate economic activity in emerging

**Figure 3.21: Households in emerging Europe can withstand economic shocks**



Note: A country-specific shock means the magnitude of the shock varies by country and depends on the historical development in each country. For example, the unemployment shock in Estonia amounts to a 12 percentage point increase in the unemployment rate while, in Hungary, the increase is only 3 percentage points. The roman numerals refer to income quintiles in each country with "I" referring to households in the poorest quintile.

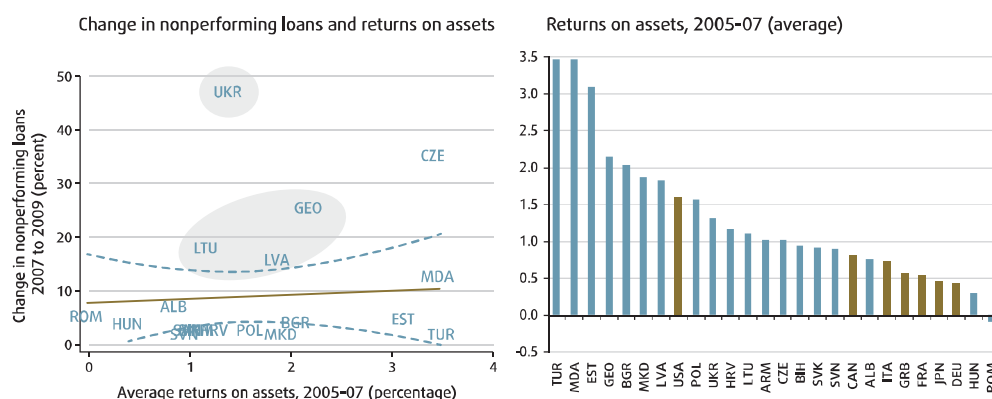
Source: World Bank staff calculation, based on household budget surveys of respective countries.

Europe. And the number of additional households at risk as a result of economic shocks does not appear to be particularly high, suggesting households are quite resilient to the economic shocks being modeled.

### Banks—some troubled, most of them foreign

Even though the previous analysis concludes that debt distress affects only a small proportion of firms and households, for some banks even this fraction can represent a sizable share of their loan portfolio. Nonperforming loans (NPLs) have increased throughout emerging Europe. Thus there may be a temporary drag on credit to the private sector as banks repair their balance sheets.<sup>47</sup>

The health of banks' balance sheets reflects how well they can cope with the credit losses they accumulated during the crisis, an ability that depends on their profit potential. NPLs climbed sharply during 2008–09, rising by over 40 percentage points in Ukraine, for example, and 20 percentage points in Georgia, Latvia, Lithuania, and Moldova (figure 3.22, left panel).<sup>48</sup> In Georgia, Lithuania,



**Figure 3.22: Some banks in some emerging European countries are at risk**

(nonperforming loans and profitability)

Note: Error bands (95 percent confidence intervals) are depicted with dashed lines.

Source: World Bank staff calculations, based on Brown and Lane 2011; and Beck, Demirgüç-Kunt, and Levine 2000 and 2010.

Latvia, and Ukraine the increases in NPLs to precrisis (2005–07) average returns on assets were 1–2 percent—not high, but higher than in most advanced economies (about 1.5 percent in the United States, and 0.5 percent in the United Kingdom and Germany; figure 3.22, right panel).

The ratio of change in NPLs during a crisis relative to precrisis returns on assets provides an indication of a debt overhang affecting postcrisis credit growth.<sup>49</sup> This indicator exceeds 30 for Ukraine, is between 10 and 20 for Lithuania, Hungary, and Georgia, and is just below 10 for Albania and Latvia. In other words, banks in Ukraine will require more than 30 years of precrisis profits to cover the loan losses incurred during the crisis. By contrast, banks in Estonia or Turkey could cover the increase in NPLs with 1 or 2 years of precrisis profits. These calculations do not include recovery rates on NPLs, which are likely to be high; indeed, real estate is the most common collateral used in emerging Europe and such collateral has high rates of recovery (Sveriges Riksbank 2009; Piątkowski and Zalduendo 2010).<sup>50</sup> Sugawara and Zalduendo (2011) describe the case of economic shocks on household debt and the impact of financial stability; while it is not negligible, emerging Europe’s well-capitalized banks provide some comfort.

So will banks’ problems become a drag on economic activity? Repairing their balance sheets might lead to a slowdown in credit growth. Such a deceleration is needed to a degree, given the unsustainably high credit growth rates seen before the crisis. Because many firms and households have no debt, there is at least the potential for further expansion in banking activities. Therefore, if existing banks have difficulties in mending their balance sheets (for example, Greek banks involved in the Balkans), then it is possible that new banks might enter these markets, helping to lessen credit constraints. This depends on the ability and willingness of new investors to exploit these market opportunities. In the end, the economic outlook for Europe as a whole is likely to be the key determinant of the rate at which bank lending in emerging Europe recovers—and, as noted throughout this chapter, current downside risks are particularly high.

### Moral suasion instead of public resources

Even though the evidence presented so far suggests that aggregate debt distress risks are manageable, and governments, firms, and households are for the most part not facing financial distress, those that are could potentially impact the balance sheets of the banking system. Therefore, avoiding the emergence of “zombie banks” remains the challenge going forward. To ensure this does not hamper economic recovery, countries should remove impediments for banks to clean up their balance sheets themselves and continue to use moral suasion to lower NPL stocks (box 3.6).

So far official bailouts in emerging Europe have been limited to domestically owned banks (as in Latvia and Ukraine). The large share of foreign ownership of the banking system has meant that parent institutions (for which emerging Europe still represents a small share of their asset portfolio) have carried out recapitalizations when needed—and as opposed to Western Europe, many banks in emerging Europe are already well-capitalized. Moral suasion may have played a role in parent banks’ willingness to support their subsidiaries. But these foreign-owned banks seem also to have recognized the long-term nature of their investments in the region and its importance as a profit center. In sum, foreign ownership has been a blessing so far, and banking flows in the emerging Europe region are more stable (see figure 3.9, and Ghosh, Sugawara, and Zalduendo 2011a).

If a debt overhang is unlikely, what explains the slow recovery of domestic demand and credit in emerging Europe? First, uncertainty regarding sovereign debts in the EU cohesion countries acts as a disincentive for investment across Europe. Second, the health of parent banks’ balance sheets is unknown as developments in Western Europe’s sovereign debt crises evolve, leading to more cautious credit decisions and a rebalancing of balance sheets. Third, exchange rate regime choices might have contributed to a lower reduction in cross-border flows than in earlier crises in other emerging market regions—an overshooting of the exchange rate has not taken place. But these regimes have also resulted in sharper output adjustment and corresponding income shocks on individual economic actors. Fourth, the recovery of the global economy remains challenged. Fifth, unemployment remains high and remittance flows are still lower than before the crisis, further limiting the recovery of regional domestic demand.

In conclusion, some deleveraging of balance sheets in emerging Europe is to be expected. For the most part, the decline in outstanding credit envisaged in some sectors is unlikely to become a stumbling block to economic recovery. (One exception is the possible retrenchment of the real estate sector in some countries.) Therefore, it follows that the case for debt relief interventions with public financial support is not compelling as fiscal space is limited; the social considerations for such interventions, funded with scarce public resources, are not obvious; and the moral hazard risks are significant and likely to have large distortionary effects. For instance, countries like Hungary—as well as Albania and Poland—already have high public debt ratios, and other countries have entered high-risk zones (public debt ratios of at least 40 percent of GDP). However, a more permanent solution to Western Europe’s public debt problems through sensible write-downs and comprehensive structural reforms is essential for the growth outlook of Europe—and thus emerging Europe—to improve.

### Box 3.6: Facilitating private debt resolution without public resources

Public involvement in resolving debt overhangs should be limited to regulatory measures that facilitate debt restructuring and ensure that an effective institutional framework for debt resolution is in place. Although countries typically have insolvency frameworks capable of dealing with reorganization, bankruptcy, and liquidation, judicial systems can become overwhelmed when, for example, NPLs are high. In such cases, out-of-court voluntary workouts have been effective. And there might be strong disincentives in the regulatory regime for pursuing debt-restructuring efforts. Action on both the regulatory and institutional fronts is needed.

#### Regulatory action includes:

*Eliminating tax impediments to debt restructuring.* Tax laws are designed to curb tax evasion, frequently leading to undue impediments to debt workouts. Whereas appropriate provisions created for NPLs are generally tax deductible, the deductions may have to be reversed, generating a tax cost after certain actions associated with problem loan resolution. Examples include debt forgiveness that is not tax deductible (particularly when it is not part of a court-supervised restructuring); losses in debt-to-equity swaps that might not be tax deductible when the face value of the debt exceeds the value of the equity; and losses when selling a loan below its face value (for example, to a company specializing in distressed asset management) that are not tax deductible. Changes to tax treatment might thus be necessary to expedite debt resolution.

*Ensuring loss recognition by lenders through supervision and fair regulatory treatment of restructured loans.* Problem loans may be provisioned inadequately, in particular at weakly capitalized banks fearing regulatory actions, and in these instances supervisory vigilance on asset classification is essential. Otherwise, lenders will avoid debt resolution,

which would force them to recognize their losses. Regulations will rightly require provisioning against restructured loans, given that such loans are riskier than normal loans, though unduly strict post-restructuring classifications may impede debt resolution.

#### Two areas of action may be considered for institutional arrangements:

*Out-of-court corporate restructuring.* The out-of-court “London approach,” which was developed in the 1970s, has led to what is known as the INSOL (International Association of Restructuring, Insolvency and Bankruptcy Professionals) principles as guidance for multi-creditor workouts. Three of these principles are at the center of these restructuring efforts: minimizing losses to creditors from unavoidable company failures; avoiding unnecessary liquidation through the preservation of employment and productive capacity while the firm is restructured; and seeking ways to provide financial support to companies deemed viable as the workout is concluded. These out-of-court efforts are not a substitute for a well-functioning in-court system; they are a necessary complement. The threat of a court-imposed loss under a country’s insolvency laws is needed to create the incentive for debtors to agree to measures such as asset sales, the dilution of equity, and reduction of management control (Laryea 2010). As examples, authorities in Latvia and Romania have recently introduced reforms to remove obstacles to out-of-court corporate restructuring, allowing “prepackaged” recovery and settlement agreements between debtors and creditors, and introducing flexibility to insolvency proceedings.

*Out-of-court mortgage restructuring.* A similar set of principles can be developed for mortgage debt. The aim is to establish trust between the lender and the borrower and facilitate loan restructuring, rather than foreclosure. A model applied in many

advanced economies is the United Kingdom’s preforeclosure protocol. Its goal is to encourage negotiations between creditors and debtors by setting options on how to restructure loans, such as extending the term of the mortgage, changing the type of mortgage, deferring payment on interest, or capitalizing arrears. Banks are better suited to judge the loan’s long-term viability, and this decision should remain their responsibility, with an independent authority ensuring that proper and fair steps are followed. A particular concern with mortgage restructurings is that they might not involve enough of a reduction in net present value terms. Thus the protocol should set out minimum requirements for restructuring loans, define which restructuring methods should not be pursued (such as long grace periods for insolvent borrowers), and provide guidelines for the regulatory treatment of restructured mortgage loans. Latvia has recently developed guidelines for restructuring mortgage loans (see Erbenova, Liu, and Saxegaard 2011, for a discussion of current developments in Latvia’s mortgage debt restructuring efforts), and Romania has developed consumer debt restructuring guidelines.

Do these out-of-court frameworks work? As already suggested, the success of an out-of-court system of voluntary workouts depends on the ability of creditors to impose losses on debtors. Without the threat of a court-imposed loss under a country’s insolvency laws, debtors have little incentive to agree to asset sales, dilution of equity, and reduction of management control. Indeed, a requirement for an out-of-court process is a credible threat of seizure of assets and liquidation under a normal insolvency or bankruptcy regime. Creditors cannot otherwise force debtors to take part in good faith.

Box contributed by Steen Byskov.

## An enviable development opportunity with tail risks

In the late 1990s, emerging Europe embraced economic integration with Western Europe through the flow of capital, labor, and goods and services. Integration also had a deeper dimension: full membership of the European Union and then entry into a common currency area. Financial integration took place through all types of capital. FDI played a more important role than in other parts of the world, as did banking flows. Abundant global liquidity aided financial deepening as emerging Europe received large financial flows from

richer countries. Given their dependence on Western European capital, it is unsurprising that these economies were hurt by the crisis. As external finance dried up, the resulting income declines and job losses were bigger than in other developing regions. Financial integration contributed to the transmission of a crisis that did not originate in local economic conditions.

So it is sensible to ask: Has financial integration in Europe happened too fast, and has it made economies in emerging Europe more vulnerable instead of vibrant? There is no doubt that gains in incomes and jobs over the two or three years prior to 2008–09 were rapidly lost during the crisis in countries such as Latvia and Ukraine. But a longer view provides a more encouraging assessment. Indeed, even after taking into account the impact of the crisis in the region, convergence in per capita incomes (in purchasing power parity terms) remains impressive. Latvia's real GDP at end-2010 was 22 percent below the peak level reached in 2007, but this country still ranks 24th of 184 countries in terms of convergence to EU15 average incomes since 2000. So, although financial integration led to easy access to foreign funding and overborrowing by firms and households in some countries, it also supported income convergence. In short, Western European savings helped Eastern European growth.

Why is emerging Europe different from other regions such as East Asia and Latin America? The evidence presented in this chapter points to institutional anchoring as the unique strength of the European model of finance for countries that begin their entry into this club. This is related to the European Union. The expectation that institutions will converge to the structures that can already be seen in Western Europe appears to be enough to spur growth. This link between foreign savings and growth has been found to be weak in other parts of the world—it has been difficult to prosper with someone else's money. But emerging Europe is for the most part different. Foreign savings have made possible the pursuit of investment opportunities.

What helped some European economies get more out of such large international financial flows than other countries in the region? The crisis shows that this convergence is an opportunity, not a guarantee. As noted throughout this chapter, excesses and resource misallocation also took place. Thus, to benefit from the institutional-anchoring aspects of EU membership, structural reforms are needed to persuade markets that the vision will become a reality.

The right balance between growth and vulnerability has to be found, and bankers and bureaucrats need to show less complacency toward large external imbalances. The first area of action relates to the need to boom-proof public finances. When economic growth leads to government coffers overflowing, this money should be saved, not spent. In some cases, countercyclical fiscal policies have to offset the vulnerabilities that the closeness to big capital markets inevitably implies. The second area of action concerns the need to crisis-proof private finance. Nationally, this requires greater reliance on macroprudential policies. As seen in the experiences of central bankers and bank supervisors in eight countries of emerging Europe, the effectiveness of such policies may at times be transitory, and regulators have to constantly play catch-up with the eagerness of financial intermediaries to find loopholes in existing prudential

regulations. Also, to be fair, this policy toolkit was not always deployed; for instance, policies to improve credit quality had not been applied until recently.

A final question: In the countries that did not manage capital inflows as well, or where these could be viewed as excessive, is there a debt overhang—a level of indebtedness that risks becoming a drag on investment and economic activity? At a macroeconomic level, the evidence for much of emerging Europe suggests not. Although countries in the region have negative foreign asset positions, their liability structure points to reliance on equity financing that has useful burden-sharing features. Net debt liabilities are in most cases manageable, and some have burden-sharing features given their links to ownership structures. Foreign exchange liquidity also remains, with few exceptions, comfortable. Where this is not the case, the dependence on one Western European economy for funding—for example, Sweden for the Baltic countries—helps to facilitate policy coordination between debtors and creditors. Among emerging Europe's peers, however, some EU cohesion countries look particularly vulnerable, and this could have spillover effects on emerging Europe.

At a microeconomic level, few firms and few households have high debt. This limits the risk of a debt overhang. Most firms and households with debt appear able to withstand severe negative shocks. Government balance sheets are quite healthy. Still, fiscal space is limited. Therefore, at least for now, there is no good justification for using scarce public money to reduce the debt of firms and households.

Nor is there a need to bail out banks at this time. Emerging Europe has many well-capitalized banks that could once again become profit centers for Western European parents. Foreign ownership of the banking system isolated emerging Europe's governments from the financial sector bailouts that were necessary in Western Europe and the United States during the crisis. In fact, foreign banks in emerging Europe took upon themselves the recapitalization of banks that were needed. This is a virtue that should be preserved.

In conclusion, *whether* European finance is unique should not be debated. Nor should it be deplored, and the attributes that make it unique should be preserved. Capital in Europe flows downhill—from richer to poorer countries. It also flows to higher-growth countries. Financial integration is a principal component of Europe's economic convergence engine. Capital inflows have contributed to economic growth and made the host countries in emerging Europe richer—a conclusion that remains valid even after the recent recession. In and near the European Union, investment projects have been financed that would not have been otherwise.

*Why* Europe is different can be debated, but financial development is not the reason. More likely, the expectations of improvements in institutional quality are the crucial element in the foreign savings-growth link—and EU membership serves as an anchor for these expectations. But this positive assessment should not distract from the risks faced by countries at different stages of development and integration. Indeed, there are lessons to be drawn from the diverse experiences of emerging Europe and the EU cohesion countries: excesses are possible and countries must remain vigilant to avoid a buildup of

vulnerabilities. To keep up with the speed of income convergence facilitated by the extraordinary trade and financial integration, and to avoid Southern Europe's current challenges, new and future members of the European Union should pay more attention to the policies and institutions that govern enterprise, innovation, work, and public service. These are the issues examined in the rest of the report.



Answers to questions on page 131

- The prospect of membership in the European Union exerts a powerful policy and institutional pull, making Europe unique and strengthening the link between foreign savings and economic growth.
- European economies that managed to “boom-proof” public finances and “crisis-proof” private financing without resorting to the costly self-insurance seen in Asia benefited from foreign financial flows.
- In emerging Europe, treasuries, enterprises, and households do not face a debt overhang, but in the eurozone’s periphery this problem is acute, posing a danger for banks everywhere.



## Chapter 3: Annexes

**Table A3.1: Foreign savings and growth—EU12 and EU candidate countries are different**

(testing the role of EU proximity and investment-driven versus savings-substitutions effects)

Dependent variable is growth in GDP per capita (PPP terms)	EU proximity		Is it investment or savings substitution? Mostly investment!	
	3 emerging Europe groups	2 emerging Europe groups	3 emerging Europe groups	2 emerging Europe groups
Current account balance (CAB)	0.044	0.047	0.079	-0.107
	0.053	0.053	0.061	0.071
EU12 x CAB	-0.245**			
	0.101			
EU candidates x CAB	-0.124**			
	0.062			
EU 12 and EU candidates x CAB		-0.165**	-0.085	-0.141**
		0.077	0.059	0.062
EU eastern partnership x CAB	0.485***	0.471***	0.495***	0.445***
	0.135	0.130	0.178	0.129
Investment			0.318***	
			0.068	
Savings				0.228***
				0.066
Observations	584	584	584	584
Number of countries	88	88	88	88
p value of Hansen statistic	0.204	0.204	0.188	0.062
Number of instruments	45	40	49	49

Note: Other growth determinants included (but not reported) are population growth, educational attainment, trade openness, and the relative price of investment goods. Robust standard errors are reported below each point estimate. \*\*\*, \*\*, \* denote significance at the 1, 5, and 10 percent levels, respectively.

Source: Stojkov and Zaldueño 2011, table 5.

**Table A3.2: EU membership as an anchor for institutional development**

(testing the role of EU proximity and investment-driven versus savings-substitutions effects)

Dependent variable is growth in GDP per capita (PPP terms)	Financial development			Financial frictions (institutional development)		
Current account balance (CAB)	0.032	0.028	0.029	0.019	0.031	0.016
	0.034	0.039	0.040	0.038	0.057	0.041
EU 12 and EU candidates x CAB	-0.164***	-0.169***	-0.169***	-0.674**	-0.735***	-0.505*
	0.051	0.057	0.060	0.255	0.260	0.264
EU eastern partnership x CAB	0.488***	0.477***	0.476***	0.498***	0.429***	0.499***
	0.082	0.101	0.107	0.086	0.095	0.074
CAB x dummy for financial development in top two quartiles		0.006				
		0.049				
CAB x dummy for financial development in top quartile			-0.025			
			0.077			
CAB x dummy for institutional development in top two quartiles					0.027	
					0.075	
CAB x dummy for institutional development in top quartile						-0.037
						0.055
Observations	329	329	329	208	208	208
Number of countries	88	88	88	59	59	59
p value of Hansen statistic	0.305	0.567	0.269	0.511	0.598	0.720
Number of instruments	37	46	46	37	46	46

Note: Other growth determinants included (but not reported) are population growth, educational attainment, trade openness, and the relative price of investment goods. Robust standard errors are reported below each point estimate. \*\*\*, \*\*, and \* denote significance at the 1, 5, and 10 percent levels, respectively.

Source: Stojkov and Zaldueño 2011, table 6.

## Notes

- 1 Emerging Europe includes all the countries integrating into the European Union, politically or economically: the 2004 and 2007 entrants to the EU (the “new” member states or the EU12), the EU candidate countries, and the EU eastern partnership countries in the former Soviet Union. The EU12 comprises Bulgaria, Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, the Slovak Republic, and Slovenia; data for Cyprus and Malta are not always available. The candidates are the Balkans (Albania, Bosnia and Herzegovina, Croatia, Kosovo, FYR Macedonia, Montenegro, and Serbia) plus Turkey. The EU eastern partnership covers Armenia, Azerbaijan, Belarus, Georgia, Moldova, and Ukraine. This chapter refers to Greece, Ireland, Portugal, and Spain as the “old” EU cohesion countries, and the EU15 comprise Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden, and the United Kingdom.
- 2 There are differences within each country group. Estonia and Latvia, for example, relied heavily on Nordic banks, but at the peak of the crisis in Latvia these banks accounted for a smaller share of banking system assets: 90 percent in Estonia and 60 percent in Latvia. While Nordic banks have maintained their exposures, banks in Latvia that relied on wholesale funding sources (delinked from parent-bank ownership structures) and on nonresident deposits were more vulnerable during the crisis. See Mitra, Selowsky, and Zaldueño (2010) for a full discussion.
- 3 Private capital might flow downhill, but it is redirected to the accumulation of foreign exchange reserves, which in effect is equivalent to capital flowing uphill; it is not absorbed. Absorption would take place only if imports expand or the domestic resources devoted to producing exports are reduced, in other words, if net capital flows match current account deficits.
- 4 This is known as the allocation puzzle, posed by Gourinchas and Jeanne (2007).
- 5 The country acronyms for figure 3.4 and all subsequent figures and tables are: ALB, Albania; ARM, Armenia; AZE, Azerbaijan; BGR, Bulgaria; BIH, Bosnia and Herzegovina; BLR, Belarus; CAN, Canada; CZE, Czech Republic; DEU, Germany; ESP, Spain; EST, Estonia; GBR, Great Britain; GEO, Georgia; GRC, Greece; HRV, Croatia; HUN, Hungary; IRL, Ireland; ITA, Italy; JPN, Japan; KSV, Kosovo; LTU, Lithuania; LVA, Latvia; MDA, Moldova; MKD, FYR Macedonia; MNE, Montenegro; POL, Poland; PRT, Portugal; ROM, Romania; SRB, Serbia; SVK, Slovak Republic; SVN, Slovenia; TUR, Turkey; UKR, Ukraine; and USA, United States.
- 6 A similar argument is made by Prasad, Rajan, and Subramanian (2007a and 2007b), Abiad, Leigh, and Mody (2009), and EBRD (2009) for all transition countries.
- 7 A few caveats before outlining the findings. The countries of emerging Europe have a limited economic history as market economies since central planning. In addition, transformational recessions dominated the early years of transition. As a result, empirical work on these countries is difficult, and for the growth analysis reported here, emerging Europe covers only three four-year periods between 1997 and 2008. Moreover, the global crisis interrupted the progress of these countries over the past decade and this needs to be captured in the analysis. Finally, the verdict on financial integration would be less sanguine in relation to the EU cohesion countries, in particular countries such as Greece, where structural and fiscal weaknesses were papered over with foreign borrowing in the aftermath of the euro’s introduction. These qualifications notwithstanding, the evidence provides an encouraging story on the merits of Europe’s financial integration, but provides a warning that its tail risks are ignored only at considerable peril. The empirical work for this section can be found in Stojkov and Zaldueño (2011).
- 8 For most emerging markets the usual explanation is that the absorptive capacity of these countries remains limited despite the availability of financing and, as a result, foreign savings trigger a real overvaluation of the currency. In turn, this weakens the profitability of investment and results in consumption booms.
- 9 See Stojkov and Zaldueño (2011).
- 10 In the fictional television saga *Star Trek*, smaller spaceships cede control to large spaceships or space stations upon approach, and are pulled into docking stations by a powerful “tractor beam.”
- 11 Two approaches yield similar results. The first excludes countries with growth rates that are one standard deviation above the precrisis average in each of the three four-year periods in our sample. This excludes one or two periods for countries that experienced sharp reversals in real GDP in 2009 and eliminates (somewhat mechanically) what could be referred to as the unsustainable effects of foreign savings on growth. The countries excluded are Albania, Estonia, Latvia, Lithuania, Montenegro, and Romania. The second approach excludes countries that have external imbalances that are one standard deviation above the average; many of the same countries are excluded.
- 12 See Mitra, Selowsky, and Zaldueño (2010) for a discussion of the challenges faced by the monobank systems of transition countries in the 1990s.
- 13 The IMF’s AREAER (IMF 2010) is aggregated into three groups of countries: group 1 (flexible or independent floating): Albania, Armenia, the Czech Republic, Moldova, Poland, and Turkey; group 2 (intermediate, including basket, peg within bands, crawling peg, crawling band, and managed floating): Azerbaijan, Belarus, Croatia, Georgia, Hungary, FYR Macedonia, Romania, Serbia, the Slovak Republic, and Ukraine; and group 3 (fixed, which includes countries with no legal tender, currency boards, and conventional pegs): Bosnia and Herzegovina, Bulgaria, Estonia, Latvia, Lithuania, Montenegro, and Slovenia. Both de jure and de facto classifications of these choices are used, but the conclusions are similar. To make the presentation simpler, only the de jure classification results are discussed. Following Tsangarides (2010), alternative definitions of periods of interest are used. The regime in place at end-2007 is assumed to remain valid in the two years reported in the figures.
- 14 This arises from faster productivity growth in the tradable goods sector than in nontradables. Wages are determined in the tradable goods sector in line with productivity, and hence unit labor costs in the economy as a whole increase, causing a real appreciation.
- 15 The literature on the impact on credit is more mixed; De Haas and others (2011) find that foreign banks constrained credit more than domestic banks while Barba Navaretti and others (2010) find the opposite. The distinction between supply and demand factors remains a challenge and, as suggested by figure 3.9, heterogeneity across emerging European countries will likely complicate a definitive assessment.

- 16** In early 2009, several international organizations and the European Commission created what became known as the Vienna process: a forum for countries with IMF-supported programs to exchange views on economic conditions with the primary banking groups involved in their countries as well as with banking supervision authorities of both the host and home countries. This process included legally nonbinding agreements in which banks committed to maintain their exposures in the countries involved. While it can be argued that banks already had strong incentives to remain in the countries concerned as a result of the long-term nature of their investments in the region, the forum facilitated exchange of views and instilled confidence in the economic programs being implemented with international financial support.
- 17** Allen and others (2011) highlight this feature—what Mitra, Selowsky, and Zaldendo (2010) refer to as golden handcuffs.
- 18** A similar argument is put forward by Lane (2010).
- 19** Purfield and Rosenberg (2010) put forward a similar argument for the Baltic states.
- 20** Some countries have experimented with dynamic provisioning rules. Spain, for example, requires a buildup of capital buffers when credit growth exceeds certain thresholds. Note, however, that these policies succeed in increasing buffers but appear to have a less clear impact in containing credit growth itself.
- 21** The use of high rates of reserve requirements is not discussed because, although quite common in some Balkan countries, it represents a monetary policy tool.
- 22** It is difficult to estimate the impact of these measures on the health of the financial system and the degree to which they mitigated the negative impacts of the subsequent financial collapse. One attempt in this direction is a recent paper by Polgár and Zdzienicka (2010) where the authors attempt to assess the impact of different macroprudential policies on subsequent credit growth or lending in foreign exchange.
- 23** This subsection draws on Schinasi (2011).
- 24** Similarly, euro area and EU leaders have introduced reforms to establish permanent sovereign debt crisis-resolution and financing mechanisms, as well as a pact aimed at improving European macroeconomic performance, competitiveness, and governance. In the meantime, the sovereign debt crises are being managed with temporary EU and euro area financing facilities and the resources of the IMF.
- 25** See Tait, Masters, and Braithwaite (2011).
- 26** Creditors might, for example, have no incentive to take part in debt-restructuring efforts because they would prefer to be repaid on existing lending terms; in doing so, however, they negatively impact the region's recovery.
- 27** Recent government interventions—in Ireland most prominently—have greatly raised public debt, burdening economic activity.
- 28** The section draws on Brown and Lane (2011), which provides a framework for assessing debt overhang, and Sugawara and Zaldendo (2009 and 2011), which examines the stress-testing of household balance sheets.
- 29** In this section East Asia comprises Indonesia; the Republic of Korea, Malaysia; the Philippines; Taiwan, China; and Thailand. The LAC region comprises Argentina, Brazil, Chile, Colombia, Ecuador, Mexico, Peru, and Uruguay.
- 30** No doubt this positive aspect has its own risks, and what will happen as a result of ongoing developments in the eurozone is a concern (such as risks of added deleveraging). But so far the behavior of parent institutions has been a plus.
- 31** The bulk of external debt liabilities in euro area countries is denominated in euro, and these countries have access to ECB liquidity facilities. Thus, high gross debt and low foreign exchange reserves are more viable options than in countries outside a monetary union.
- 32** Historical comparisons have limitations. For instance, financial innovation might enable agents to carry greater debt burdens. This is why we complement the analysis by stress-testing the balance sheets of households in emerging Europe.
- 33** Chapter 5 reports the results of a benchmarking exercise similar to Cottarelli, Dell'Ariccia, and Vladkova-Hollar (2005). It also carries out such benchmarking for the level of stock market development. The main conclusion is that in a few emerging European countries (after controlling for structural features), private sector credit is above the levels of other countries at similar stages of development. By contrast, stock markets are extremely underdeveloped. The extent to which this might simply be a reflection of differences in the importance of relationship-based financing is a subject for further research.
- 34** As noted in Mitra, Selowsky, and Zaldendo (2010), concerns that the survey might be contaminated by the early effects of the crisis are not supported by the data. Although the average complaint level across all dimensions of the business environment rises in 2008 relative to 2005, it is close to the 1999–2005 average and to the level observed in nontransition economies. By contrast, the 2008 complaint level for problems related to finance remains similar to that in the 2002 and 2005 BEEPS surveys. This evidence would suggest that the responses from the last BEEPS survey should be interpreted as on the eve of the crisis rather than in its early stages.
- 35** The BEEPS survey does not include sampling weights, but as the surveyed sample size across countries accounts for country size, and industry and size quotas were set so as to get a representative sample within countries.
- 36** Some perception surveys highlight that respondents say they have more difficulties servicing their debts, but this does not really mean that they are facing a debt overhang that would require debt restructuring or debt-relief interventions.
- 37** Roughly 9,000 firms are covered in the BEEPS 2008–09 round. Of these, 4,667 firms report that they have a loan (roughly 50 percent). Among these firms, 3,364 report positive leverage due to 2007 investment and 1,303 do not. Thus at most an additional 1,303 of the 9,000 firms in the sample could also be overleveraged.

- 38** More detailed information for the 24 countries in emerging Europe examined in this section is simply not available—thus the reliance on survey information. However, the analysis is consistent with earlier World Bank work (Mitra, Selowsky, and Zalduendo 2010) using data from both Datastream and Bloomberg on nonfinancial corporate leverage and on debt service coverage ratios. Specifically, debt and debt service ratios among nonfinancial corporates are not high when compared with the levels observed in past capital account crises events (see tables 3.3 through 3.6 in the referenced report). The drawback of such data is that they only cover large, listed firms (and in a handful of countries) in the emerging Europe region.
- 39** The regression lines and corresponding confidence bands only depict the relationship between the indicators on each axis. Identifying endangered countries requires matching high-risk and high-shock countries.
- 40** Of course, some countries have experienced no adverse depreciation shock given their choice of exchange rate regime. This is a potential source of risk in some countries. For the case of households, Sugawara and Zalduendo (2009 and 2011) carry out stress-testing exercises that assume sharp changes in exchange rates even in countries that have fixed exchange rate regimes. Even in such cases the impact remains for the most part manageable.
- 41** The LITS dataset includes sampling weights to account for differences in the ratio of sample to population size across countries and for sampling biases within countries. The data enable a representative analysis of debt incidence.
- 42** The table suggests very low levels of debt among households in the region. But how good are these surveys? We explored central bank information and three different sources of household budget surveys: official household budget surveys, the European Union Statistics on Income and Living Conditions, and the LITS. Overall, the data seem to be consistent though some indicators are unclear. For instance, what is understood by a foreign currency mortgage now that Slovenia and the Slovak Republic have adopted the euro remains an open question. We also carried out some back-of-the-envelope calculations. For example, private sector credit to households in Ukraine amounts to some \$40 billion (or 25 percent of GDP), of which mortgage debt amounts to 14 percent of GDP. Because only about 250,000 of 13 million households have mortgage debt (2 percent of all households living in a dwelling that they own), this would imply an average mortgage loan size of about \$90,000 at most. These surveys do not include consumer credits. In sum, even though there are some discrepancies between different household budget surveys and the LITS, they do not appear to be large enough to eliminate the conclusions presented in this chapter.
- 43** Respondents are asked whether during the crisis they reduced consumption of goods (food, luxury goods, alcoholic beverages), cut the use of services (phone, utilities, health insurance), or sold assets. Such behavior is then linked to the household's use of bank debt (credit card, mortgage debt) after controlling for other household characteristics (income, education level, employment type) and a range of economic shocks (job loss, income reduction, closing of a family business, reduction in remittance flows).
- 44** Unlike Brown and Lane (2011), we use the depreciation relative to the foreign currency that is most common in each country.
- 45** Given the concentration of debt in upper-income quintiles, this vulnerability threshold overestimates households at risk. Another metric, used in Sugawara and Zalduendo (2011), is known in the literature as the financial margin (are households unable to maintain subsistence consumption levels?). It also suggests that household over-indebtedness is not widespread.
- 46** A detailed discussion of the shocks methodology can be found in Sugawara and Zalduendo (2011) for the case of Croatia. This paper also includes an assessment of arbitrary exchange rate shocks.
- 47** The analysis depends crucially on the quality of the official NPL statistics. For example, one concern could be that Albania has seen only a small increase in NPLs despite having about a third of foreign currency loans and experiencing a sharp depreciation.
- 48** Excesses have occurred, as noted. Thus the sectors to which resources are channeled will be quite important in the strength and sustainability of the recovery.
- 49** This is the approach followed by Brown and Lane (2011).
- 50** Although real estate prices have declined, recovery rates are higher than for movable collateral.

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## Chapter 4

### Enterprise

Mr. Rossi (not his real name) owns a small mechanical firm in Northern Italy. The company repairs valves and other components for manufacturing plants, serving mostly the agro-processing businesses in the region. Mr. Rossi's father started the company more than 40 years ago and it remains a family-run enterprise with five or six employees and some family workers.

The business is profitable. But it has not grown since its first few years. When asked why, Mr. Rossi answers: "Do you know what I would have to deal with if my business employs 40 people? To start with, my workforce would be unionized by law. I would have to employ 'a socially useful worker.' The tax police and other government agencies like the labor safety agency would enforce stricter controls. I pay most of my taxes and I try to be current with the health and safety norms, but how much would this additional scrutiny cost? I would have to spend days running after the inspectors and I am sure that they would find something wrong. And to be frank, in family-run companies like mine, it is common to pay overtime in cash. We are happy because this costs 50 percent less than paying through the official payroll, and our workers are happy to get some extra cash."

In Italy one out of two workers is employed by a company with fewer than 10 employees. In Greece the number is six out of ten. When the cost of dealing with the government is high, many businesses choose to stay small. Firms tend to be small in countries such as Sweden too but, as this chapter shows, for different reasons and with starkly different economic consequences.

- What does Europe expect from its enterprises?
- How have European firms done in an enlarged Europe?
- Why did some parts of Europe do better than others?
- Which government policies help enterprises do better?



This chapter assesses the performance of European enterprises over the past decade, asking and answering four questions:

- **What does Europe expect from its enterprises and do they fulfill these expectations?** Enterprises in Europe are expected to generate new employment, make jobs more productive, and export a large share of their output. European enterprises have generally delivered on these expectations, though recently there have been signs that in some parts of Europe—notably the south—enterprises are failing to deliver two or more of these three goals.
- **How have European firms done in an enlarged Europe?** While regional discrepancies exist, European firms benefit from a bigger and more diversified market. Enterprises in the new member states have become part of the pan-European supply chain, helping them restructure their production systems and increase their exports. Many Western European enterprises responded well to the growing competition in global markets (especially from East Asia) by investing in emerging countries in Europe and moving parts of their business eastward. However, Southern Europe has neither attracted investment nor taken advantage of the offshoring opportunities presented by cheaper eastern economies.
- **Why did some parts of Europe do better than others?** This question is answered along two perspectives: geographic (a three-speed Europe); and the benefits and drawbacks of foreign direct investment (FDI), offshoring, and lower quality of regulations. Countries with more efficient regulatory systems did best in increasing productivity. This helped them become internationally competitive, raise exports, and sustain job creation. These countries had entrepreneurial profiles that were better suited for ever more integrated European markets. In particular, they had a critical mass of large enterprises. Regulatory arrangements that made complying with laws easy and did not penalize enterprises that grew, as well as supporting policies that attracted foreign investors, were most important in helping enterprises balance social responsibility at home and competitiveness abroad.
- **What is the relationship between business regulation and enterprise growth?** The answer is a little different looking east (emerging Europe) or west (Continental and Northern Europe, and Southern Europe). In advanced Europe, reducing the regulatory burden on firms increases their productivity and brings about a size and sector distribution of enterprises that is most conducive for a single European market. An efficient—not necessarily lighter—regulatory framework is needed for firms to reach the minimum size required to operate internationally, especially to attract FDI. In emerging Europe governments can also support enterprise through improved infrastructure and better access to credit to finance investments, which are common features of the best-performing countries.

In short, an economic model that requires enterprises to be socially responsible can be compatible with a vibrant private sector if it is supported by a simple and efficient regulatory framework. Not all countries in Europe have managed to strike this balance. Regulations still impede enterprises in some countries, preventing businesses from taking advantage of a more integrated Europe. Nevertheless, this chapter concludes that outside the EU15 southern states,

Europe's enterprises have largely delivered what was expected of them by their workers, owners, and governments.

## What does Europe expect from enterprise? Jobs, value added, and exports

Firms may be more integrated with the social fabric in Europe than in any other part of the world. Private enterprises are not only held accountable by shareholders for profits, but also held responsible by society for the social and environmental consequences of their actions. This is reflected in regulations that stress such consequences more than in other regions: labor regulations that protect the rights of workers;<sup>1</sup> a taxation system that supports generous welfare policies;<sup>2</sup> and licensing and permitting regimes that control access to specific activities and verify adherence to strict codes and norms.

In sum, firms are expected by societies to create jobs and protect the environment, by shareholders to generate profits, and by governments to pay taxes and—if they are sizable—to generate exports. Accordingly, this chapter assesses the performance of European enterprises using three criteria:

- **Jobs.** Enterprises contribute to economic growth by generating employment. About three of four jobs in Europe are created by enterprises,<sup>3</sup> and firms are given a specific social role: reducing unemployment.
- **Productivity (value added).** Enterprises contribute to growth by adding value. An enterprise's contribution to aggregate growth is most easily measured by labor productivity growth: increases in value added per employee. Productivity is not a bad proxy of profitability.<sup>4</sup>
- **Exports.** The third performance indicator of an enterprise is its export propensity (the likelihood a firm will export), which proxies its capacity to identify foreign markets where it can successfully place its products. Export propensity measures a firm's ability to compete on an international scale and, taken in aggregate, measures the competitiveness of an open economy.

While pursuing these objectives, firms in Europe must comply with regulations that, while reflecting society's expectations, affect their performance by generating direct costs—for example, through tax or labor contributions and payments for licenses and permits. Regulations also affect performance by influencing investment decisions. Similar regulations can have different impacts, depending on the way they are enforced. Many well-designed regulations have a negative impact due to poor implementation.

The quality of the design and implementation of regulations across Europe can be assessed with the World Bank Doing Business indicators as proxies. These indicators measure the quality of regulations (such as the burden of tax systems, rigidity of labor laws, regulations affecting entry and exit, ease of access to finance, and enforcement of contracts), based on the experience of users. They allow comparisons across countries and over time. In particular, the "time and motion" indicators measure the steps that enterprises must take to comply with business regulations—in number of procedures, time, and money spent.<sup>5</sup>

Europe overall has heavier regulations than other regions, but intercountry variance is considerable. Northern and Continental European countries have better regulatory frameworks than Southern or Eastern European countries. Sweden, Finland, and Norway do better than the rest of Europe in balancing the quantity and quality of business regulations and are in line with the most advanced countries in the world thanks to the efficiency of their administrative systems, which makes compliance less burdensome.

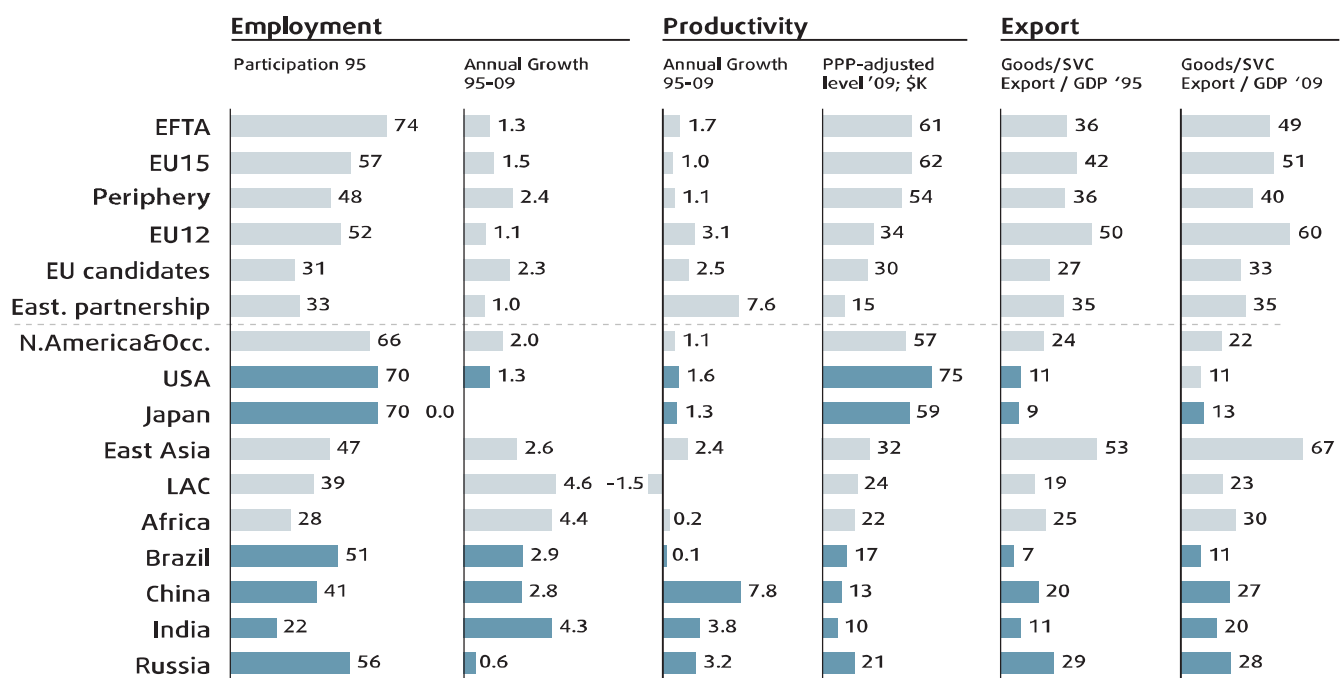
This chapter assesses the likely impact of the regulatory framework on how enterprises perform, measured by employment, productivity, and exports. It looks deeper than the aggregate indicators of an economy's performance, employment growth, productivity growth, and total share of exports in GDP and looks into more disaggregate elements of successful firm performance, such as firm size and ownership.

The investigation finds that performance depends on the characteristics of a firm such as its size, ownership structure, and age, as well as country-specific factors related to the environment in which it operates. It focuses on the regulatory framework among the country factors, but also considers the amount of credit available to the private sector, the quality of infrastructure, workforce skills, and FDI inflows and outflows.<sup>6</sup>

When one disentangles the impact of firm and country characteristics, the question arises whether seemingly similar companies perform equally well in different countries. If companies with similar characteristics do equally well in different countries, differences in "types" of companies would explain the difference in country aggregates. By contrast, if the performance of companies with similar characteristics is different, the differences can be explained by factors that vary across countries.

**Figure 4.1: European enterprises did well in 1995–2009**

Note: "Periphery" includes Greece, Ireland, Portugal, and Spain.  
Source: World Bank staff calculations, based on ILO 2010; and WDI.



This distinction has policy implications. Government policies and regulations, and the institutions that enforce them, affect firm performance by influencing the enterprise's cost structure. If firm performance differs across countries, measuring the effect of policies on performance would be illuminating. The impact of regulations on firm performance could be viewed as the "static" impact of regulations.

Government policies might also affect market dynamics by influencing firms' entry and exit decisions and growth patterns. The type of firms that survive and succeed in different environments depends on the policies in different countries. If the mix of enterprises operating in each country differs, the link between market structure and the regulatory framework must be understood. The impact of regulations on enterprise growth—the "dynamic" impact of regulations—is as important in explaining how firms produce jobs, value added, and exports. Both firm- and country-specific elements affect performance, but their relative importance differs in ways relevant to policy reforms.

## How have enterprises done? Quite well

Over the past two decades, the competitive landscape for European enterprises has changed. The globalization of markets and enlargement of the European Union have altered the way European firms do business. European firms have generally coped well with these changes: during 1995–2009, they managed to deliver against the three objectives set out above and remained globally competitive (figure 4.1 and table 4.1).<sup>7</sup>

A comparison of the performance of European subregions shows the following:

- In 1995, enterprises in Europe employed a larger share of the working-age population than in the rest of the world, but lower than other most advanced economies. Since then, Europe has produced jobs faster than the United States but more slowly than the rest of the world. In fact, emerging market countries, notably China, saw a massive reallocation of labor from agriculture to industry, which Europe experienced soon after World War II.
- Value added per worker has increased in much of Europe. While European productivity<sup>8</sup> grew in line with its competitors (but from a higher base), Europe did not close the productivity gap with the United States. However, the EU15 grew at a rate comparable with Japan, the United States, Canada, Australia, and New Zealand taken together, while many European countries performed as well as the United States.
- European enterprises have maintained a favorable position in global trade. In 1995, Europe exported goods and services worth more than 40 percent of its GDP, a much higher share than the Organisation for Economic Co-operation and Development (OECD) average. Since then, Europe has increased exports in value terms, although less quickly than emerging countries.

Average trends mask differences in performance among countries and firms in Europe. Disparities are evident not only between advanced and emerging Europe, but also between countries in each group.

Table 4.1: European enterprises, benchmarked quantitatively and globally

(GDP, labor participation (industry and services), productivity, and exports, 1995–2009)

	Real GDP growth, percent, CAGR	GDP per capita, PPP, '000, current int'l\$, Latest	Employment participation, percentage of working-age population			Productivity, '000, constant 2005 US\$		Exports of goods and services, BOP, percentage of GDP	
			Level		Growth, percent, CAGR	Level	Growth, percent, CAGR	Level	
			Initial	Latest				Initial	Latest
Norway	2.4	55.7	68.4	75.5	0.7	111.9	0.4	37.6	40.9
Switzerland	1.7	45.1	76.4	72.7	-0.4	96.9	1.2	39.0	57.0
Iceland	3.6	36.7	73.9	79.9	0.6	84.7	2.5	35.5	52.8
Liechtenstein	3.7	-	-	-	-	-	-	-	-
Ireland	5.3	39.6	48.6	60.3	1.6	98.1	2.1	73.7	90.9
Denmark	1.3	37.7	70.7	74.4	0.4	78.9	0.7	36.1	47.7
Sweden	2.3	37.2	68.7	72.1	0.3	74.1	1.4	37.7	47.9
Finland	2.8	35.3	57.2	65.7	1.0	71.8	1.4	36.7	38.2
United Kingdom	2.1	35.1	67.5	69.3	0.2	71.8	1.4	27.8	27.4
Luxembourg	4.1	84.8	53.4	58.1	0.6	188.2	2.0	132.7	142.0
Netherlands	2.3	40.8	59.8	69.2	1.0	76.5	0.9	57.6	65.2
Austria	2.0	38.8	65.1	68.0	0.3	73.7	1.4	37.7	49.9
Germany	1.1	36.3	62.0	70.3	0.9	67.0	0.5	23.8	41.8
Belgium	1.8	36.3	54.6	60.7	0.8	80.2	0.7	67.1	70.8
France	1.7	33.3	53.6	59.2	0.7	77.2	0.4	23.1	23.6
Italy	0.8	32.4	48.0	56.0	1.1	68.2	-0.5	26.3	23.8
Spain	2.9	32.3	42.5	57.7	2.2	56.9	-0.5	22.4	24.0
Greece	3.3	29.3	42.1	52.5	1.6	56.4	1.4	11.8	18.1
Portugal	1.9	25.1	57.9	62.9	0.6	36.7	1.0	27.7	28.8
Slovenia	3.4	27.6	57.2	63.0	0.7	40.2	3.5	49.9	58.2
Czech Republic	2.6	25.6	65.9	64.9	-0.1	27.1	3.0	51.0	67.2
Slovak Republic	4.4	22.9	54.8	57.9	0.4	26.7	2.8	43.5	70.5
Hungary	2.7	20.3	48.4	53.6	0.8	25.7	2.8	44.3	77.8
Poland	4.4	18.9	44.9	50.4	0.8	22.7	3.0	25.7	39.7
Estonia	4.8	19.7	60.2	69.2	1.1	21.7	5.7	59.1	71.2
Lithuania	4.6	17.1	49.9	55.8	0.8	18.1	4.3	40.4	54.8
Latvia	4.7	16.2	48.3	57.7	1.3	15.3	4.2	39.9	43.4
Cyprus	3.3	30.7	58.1	65.7	0.9	34.0	0.5	49.8	48.3
Malta	2.6	24.8	50.1	56.3	1.0	33.1	0.1	83.8	79.0
Romania	2.5	14.2	43.4	43.6	0.0	15.6	3.4	26.5	31.3
Bulgaria	3.0	13.8	44.0	57.7	2.1	8.8	2.5	51.9	47.9
Croatia	3.2	20.0	47.7	51.9	0.7	25.2	2.8	31.6	35.7
Turkey	3.6	14.2	30.9	33.9	0.7	24.8	1.2	21.6	23.3
Montenegro	2.6	12.9	31.9	36.2	1.8	13.3	3.8	-	-
Serbia	3.6	11.5	44.6	42.5	-1.2	10.9	8.4	30.1	28.4
Macedonia, FYR	2.5	11.1	30.9	34.0	1.6	10.3	1.9	29.4	38.2
Albania	5.4	8.6	16.4	21.6	2.8	12.5	4.2	12.5	29.3
Bosnia and Herzegovina	12.2	8.5	49.4	52.7	0.8	6.5	3.4	27.3	32.4
Kosovo	6.4	-	-	-	-	-	-	-	-

	Real GDP growth, percent, CAGR	GDP per capita, PPP, '000, current int'l\$, Latest	Employment participation, percentage of working-age population			Productivity, '000, constant 2005 US\$		Exports of goods and services, BOP, percentage of GDP	
			Level		Growth, percent, CAGR	Level	Growth, percent, CAGR	Level	
			Initial	Latest		Latest		Initial	Latest
Belarus	7.1	13.0	52.8	61.3	1.1	7.8	6.9	37.7	50.5
Azerbaijan	12.8	9.4	32.2	40.1	1.7	8.7	9.2	25.7	53.1
Ukraine	2.0	6.3	29.3	54.5	4.9	4.7	-1.2	35.4	46.3
Armenia	7.3	5.3	46.4	29.1	-3.3	6.3	10.6	20.4	15.7
Georgia	6.1	4.7	34.1	31.1	-1.0	6.6	9.5	16.4	29.8
Moldova	2.3	2.9	38.3	37.6	-0.1	2.7	4.4	50.4	36.7
United States	2.5	45.7	69.6	70.1	0.1	84.6	1.6	10.8	11.2
Australia	3.5	39.4	65.0	71.4	0.7	64.1	1.5	18.8	21.2
Canada	2.6	37.8	64.2	71.0	0.9	66.2	1.1	37.2	28.8
New Zealand	2.7	29.3	63.7	70.3	0.9	50.7	0.9	28.5	26.2
Singapore	5.1	50.7	67.4	67.3	0.0	58.1	2.4	183.2	200.6
Japan	0.6	32.0	69.5	72.8	0.4	76.3	1.2	9.4	13.4
Taiwan, China	4.3	31.0	-	-	-	-	-	-	-
Korea, Rep.	4.1	27.1	55.8	62.4	0.9	38.1	2.9	28.8	51.8
Malaysia	4.5	13.7	48.7	52.2	0.5	15.3	1.9	93.8	96.5
Thailand	2.7	7.8	39.1	46.3	1.2	7.8	0.1	41.8	68.5
China	9.8	6.8	40.7	49.2	1.5	6.1	7.8	20.2	26.7
Indonesia	3.5	4.0	36.2	39.7	0.7	4.7	0.8	26.2	24.6
Philippines	4.1	3.7	36.3	40.9	0.8	4.7	0.9	36.2	28.9
Vietnam	7.2	3.0	24.6	40.4	5.1	2.0	0.1	38.5	64.7
Argentina	3.4	14.5	54.0	67.9	1.7	11.1	0.3	9.7	21.7
Chile	3.8	14.3	46.1	50.5	0.6	20.0	1.1	27.1	38.9
Mexico	2.8	13.8	45.1	52.2	1.1	21.5	-0.1	31.2	27.8
Uruguay	2.7	13.1	61.9	63.2	0.2	11.5	0.4	18.2	27.3
Venezuela, RB	2.5	12.3	50.2	56.7	1.2	13.4	-3.2	27.7	18.3
Brazil	2.7	10.3	50.8	59.1	1.1	10.6	0.0	6.8	11.3
Columbia	3.0	9.0	50.9	45.5	-0.8	11.0	1.9	13.3	16.2
Peru	4.3	8.7	62.8	62.7	0.0	7.7	2.7	12.3	24.1
South Africa	3.3	10.2	37.1	39.0	0.6	18.5	1.0	22.8	27.8
Tunisia	5.0	8.2	35.2	36.1	0.6	12.1	2.8	44.3	45.8
Algeria	3.5	8.1	34.1	39.4	5.0	10.1	-2.5	47.7	34.3
Egypt, Arab Rep.	5.1	6.0	31.1	32.1	0.3	5.7	2.4	22.0	23.6
Morocco	4.6	4.5	47.6	30.2	-3.4	8.5	5.9	27.4	28.9
Russian Federation	3.7	18.9	56.5	59.0	0.3	11.8	3.3	23.5	28.2
India	6.9	3.3	24.0	26.2	1.7	3.5	4.2	10.7	18.9

Note: CAGR refers to compound annual growth rate. Although for most countries the initial and latest years are 1995 and 2009, the period varies by country and data series: for real GDP growth, Kosovo (2000 -09) and Montenegro (1997 -2009); for GDP per capita, Taiwan, China (2008); for exports, Luxembourg (2002 -09), Bosnia and Herzegovina (1998 -2009), Macedonia, FYR (1996 -2009), Serbia (2007 -09), Georgia (1997 -2009), Vietnam (1996 -2009), and Algeria (2005 -09). Selected Indicators table A4 (Enterprise) at the end of the report gives the periods for productivity data.

Source: World Bank staff calculations, based on ILO 2010; WDI; UNdata; and data from country sources.

In the EU15, different development patterns can be discerned by geography, according to the three criteria. Performance differs among Northern Europe (Denmark, Finland, Ireland, Norway, Sweden, and the United Kingdom), Continental Europe (Austria, Belgium, France, Germany, Luxembourg, and the Netherlands), and Southern Europe (Greece, Italy, Portugal, and Spain):

- **Job creation.** Southern countries have done better than others though they started with a lower participation rate. Spain generated 6.8 million jobs in 1995–2009. Northern, particularly Continental, Europe has lagged in employment generation, but has increased employment, and the average share of the working-age population employed remains higher overall. Ireland is the best performer in the EU15, increasing its workforce by 3.4 percent a year. (The global economic and financial crisis, however, highlighted that employment resilience is as critical as employment generation. In some countries, the crisis reversed some of the earlier gains: from end-2008 to the second quarter of 2011, Spain lost 1.5 million jobs, Ireland 200,000.)
- **Productivity.** Northern European countries have outperformed the rest, with productivity growing by 1.4 percent a year. However, productivity declines from north to south. Italy and Spain show a fall in productivity, while Greece and Portugal narrowed the gap dividing them from the rest of the EU15.
- **Exports.** Trade performance reveals a “winners-take-all” pattern. Continental Europe, already more outward-oriented than the rest of Europe, became even more open, while Southern Europe shows only a modest increase of its export share. In Continental Europe, France’s stagnant exports resemble those of its southern neighbors.

Emerging Europe (the EU12)<sup>9</sup> can be categorized in three groups: Central Europe (the Czech Republic, Hungary, Poland, the Slovak Republic, and Slovenia); the Baltic countries (Estonia, Latvia, and Lithuania); and the south (Bulgaria and Romania). The EU12 demonstrates a pattern similar to the EU15, with two groups (the Baltic countries and Central Europe) dominating exports and the south lagging behind:

- **Job creation.** The economies that proceeded fastest in enterprise restructuring generated new jobs. Romania appears to be the only country still grappling with its restructuring.
- **Productivity.** With an average annual growth in value added above 5 percent—realized mainly through vigorous restructuring starting from low productivity levels—the Baltic economies outperformed the rest of the EU12. Central and Southern Europe also did well, with intercountry variations.
- **Exports.** Emerging Europe maintained a high share of exports in GDP. Central Europe responded to European integration by increasing its share of exports, while the Baltic countries remained highly open economies. Bulgaria and Romania benefited less from close relationships with the rest of Europe, but have maintained their export shares.

The EU candidates and eastern partnership countries are different from EU member states:



- **Job creation.** The share of the working-age population employed in industry and services is about 60–70 percent of the share in the European Union, reflecting lower participation rates in the labor force following transition and greater reliance on traditional sectors (such as agriculture) and on the government. However, employment growth in enterprises is consistently higher than in the European Union.
- **Productivity.** Countries outside the European Union recovered from the transition with high growth rates, but the development patterns remain different. While some EU candidate countries show productivity in line with or higher than that of the EU12, the gap between Europe and the eastern partnership countries remains, as productivity in the latter is about one-tenth that in Western Europe. Catch-up accounts for a large share of productivity improvements.
- **Exports.** The EU eastern partnership countries' exports/GDP ratio is close to Europe's and more than double that of the EU candidate countries. The ratio is increasing, testifying to increased integration with Europe and global markets.

## Why did some parts of Europe do better than others? A three-speed union

Prato was one of the most famous Italian industrial districts. Its specialization in textile production dates to the seventh century, when clothes production was regulated by the Arte della Lana craft guild. By the 1980s Prato had the biggest concentration of textile firms in Europe specializing in yarns for weaving and knitwear, woven and knitted fabrics for the apparel industry, and special fabrics. Changes in global textile production patterns altered Prato's fortunes. From 1991 to 2010 about 1,600 of the 7,600 textile firms in Prato closed or relocated. Between 2002 and 2009 Prato's total textile exports fell from \$2.2 billion to \$1.5 billion.<sup>10</sup> The loss of market share is not the only result of globalization. Prato's surviving clothing industry now has a different business model. More than half of Prato textile businesses are reportedly owned by the Chinese, who import fabric from China and produce cheap "fast fashion" clothes for sale in the single market.

Siemens, the electronics and engineering conglomerate, is increasingly less German and more global. Founded in 1847 by the inventor of the pointer telegraph, Siemens was already operating in countries such as Estonia, Turkey, and Ukraine in its first 10 years. Its introduction of the first direct transatlantic telegraph cable in 1874 signaled the company's global goals. After World War II, Siemens maintained a global presence through foreign investments, acquisitions, and partnerships. With the fall of the Berlin Wall, the company started to operate again in Eastern European countries. Between 1996 and 2008 Siemens' overall employment increased from 380,000 to 430,000 and the company became more international. More than 20,000 jobs were created in production and service facilities in the Czech Republic, Poland, the Slovak Republic, Hungary, and Romania while Germany's employment share decreased from 54 to 31 percent. Siemens reached new product markets and by 2008, just 17 percent of its revenues were generated in Germany, compared to 39 percent in 1996. A German economist described Siemens as "a global value chain with its R&D and engineering activities located in Europe and the United States, procurement and logistics located in south

east Asia, its assembly activities located in eastern Europe, and its marketing activity organised at local level or via the Internet.”<sup>11</sup>

Škoda Auto, the automaker from the former Czechoslovakia discussed in chapter 2, began as a bicycle manufacturer. The collapse of communism left Škoda in a difficult position. Its products were based on obsolete Soviet-era technologies and faced a wide technological, design, and quality gap with Western competitors. Lada-AutoVaz, an automaker in the Russian Federation, was in a similar state. Škoda was acquired by the Volkswagen Group, which revamped its product range. Škoda is now the entry brand of a global group. It produces five times as many cars as in 1990, generating profits for its parent, and employs nearly 25,000 workers. Lada, on the other hand, still produces cars that are not competitive in the bigger European market.

These three examples—Prato, Siemens, and Škoda—come from the south, north, and east, respectively. They illustrate three different responses to a new economic landscape (box 4.1). This section analyzes these differences, the changes in the European economy, and their consequences for jobs, productivity, and exports.

## A period of structural change

In the early 2000s, economists in Europe debated which pressures the European model would face as the European Union enlarged. Enterprises in the EU12 were emerging from a decade of restructuring and had large productivity gaps with older EU member states. The prognosis was unclear:

*The accession of 10 more countries also adds a dimension of complexity and heterogeneity that was not present in the previous round. ... Because of the gap in income, convergence between the new member states and the current EU members is more than ever the key to successful enlargement. Neither theory nor the experience of earlier enlargement convincingly supports a hypothesis of automatic convergence. ... On the one hand the new member states have relatively high levels of human capital. On the other hand, they have a legacy of old industrial investment, environmental damage and poor public administration to remedy (Sapir and others 2004, pp. 4-5).*

Policymakers sought to integrate these diverse entities into a single market without creating imbalances and compromising competitiveness.

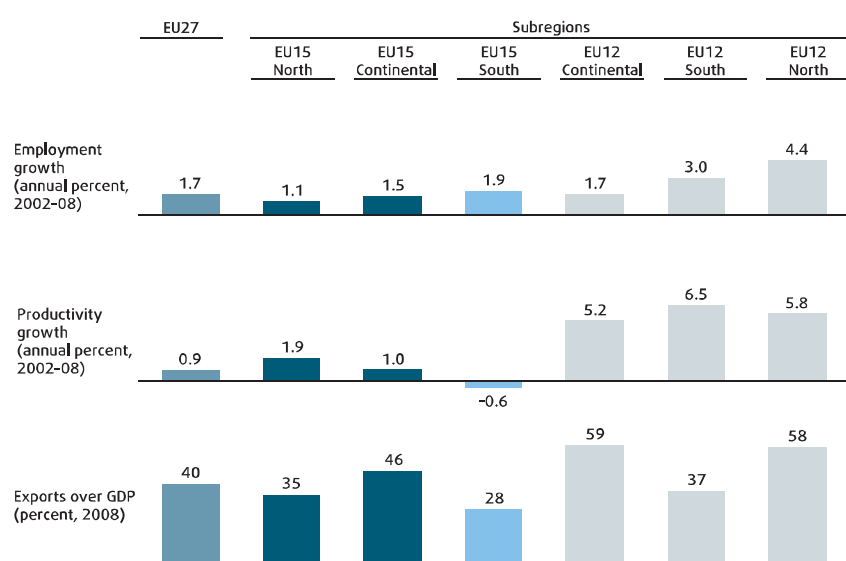
In hindsight, European firms mostly did well. The 2004 and 2007 enlargements—along with integration efforts since the mid-1990s—appear successful so far. Enterprises in the new member states experienced vigorous productivity improvements and generated new jobs, contributing to economic growth in all parts of Europe. European enterprises fought off the increasing competition from emerging markets and maintained a significant share of global trade. In 2002–08, in aggregate, enterprises in the European Union increased value added by 16 percent. In 2008, the European Union exported the equivalent of 40 percent of its GDP.<sup>12</sup>

Discontinuity in Europe’s competitive landscape challenged the way firms did business and created winners and losers. Winners captured the opportunities to expand sales and production into new markets. Siemens and Volkswagen-

Škoda expanded networks in the bigger European market to grow outside Europe as well. Firms with traditional business models whose markets were disrupted by the competition from emerging economies were the losers. Italian industrial districts like Prato are among the entities that depended on the flexibility offered by local networks of small companies and are struggling in a world where a minimum scale is critical to success.

As a result of these and other changes (box 4.1), and despite decent performance overall, the expanded single European market did not benefit incumbents equally. A decomposition of overall performance depicts a European Union<sup>13</sup> where convergence of emerging Europe toward advanced Europe coexists with a divergence within advanced Europe. The result is a Europe growing at different speeds (figure 4.2):

- **The leaders.** Continental and Northern Europe saw value added grow in 2002–08 at an average of 3 percent a year, due in equal part to productivity gains and employment creation. The average export share in GDP in these countries was more than 40 percent.
- **The chasers.** Emerging Europe reduced part of the gap with the rest of the European Union, generating value added at more than twice the rate of the EU15, mostly because of increased productivity. These economies became increasingly connected to the rest of Europe and the world: on average, exports now stand at more than 50 percent of their GDP.
- **The laggards.** Southern Europe (EU15 South) shows the slowest value-added growth (1.3 percent) in the same period, coming exclusively from employment generation. Southern countries did not register productivity improvements and showed little growth in export intensity (the share of foreign sales in total turnover) which, at 28 percent of GDP, is well below the EU average.



**Figure 4.2: The east giving chase, the south falling behind**

(employment, productivity, and exports, 2002–08)

Source: World Bank staff calculations, based on Eurostat and WDI.

These changes also had implications for product and factor markets in Europe. In the product market, the reduction in the cost of accessing foreign and other European markets implies that the competition in the local market increases. This effect can be offset by the opportunity to compete in other product markets. In factor markets, the forces at play are less obvious: while access to international markets opens new opportunities for companies to reduce their cost base, the impact on the local market can be negative or positive, depending on local conditions.<sup>14</sup>

A strategy to protect a market niche can only be pursued in the short term: over time most markets open, so the best strategy for a firm is to be prepared. For firms to fully benefit from the single market, they need to engage in foreign operations in the form of sales, sourcing, or both. Companies that do not can find themselves in a “lose-lose” world in which competition increases in the local product markets, but there are no benefits in international markets.

Not all firms can access international markets—the costs are often simply too high to justify the investment. In particular, the costs of entry—especially access to information and management of subsidiaries abroad or a decentralized sales network—are often too high for small firms. Hence minimum scale is becoming more important. In other words, although falling barriers to entry to new markets imply that the minimum scale for international operations is now lower, reaching that scale becomes critical to success (box 4.2).

To address current imbalances and learn lessons to make future EU enlargement even more effective, it is necessary to understand the determinants of Europe’s varied performance. More immediately, policymakers need to understand

#### Box 4.1: Is staying local now riskier?

When measuring the performance of European enterprises, one should keep in mind some structural changes:

- **Transition in emerging Europe.** For emerging Europe, the transition from the socialist to market system involved privatizing on a large scale, restructuring production and distribution systems, and shedding surplus labor. Transition affected small and medium enterprises, with slower and still incomplete privatization and restructuring of larger state-owned enterprises. At the macro level, the biggest challenge was an efficient reallocation of the enterprise workforce that was made redundant during rationalization. For firms, the changes went beyond the pure shift in the ownership structure and encompassed technological and managerial modernization to align production and commercial processes with those in the rest of the world. FDI inflows were essential to the transition’s success: in 1990–2009, \$814 billion was invested in emerging Europe, according to UNCTAD (at current prices and exchange rates). It brought

new technologies, managerial know-how, and cooperative links with firms from advanced Europe and other mature market economies. It also presented a unique opportunity for thousands of start-ups and spin-offs to emerge, bringing the diversity of Western Europe to the broader group of countries.

- **Globalization of markets.** Trade and production became more globalized, with developed and emerging economies around the world becoming more integrated. This is evidenced by the growth in trade volumes, which almost tripled in 2000–10. (Trade also improved timing and reliability of shipments, allowing firms to better control the decentralized supply chain, since, along with costs, they are key factors in firms’ outsourcing decisions.) European enterprises, operating in one of the largest markets in the world with about 500 million high- and middle-income consumers, were increasingly exposed to international competition. On the cost side, the reduction of transaction costs introduced additional opportunities to maximize profits as firms attempted to move labor-intensive activities

offshore. This fragmented the production process and supply chain, rewarding firms that could better manage the complex structures involved.

- **EU enlargement and the creation of the single market.** EU enlargement—built on the principle of a common market for goods, services, capital, and labor—strengthened a global trend. In Europe, due in part to the macroeconomic stability provided by (prospective) membership, geographic and market borders became thinner, allowing increased mobility for products and factors of production. The EU expansion process opened new markets to enterprises in advanced Europe. It also expanded opportunities for offshoring parts of the production process, while providing an opportunity for firms in emerging Europe to enter niche markets and take over parts of the value chains. For example, the Slovak Republic, with virtually no tradition of car manufacturing, became one of Europe’s largest car manufacturers, and many Polish enterprises are becoming suppliers to German companies.

how to help lagging countries catch up or at least to ensure that the gaps grow no wider. Enterprise productivity growth in the south is needed most of all. Policymakers will also need to ensure that the countries now catching up will continue to grow in an enlarged Europe, where new entrants will vie for potential investors. Finally, internal sources have driven enterprise growth in Europe to date. The sources of growth once the EU12 catches up remain unclear (chapter 5).

## Jobs—some are more durable than others

Contrary to common perceptions, enterprises created employment across Europe in 2002–08: enterprises outside financial and extractive sectors, for example, created more than 12 million jobs.<sup>15</sup> Of these, 25 percent were made in the new member states, 31 percent in Southern Europe, and 44 percent in the rest of the European Union.

Employment generation in emerging Europe was almost double that in the EU15. Following the large reallocation of labor resulting from the transition, private enterprises became net job creators. The domestic service sector, which is underdeveloped in emerging Europe relative to advanced Europe, drives employment growth across all countries (figure 4.3). Construction, fueled by the precrisis real estate boom in the Baltic states, but also in Bulgaria and Romania, explained much of the difference between Central European countries and the rest of New Europe. Manufacturing jobs fell slightly in emerging Europe overall,

### Box 4.2: Firms in Europe are becoming more similar—in size

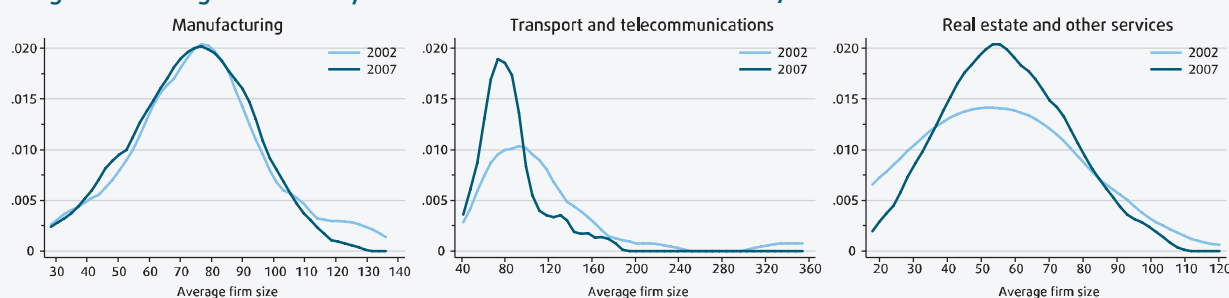
Regional integration and globalization are making firms increasingly similar. As barriers to entry to new markets have fallen, so have differences among firms operating across countries. A critical and observable firm characteristic is size, where European firms appear to be increasingly similar. This is in line with economic theory: thanks to reduced barriers to entry, markets become more competitive and industries converge toward

their minimum efficient scale. According to the theory of contestable markets, in an industry with no fixed costs, extra profits would be eliminated through entry and firms should converge to the efficient minimum scale. In this way, dispersion of firm sizes is explained by barriers to entry in the form of fixed costs.

When observing the evolution in size of the European firms in sectors most exposed to

international competition—manufacturing, transport and telecoms, real estate, and other services—both trends are visible, especially in transport and telecommunications (box figure 1). The forces described above affect the day-to-day operations of companies in Europe and around the globe. Some companies have managed to successfully adapt and benefit—but not all.

**Box figure 1: Average firm size by sector in EU countries: 2002 and 2007**

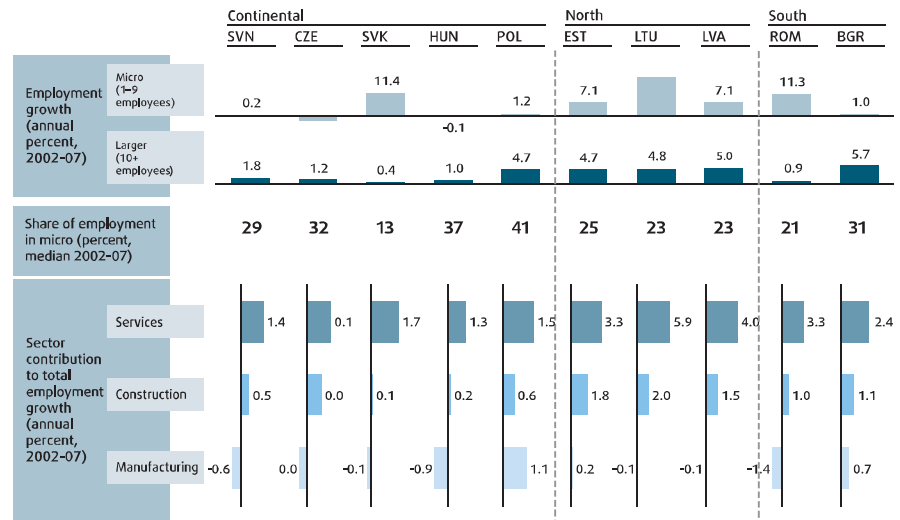


Note: Nonparametric estimations of the density function of EU average firm size (10 employees and above) for 2002 and 2007. Empirical densities were estimated using Epanechnikov kernel techniques.

Source: World Bank staff calculations, based on Eurostat.

**Figure 4.3: In the EU12, most jobs created were in services and construction**

(employment growth, by size of firms and sector, 2002–07)



Note: Data for 2008 are not included as sector classification changed from 2007 to 2008. The period of time considered varies by country: Estonia and Lithuania (2004–07), Latvia and Poland (2003–07), and the Slovak Republic (2002–05).

Source: World Bank staff calculations, based on Eurostat.

reflecting two opposite forces: growth in some parts due to delocalization of labor-intensive tasks from advanced to emerging Europe to leverage the lower labor costs of the skilled workforce; and decline in the EU entrants' larger enterprises, especially the Baltic economies, as they restructured their industries from the legacy of the Soviet system.

In advanced Europe, the southern countries outperformed the rest in job creation, with an average yearly growth of 1.9 percent in 2002–08 (compared with 1.5 percent and 1.1 percent in Continental and Northern Europe, respectively). The sector distribution of employment creation followed a path similar to emerging Europe's. Manufacturing declined overall, emphasizing the shift toward services (figure 4.4). The type of companies generating service jobs varied. In Southern Europe, microenterprises (mostly family-owned firms with fewer than 10 employees) and small and medium enterprises generated most jobs. Construction contributed to employment in the south, accounting for a large share of the growth: in Spain alone, it accounted for one out of five jobs in 2007.

Yet a simple comparison of growth rates misses the fact that jobs do not all contribute equally to growth. Decomposing job creation by sector and size brings out two main trends:

- Some jobs are more stable than others. Domestic, consumer-driven retail services<sup>16</sup> accounted for the largest share of the difference in job-growth rates across countries. More than half the growth in the EU15 South (1.8 percent of 2.9 percent) was concentrated in these sectors, which are cyclical and credit-dependent: in Southern Europe alone more than 1.4 million jobs created in 2000–08 (about half the total) disappeared by end-2010. Similarly, jobs created in microfirms (those with fewer than 10 employees)

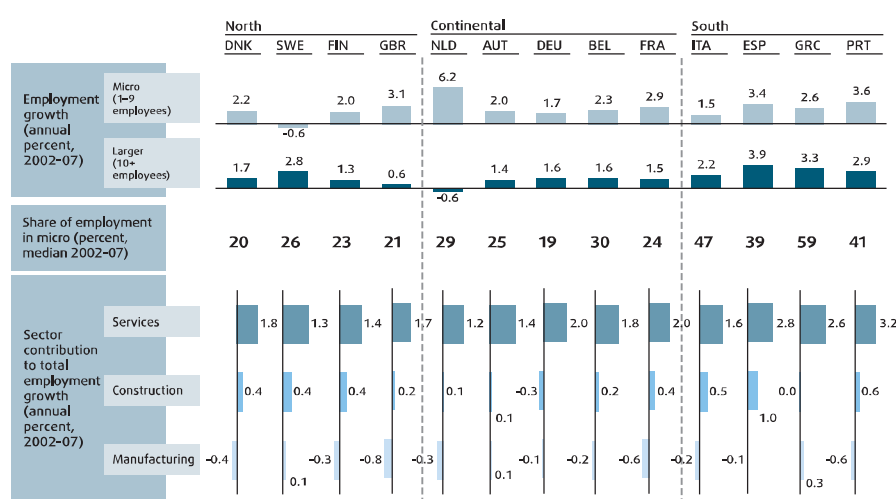
are less resilient than those in larger companies, as they are less likely to survive—bad news for the EU15's south, where half the new jobs were in microenterprises.<sup>17</sup>

- Some jobs add more value than others. Jobs in microenterprises often have low productivity. This is evident in Southern Europe where one job in a large firm produces on average the same value added as two jobs in a small family-run business with up to nine employees (figure 4.5). The additional jobs created in microfirms and in labor-intensive nontradable sectors in the EU15 South have only a small impact on value addition. The size of enterprises generating jobs in Southern Europe—mostly smaller firms with fewer than 10 employees—is also relevant to explain the high unemployment rates, especially among young people, despite reasonably rapid job creation. This could signal a mismatch between what is demanded by such firms—essentially unskilled labor—and the skilled labor available in the market. A worker in a microfirm generates output valued at about \$40,000 annually, including the gross salary, gross profits, and depreciation. With this low value added per worker, microfirms cannot afford to hire educated Europeans, who form a sizable fraction of job seekers. Besides, they may only require unskilled or semiskilled workers.

When the durability and value added of the new jobs is taken into account, the gap between the apparently sluggish north and faster south in creating jobs narrows.

## Value added—closing one productivity gap, opening another

Intercountry differences are most telling in productivity indicators (figure 4.6). These differences are instrumental in understanding firm performance. Over time, in a single integrated market like Europe, firms in low-productivity countries are expected to upgrade their technology, adopt new management



**Figure 4.4: In the EU15, a loss of manufacturing jobs, replaced by small service enterprises**

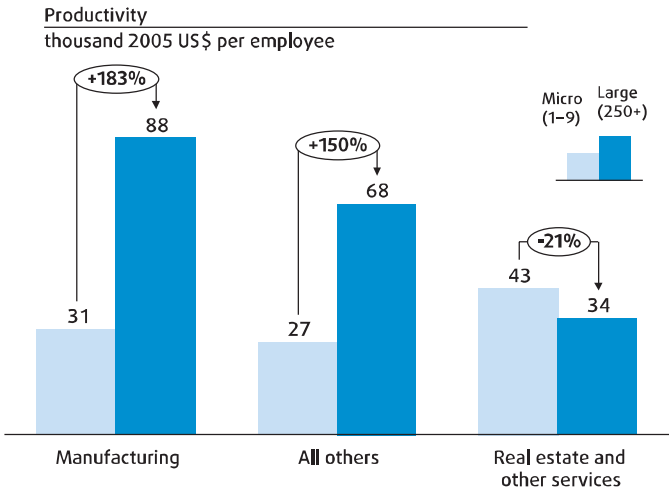
(employment growth, by size of firms and sector, 2002-07)

Note: Data for 2008 are not included as sector classification changed from 2007 to 2008. For Belgium, France, and Greece, the period considered is 2003-07.

Source: World Bank staff calculations, based on Eurostat.

Figure 4.5: Microenterprises in the EU15 South cannot pay for skilled workers

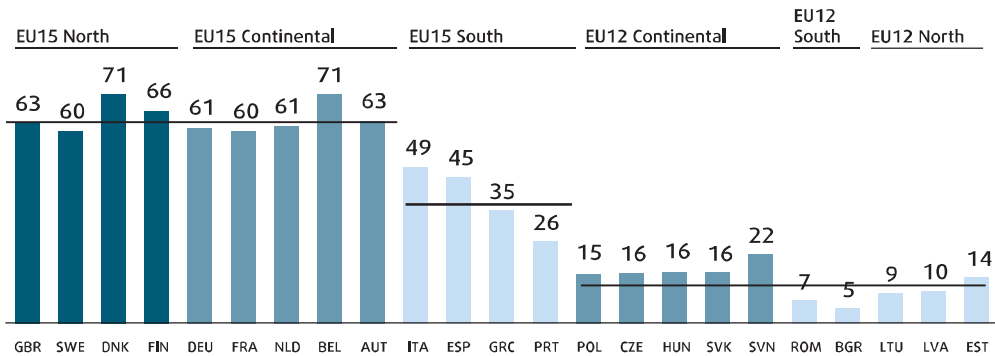
(productivity level, by firm size and sector, 2007)



Source: World Bank staff calculations, based on Eurostat.

Figure 4.6: Productivity levels were lower in the south and lower still in the east

(average productivity in 2002, thousand 2005 US\$)

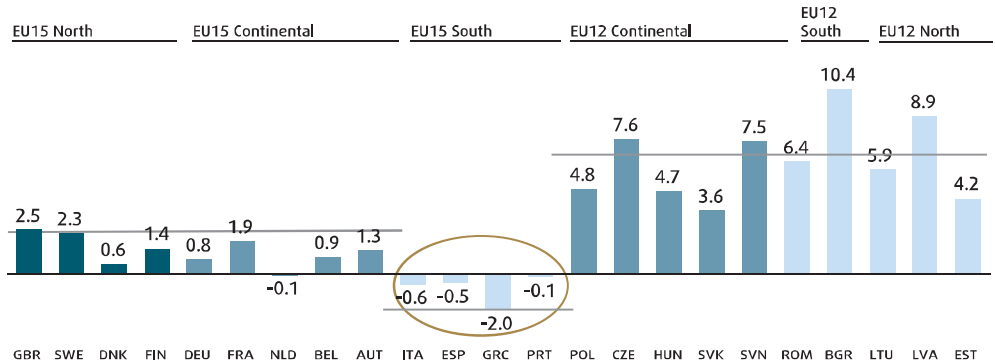


Note: For Belgium and Greece, productivity levels refer to 2003.

Source: World Bank staff calculations, based on Eurostat.

Figure 4.7: The east has been catching up, the south has been falling behind

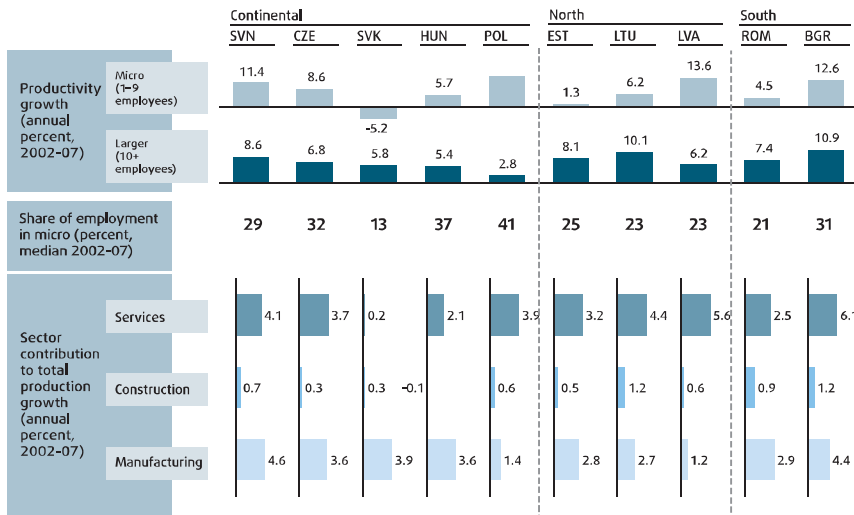
(average productivity growth in EU27, annual percentage rates, 2002-08)



Note: The period of time considered varies by country: Belgium (2003-08), Greece (2003-07), and Great Britain, France, Czech Republic, Latvia, and Romania (2002-07).

Source: World Bank staff calculations, based on Eurostat.





**Figure 4.8: In the EU12, manufacturing and services are more productive, construction less**

(productivity growth, by size of firms and sector, 2002-07)

Note: Data for 2008 are not included as sector classification changed from 2007 to 2008.

For Estonia and Lithuania, the period considered is 2004-07; for Poland and Latvia, 2003-07.

Source: World Bank staff calculations, based on Eurostat.

processes, and learn from the more productive ones through the flow of knowledge, capital, labor, and goods, moving toward the efficiency frontier (Acemoglu, Zilibotti, and Aghion 2006). Productivity growth should be inversely correlated with initial productivity levels.

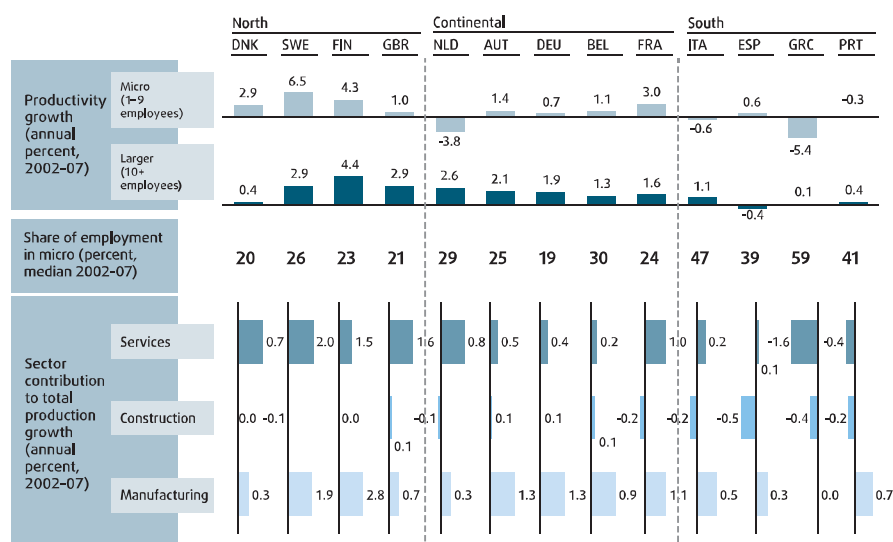
The data for Europe show a different story.<sup>18</sup> As expected given the low initial level, from 2002 to 2008 EU12 productivity growth was strong, three to four times as high as in the average EU15 country. However, while the productivity divide between advanced and emerging Europe was closing, another gap was growing—that between the EU15 South and the rest of Western Europe (figure 4.7). North and Continental Europe improved productivity, while the EU15 South showed a decline.

A breakdown of the productivity contribution from 2002 to 2007 according to the different mix of sectors and size of enterprises helps explain in particular why Southern Europe was lagging.

The catch-up of productivity in emerging Europe was vigorous, with annualized growth rates above 6 percent for almost all countries, from all types of firms (figure 4.8). The sectors more exposed to foreign trade (manufacturing and other services) accounted for a similar productivity gain across countries, while differential productivity growth in the remaining sectors (construction, wholesale and retail trade, hotel and restaurants, and transport and telecommunications) accounted for most of the difference, particularly the higher growth in the Baltic economies and the EU12 South (Bulgaria and Romania). In Central Europe, where larger enterprises shed excess labor, and drove productivity levels close to Portugal's, smaller enterprises have increased productivity. In Romania and Bulgaria, firms of different sizes show similar growth patterns, although in Bulgaria—where the average firm size is larger—the productivity gains by large enterprises account for half of overall growth.

**Figure 4.9: Manufacturing drives productivity growth in the EU15 center, services in the north**

(productivity growth, by size of firms and sector, 2002–07)



Note: Data for 2008 are not included as sector classification changed from 2007 to 2008. For Belgium, France, and Greece, the period considered is 2003–07.

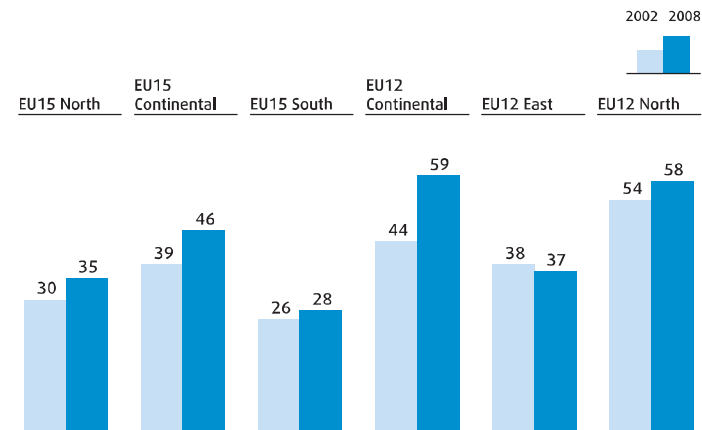
Source: World Bank staff calculations, based on Eurostat.

In the EU15, the construction sector shows limited or no productivity growth. Excluding construction, the gap between the EU15 South and the other countries is seen in all type of enterprises and sectors. On average, productivity growth for micro, small and medium, and large enterprises in all sectors is 0.5–1 percent lower than in the rest of Europe, pointing to a structural issue rather than firm-specific patterns. The mix of firms may also explain part of the gap. Productivity growth in Southern Europe particularly lagged in services and in microenterprises. Microenterprises showed less productivity growth than larger enterprises across the continent and revealed a productivity decline in some southern countries. Given the relative importance of the microenterprises in these economies, this has a clear implication for overall growth. Likewise, while services increased productivity over the period in Northern Europe, the South (and to some extent Continental Europe) showed a different pattern. In Portugal and Greece, services made a negative contribution to productivity growth (figure 4.9).

The combined effect of these two patterns explains why the gap in productivity growth between Southern Europe and the rest is concentrated in real estate and other services, where microfirms have the largest productivity gap versus their peers elsewhere.

### Exports—a winner-take-all reality?

Generally speaking, European countries with higher export shares are pulling ahead and countries that are less open to trade are losing ground. Continental Europe and the new member states in the center are the export winners. Not only are they more export-oriented than the rest of Europe, their performance over the period is superior, with exports equivalent to more than half GDP. These export results are a function of the pan-European value chains



Source: WDI.

**Figure 4.10: Exporting—  
Central Europe’s specialty**

(exports as share of GDP, 2002 and 2008)

developed by firms across countries. Although overall exports relative to GDP increased across Europe, level and growth remain consistently lower in EU15 South (figure 4.10).

The presence of exporters in an economy is not only relevant from a macroeconomic perspective, but also at firm level. Research shows that although the number of firms that export is small, these firms make a big contribution to economic growth and welfare. Higher-productivity firms tend to export more.<sup>19</sup> When looking at the EU15 and EU12 countries separately to account for differences in initial conditions, one finds a strong correlation between country productivity and export performance (figure 4.11). A recent study of manufacturing in six major European countries shows that exporting firms in Europe tend to be larger, more productive, more innovative, and faster-growing than nonexporters in the same industry (box 4.3).

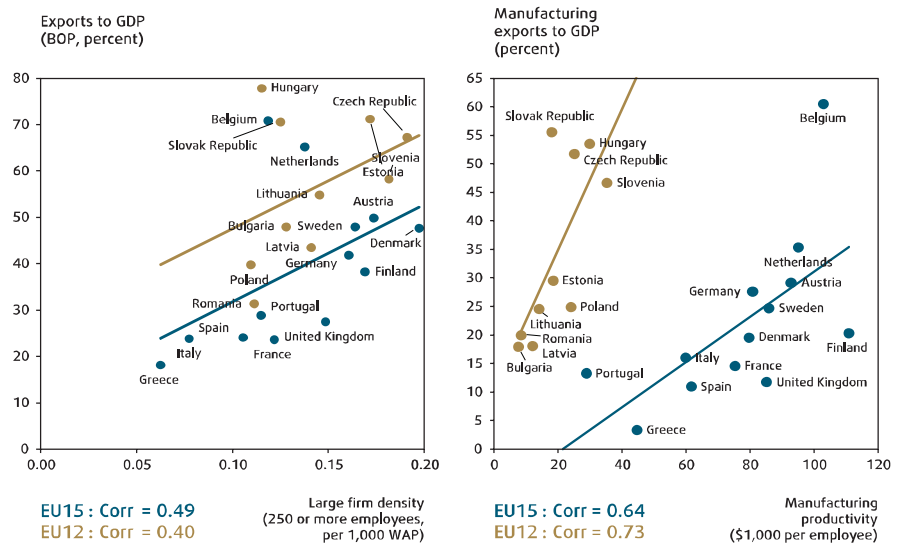
### Why did some parts of Europe do better than others? —FDI, offshoring, and heavy regulation

Volkswagen, on the edge of bankruptcy in 1993 with €1 billion in losses, achieved a turnaround by consolidating platforms among its brands (Volkswagen, Škoda, Audi, and Seat); cutting development time and cost; and relocating production to Hungary, the Slovak Republic, and elsewhere. Škoda’s Mlada Boleslav plant became Volkswagen’s leader for supplier integration, offering jobs in several on-site suppliers to deliver carpets, seats, exhaust systems, rear axles, dashboards, and instrument panels. By 2010, Volkswagen Group had increased non-German employment from 41 percent in 1993 to 53 percent (Kubes and Radler 2002) and had 22 percent of the car markets in Central and Eastern Europe.<sup>20</sup> The reconfiguration of the value chain transformed both the parent and the subsidiary.

Benetton Group, an apparel manufacturer and retailer, has around 6,000 stores in 120 countries and annual sales of about €2 billion. Distinct from its smaller peers in Prato, Benetton is an Italian “globalizer.” Its supply and distribution chains are characterized by the combination of upstream vertical integration, outsourcing of labor-intensive downstream production, and retail outlets

**Figure 4.11: The size and productivity of firms influence a country's exports, late 2000s**

(export share as a function of aggregate size and productivity)



Note: The variables on the y-axis in each panel are for 2009, while those on the x-axis are for 2007. For the Slovak Republic, data refer to 2005. WAP is working age population.

Source: World Bank staff calculations, based on Eurostat, UNCOMTRADE, and WDI.

managed by third parties—balancing quality control, cost competitiveness, and responsiveness to market shifts (Camuffo, Romano, and Vinelli 2001). Benetton has production facilities in Croatia, the Czech Republic, Hungary, Poland, Romania, Serbia, and Ukraine.

Škoda and Benetton exemplify the successful companies in Europe: those that attracted investors, expanded, and accessed new markets, often by setting up foreign subsidiaries. The success of a country in generating jobs, value, and exports depends on its enterprises. Over the past decade in Europe, this meant having export-oriented, sizable companies. But not all European firms like to grow. Mr. Rossi's firm in Northern Italy, referred to in the opening paragraphs of this chapter, remains a family-run enterprise and has not grown in size since its early years. Mr. Rossi's experience is unfortunately all too common in Italy, Greece, and some other countries. When the cost of dealing with the government is high, many businesses prefer to stay small.

Together, these examples help answer three questions:

- Why did countries in emerging Europe manage to successfully start catching up to the EU15? Being open to foreign investments, like Škoda was, helped countries begin to catch up. Lada, which until 2008 was owned by the Russian government, did not perform nearly as well. Investment flows from advanced to catch-up economies benefited host countries by generating employment, transferring technological and managerial knowledge that raised productivity, and linking the companies to global networks, which increased exports.
- How did EU15 North and Continental countries manage to keep doing well? These countries had the right type of firms to take advantage of enlargement. These firms could offshore and enter new markets. Volkswagen is just one of many companies that decentralized its production chain in Eastern Europe.

- What makes the EU15 South a laggard? Southern Europe had few global companies. If the south had more Benetton, or attracted more foreign investment, it would have been a different story. Mr. Rossi's company is typical of many in the south. A complex business environment—especially poor design and enforcement of regulations—stifles enterprises' growth, making them unsuited for increasingly competitive European and global markets.

## The northeastern achievement: attracting FDI

In 1990–2009, Poland took in more than \$180 billion in FDI,<sup>21</sup> equivalent to 39 percent of its GDP. Estimations based on a representative sample of firms from Eastern Europe show that in 2008, one of six Polish companies with 10 employees or more was foreign-owned. The same foreign companies employ a third of Polish workers and generate close to half its value added. In 2003–08, foreign enterprises were responsible for creating one of four new jobs in Poland.<sup>22</sup>

This trend is not unique to Poland. Since 1990, other countries in Central and Eastern Europe have also received large volumes of FDI—for emerging Europe, equivalent to one-quarter of its GDP (figures 4.12 and 4.13).<sup>23</sup> FDI flows have accelerated since enlargement in the 2000s, when about 20 percent of FDI flows in Europe were directed toward former Soviet bloc countries.

FDI through new subsidiaries and the acquisition of existing enterprises—most often due to privatization of former state-owned enterprises—affects the performance of the economy.

### Box 4.3: What do successful exporters look like?

An extensive economic literature analyzes the relationship between firm characteristics and export propensity. Barba Navaretti and others (2011) analyze the export activity of firms in Austria, France, Germany, Hungary, Italy, Spain, and the United Kingdom. Using data collected by the World Bank's Enterprise Surveys in 2009, this report extends the analysis to 20 emerging Europe and eastern partnership/EU candidate countries (Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, the Czech Republic, Estonia, Georgia, Hungary, Latvia, Lithuania, the former Yugoslav Republic of Macedonia, Moldova, Poland, Romania, Serbia, the Slovak Republic, Slovenia, Turkey, and Ukraine).

Following Barba Navaretti and others (2011), this report uses a cross-country linear probability model for the extensive margins (the share of exporting firms) and a linear regression model for the intensive margins (the share of the export value over total sales, restricting the sample to exporters) to identify the features that characterize exporters and nonexporters. The empirical estimation considers a number of firm characteristics: size (measured in number of full-time employees), labor productivity, domestic versus foreign

ownership, and age.

Some common patterns in advanced and emerging Europe emerge, indicating that firm characteristics are what matter more than country conditions.

- **Extensive margin:** larger, foreign, more productive, and more innovative firms are more likely to export; differences in age between exporters and nonexporters do not appear to be significant.
- **Intensive margin:** the share of exports is higher for larger, young, and foreign-owned firms.

Some differences indicate peculiarities of emerging Europe: size and foreign ownership have a much higher impact on exports in emerging Europe than in the EU15 (Hungary is the exception). Age does not appear relevant, confirming that in emerging Europe young firms are often more dynamic. And in emerging Europe, research and development is relevant to explain the propensity of a firm to export, but not its export intensity.

Barba Navaretti and others (2011) show that firm characteristics are more relevant

than country characteristics in explaining export behavior. The export performance of Eastern European firms is largely explained by firm-specific characteristics. When trying to measure the extent to which differentials in export behavior in emerging Europe are correlated with business regulations, and particularly trade-related regulations, the results show that:

- **Extensive margin** is positively correlated with business regulation (measured by the principal components analysis indicator of the Business Operations Index). A similar result holds for the specific trade indicator (one component of the Business Operations Index).
- **Intensive margin** appears correlated with the Business Operations Index, but not specifically with trade regulations.

These results indicate that better trade regulations facilitate exports by reducing barriers to new market. For firms that reach new sale destinations and overcome the entry costs, export intensity is affected by the overall regulatory environment rather than by regulations governing foreign trade.

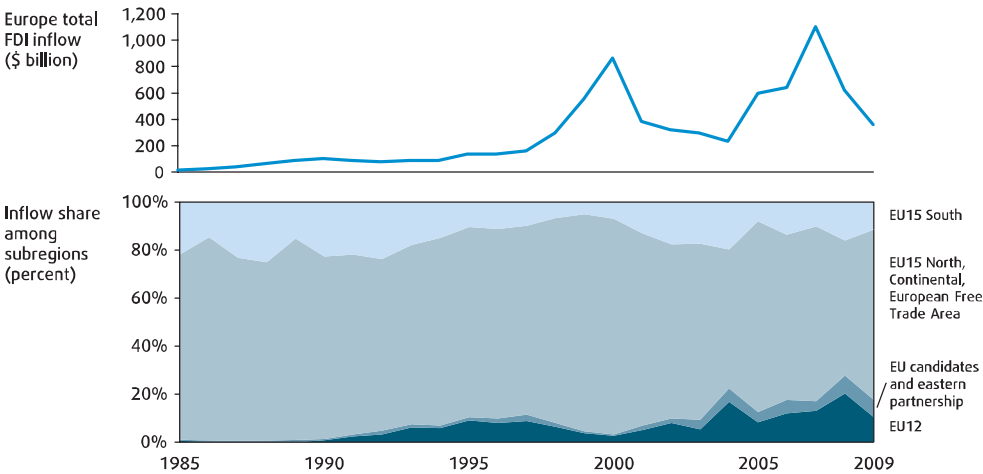
As Poland’s example shows, foreign-owned firms in the EU12 are more productive and tend to grow faster than domestic ones. This is the result of parent company investments in plants and people, which materialized in new technology and processes, but also in management skills, access to better inputs, and connection to international markets. This is the case for most countries in the sample (figure 4.14).<sup>24</sup>

FDI does not benefit only the receiving company (Javorick 2004). It has broader sector and economywide benefits, producing spillover effects as productivity improvements and employment effects are captured not only by the receiving firm, but other enterprises in the country. Other members of the value chain, which receive knowledge from international best practices (vertical spillovers, as through quality certification systems), and competitors which learn from the products brought to the market by the foreign-owned firms (horizontal spillovers), also benefit from FDI. FDI was positively correlated with growth in jobs and productivity in the EU12, and contributed to value-added growth (figure 4.15).

The export performance of firms in Eastern Europe confirms that foreign ownership—along with size—is one of the most important explanations for the enterprise’s export propensity and export intensity.

**Figure 4.12: The south has become less attractive to foreign investors, the east more so**

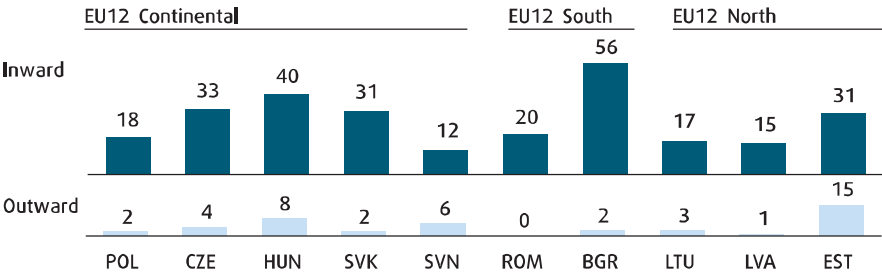
(FDI flows into Europe, all sectors, 1985-2009)



Source: World Bank staff calculations, based on UNCTAD (2010).

**Figure 4.13: Not all countries in emerging Europe are equally attractive for foreign investors**

(EU12 FDI stock, 2008, percentage of GDP)

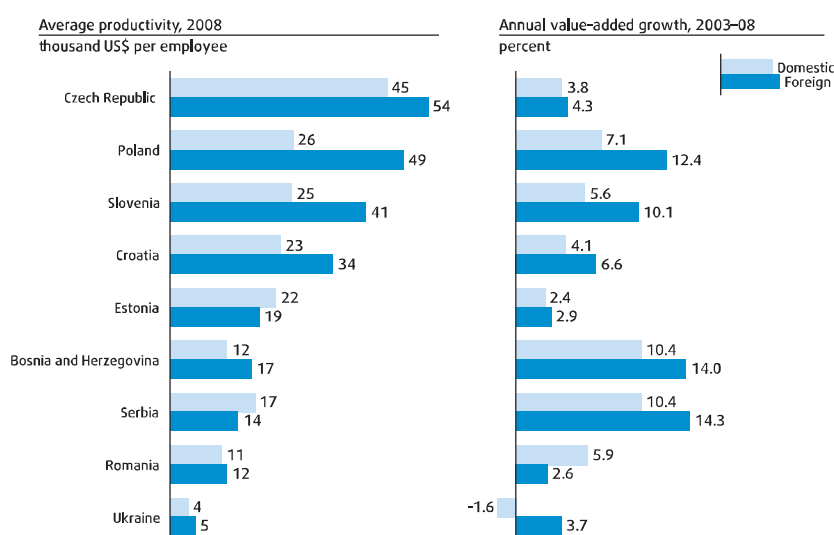


Source: World Bank staff calculations, based on Eurostat.

Beyond FDI, what are the factors behind the productivity performance of the new member states? A panel of surviving firms (with 10 employees or more) from the Amadeus dataset in EU12 countries<sup>25</sup> helps illuminate the drivers of productivity growth in different sectors of the real economy in 2003–08. The analysis disentangles firm-specific characteristics from country-level attributes.

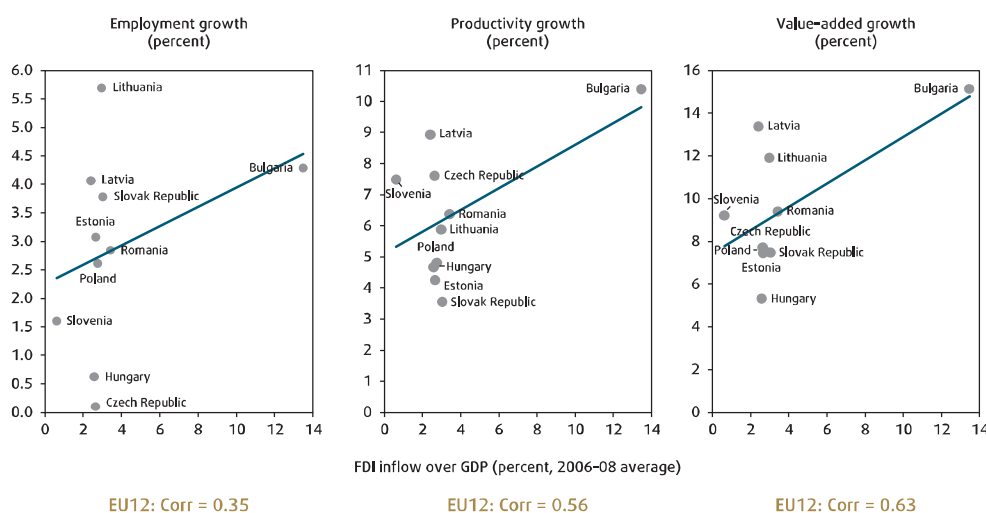
- **Do country characteristics explain enterprise performance in the EU12?**

Yes. Considering firm productivity growth as a function of the firm's initial productivity level, firm characteristics (size, age, ownership, and sector of activity), and country dummies, country dummies are statistically significant and differ greatly, indicating that similar companies perform differently in different countries (table A4.2).<sup>26, 27</sup> For example, the productivity of a manufacturing



**Figure 4.14: Foreign firms are more productive and have faster productivity growth**

Source: World Bank staff calculations, based on Amadeus.



**Figure 4.15: In the EU12, FDI is positively associated with productivity and jobs**

(growth in employment, productivity, and value added, 2002–08)

Note: For the Czech Republic, Latvia, and Romania, data on the y-axis refer to 2002–07.

Source: World Bank staff calculations, based on Eurostat.

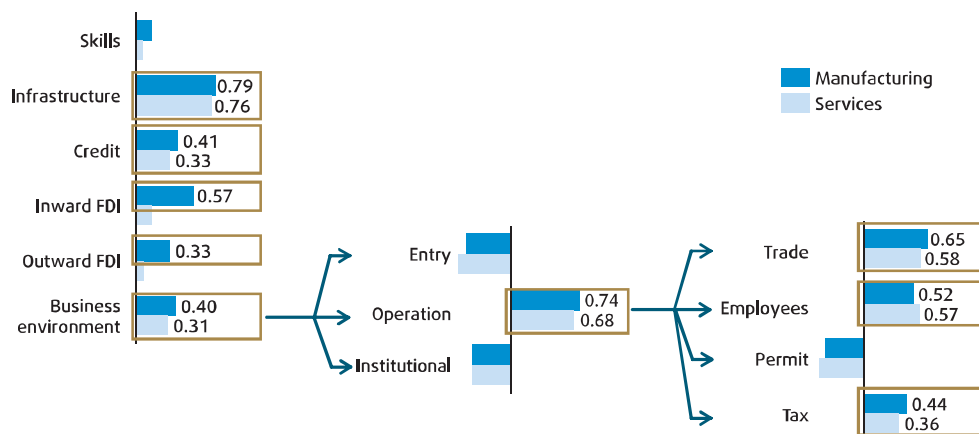
company in Poland grows 2.1 percentage points slower than that of a similar manufacturer in Slovenia. The results are similar for manufacturing and services—a country that does well in facilitating business in one sector tends to do well in the other.

- **Are country characteristics more important than firm characteristics in explaining enterprise performance in the EU12?** They appear to be. The exclusion of firm characteristics from the regression of productivity growth for manufacturing firms reduces the explanatory power of the model by 8 percent. However, when country dummies are excluded, the model loses about four times as much of its predictive power, or 33 percent. For services, a similar pattern emerges: the explanatory power of the model is reduced more when dropping country-fixed effects (23 percent) than when excluding variables of firm characteristics (8 percent). The conclusion is that cross-country differences are more relevant for firm performance than firm characteristics in the new member states.
- **What are the most important country characteristics for firm performance in the EU12?** The “fundamentals.” This response emerges from a correlation of estimated country dummies with country characteristics such as the regulatory environment, quality of hard infrastructure, skills of the workforce, share of credit to GDP, and FDI inflows and outflows.<sup>28</sup> The quality of infrastructure, FDI inflows, availability of credit, and ease of conducting business operations appear to drive country productivity improvements (figure 4.16). That most variables are similarly correlated with firms’ performance in both manufacturing and services points to the importance of fundamentals.

To infer causality, an extended version of the model is used in which firm productivity growth (in 2003–08) is explained by the same firm controls, sector dummies, country fixed effects, and changes of country characteristics in the same period. By including both country characteristics and country dummies, the unobservable country-specific influences are controlled for, allowing a more reliable understanding of what causes what. For both manufacturing and services, productivity gains in the EU12 are indeed linked to increases in inward FDI and, relatedly, to better business regulations, especially for taxes, foreign trade, and employment.<sup>29</sup>

- **What are the most important firm characteristics for explaining firm performance in the EU12?** In one word—ownership. This question was answered in two ways. First, a counterfactual exercise compared how the estimated country dummies change when adding each control (baseline productivity, sector, ownership, size, and age) in the model that explains productivity growth. A Czech manufacturing firm is a good illustration. The average productivity gap between a Slovenian and a Czech firm in manufacturing is 6.7 percent. When considering two firms with the same baseline productivity, this gap falls to 4.7 percent, indicating greater productivity for the average Czech firm. Limiting the observation to two firms with the same sector specialization would not change the result (4.6 percent). Finally, if the two firms had the same ownership, size, and age composition, the gap narrows further, to 3.8 percent, indicating that the Czech Republic





**Figure 4.16: In the EU12, infrastructure, credit, FDI, and regulations are correlated with productivity**

(correlation between country dummies and policy variables in EU12 countries, 2002-08)

Source: World Bank staff calculations, based on Amadeus, Doing Business, WEF's Global Competitiveness Reports, and WDI.

has a negative mix of firm characteristics (table A4.2).<sup>30</sup> The remaining effect is country-specific.

A complementary way to explore the role of firm features in firm performance is to look at the coefficients of the firms' characteristics in the regression model. Results show that ownership is especially important for productivity growth in the EU12 (table A4.2). Being part of an international group pays: foreign-owned firms grow faster than purely domestic ones, in manufacturing and services. Home-based companies with an international presence<sup>31</sup> also grow faster than domestic-owned companies: by 6.7 percent in manufacturing and by 3.1 percent in services. Size seems to matter less: both in manufacturing and services, size is negatively correlated with productivity growth. Lower productivity growth for larger enterprises can be part of the legacy of the Soviet system; newer, smaller enterprises are more likely to have efficient production processes and less cumbersome employment structures. The age of the firm does not seem to matter for productivity growth in the EU12.

Together, the productivity performance of foreign-owned firms and the positive correlation of inward FDI at the country level with productivity growth at the level of the firm confirm a prominent role for FDI in emerging Europe.<sup>32</sup> Inward FDI can be attracted and stimulated. Good infrastructure and favorable business regulations help the most, even when adjusting for market size and skills of the workforce (box 4.4). Among the business regulations that matter most, three stand out: trade, labor, and taxation (the burden of which is calculated as the total tax rate and compliance costs).

### Why Northern Europe thrived: flexibility in offshoring

About 10 percent of Swedish firms belong to Sweden-based enterprise groups with at least one subsidiary in Europe.<sup>33</sup> By contrast, fewer than 3 percent of Italian or Spanish firms are part of a domestic group with an international presence. As a result, more Swedish firms operate on a European scale and have taken advantage of an enlarged Europe. Such offshoring introduces substantial benefits. Domestic companies in Europe with an international presence involved in manufacturing and

services are at least 30 percent more productive, and their value added grows much faster, than domestically owned companies (figure 4.17).

Investment in new member states—facilitated by the enlargement process—is not only beneficial for FDI-receiving companies. FDI-providing firms in tradable sectors—largely in manufacturing but also in services—leveraged vertical FDI to establish production facilities in foreign markets, reducing labor costs and maintaining competitive advantage. German Mittelstand companies are the best example of this successful integration (figure 4.18).

Successful countries in Northern and Continental Europe not only nurtured domestic firms that invested abroad, but also attracted foreign firms, as reflected in their FDI. In 2000–09, \$4,400 billion came into the EU15 economies, 49 percent of which went to the United Kingdom, Germany, and France (figure 4.19).<sup>34</sup> The result is a widely internationalized enterprise sector.

As with the EU12 above, the drivers of productivity growth in different sectors of the real economy in 2003–08 may be analyzed for the EU15, as follows. Despite similarities, the different stages of enterprise development in advanced and emerging Europe stand out.

- **Do country characteristics explain enterprise performance in the EU15?**

Yes. Based on the panel of surviving firms from the Amadeus dataset, a regression model is applied to explain firm productivity growth in the EU15 countries as a function of the firms' initial productivity level, characteristics (size, age, ownership, and sector), and country dummies.<sup>35</sup> Country dummies

#### Box 4.4: What attracts FDI?—Decent infrastructure and good regulations

Regardless of geographic focus, most studies of the drivers of FDI point to market size (and its growth potential) and factor endowments (infrastructure, human capital) as significant factors in attracting FDI.<sup>1</sup>

The policy environment also matters, however. According to Demekas and others (2005 and 2007), even though market size explains a large part of FDI inflows in Central and Eastern Europe, including Southeastern Europe, the investment climate is another determinant. Expropriation risks, lack of contract enforcement, poor provision of public goods, overregulation, and unreasonable costs of doing business are likely to deter private activity. Mukim (2011), using worldwide data, finds that better access to and availability of land information increases the chances of new investment. Also using worldwide data, Waglé (2011) finds a statistically significant relationship between FDI regulations and the value of inward FDI, after controlling for market size and quality of infrastructure logistics.

The Amadeus database can also be used to shed light on the relationship between the business environment and FDI. By considering a list of top-performing manufacturing firms in Europe—the 150 international groups that contributed the most to value added in 2003–08—and analyzing their asset allocation across countries, we can measure the country-specific factors in a location choice. These 150 groups made manufacturing investment (for example, car parts and assembly factories) as well as retail, wholesale (car dealers, for example), and other services (car leasing) subsidiaries.

To calculate the factors, we use the value of the assets of these companies' foreign subsidiaries as proxies for the FDI in a specific country in given sectors. Exogenous factors affecting FDI decisions about where to locate, such as the country's market size, labor skills, infrastructure, and business regulations, we also consider. GDP (in US\$ billions) is used as a proxy for the market size of the host country, while the proxy for FDI-relevant institutions comes from the World Bank's Investment

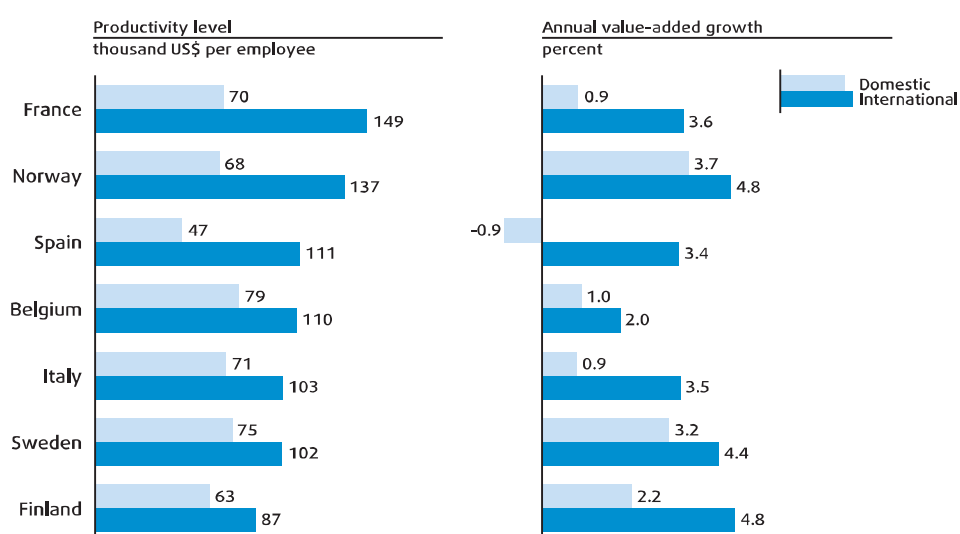
Across Borders database.

The analysis for Europe confirms what Mukim (2011) and Waglé (2011) found for the rest of the world: the quality of FDI-related institutions (measured by the ease of accessing industrial land), regulation of business operations, and infrastructure quality in a specific country are positively associated with the share of total investment made by the top global groups in Europe, even when controlling for market size and workforce skills. A one standard deviation increase in the Doing Business indicator raises the country share by 2.1 percent. For the Investment across Borders index on access to land, a one standard deviation increase would augment the country share by 0.7 percent. And a one standard deviation increase of the infrastructure quality would increase the country share by 2.8 percent.

<sup>1</sup> Mukim and Nunnenkamp 2010 offer an overview of the literature; World Bank 2010b gives a compilation of recent studies on this subject.

are statistically significant and large, indicating that cross-country differences are a relevant correlate of the performances of similar companies across the EU15. Locating in one country or another can mean up to 7 percentage points of productivity variation in manufacturing and 5 percentage points in services (table A4.3).<sup>36</sup> Country performances differ widely among sectors: Norway leads in productivity in services, but is the laggard in manufacturing.

- **Are country characteristics more important than a firm's features in explaining its performance in the EU15?** Generally no. The firm's type matters most. The exclusion of country dummies from the regression of productivity growth in manufacturing reduces the explanatory power of the model by 19 percent. For services, the model loses 11 percent. With the same exercise but excluding firm characteristics—size, ownership, sector of activity,<sup>37</sup> and age—the model loses about 25 percent of its explanatory power, in both manufacturing and services. Overall, these results suggest that the firm size, age, ownership, and sector composition explain a large share of cross-country disparities.
- **What are the most important country characteristics for firm performance in the EU15?** The factors for advanced Europe appear to be different from those for emerging Europe. Different variables explain productivity growth in manufacturing and services, with one element in common: entry and employment regulations are positively correlated with productivity growth. But while manufacturing productivity is largely correlated with FDI inflows and outflows, services appear to be most affected by regulations (figure 4.20). As with emerging Europe, an extended version of the model including variation in country characteristics as explanatory variables was used to understand causes and effects. Results show that for manufacturing in EU15, changes in supply of outward FDI increase productivity growth. Similarly, improvements in business regulation appear to increase productivity growth in both manufacturing and services.



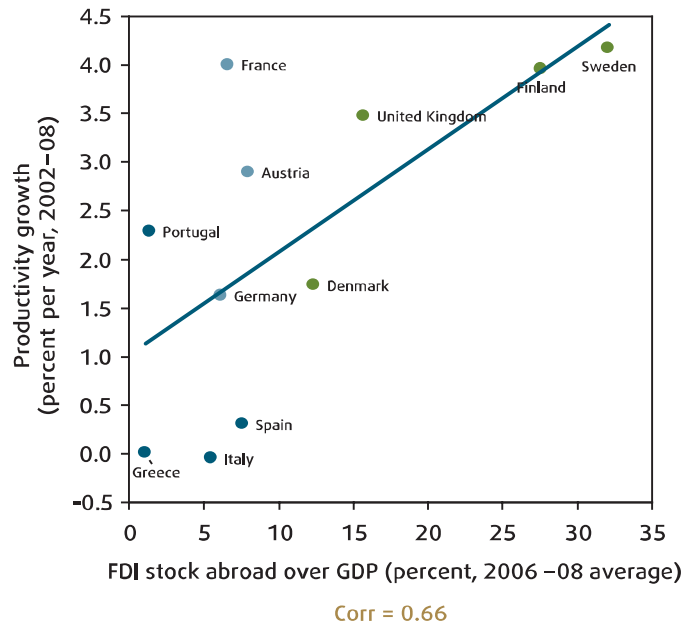
Source: World Bank staff calculations, based on Amadeus.

**Figure 4.17: In the EU15, firms with a foreign presence are more productive and grow faster**

(productivity levels, 2008, and growth of value added, 2002–08)

**Figure 4.18: Investing abroad is related to higher productivity growth**

(correlation between economywide productivity and investments abroad)

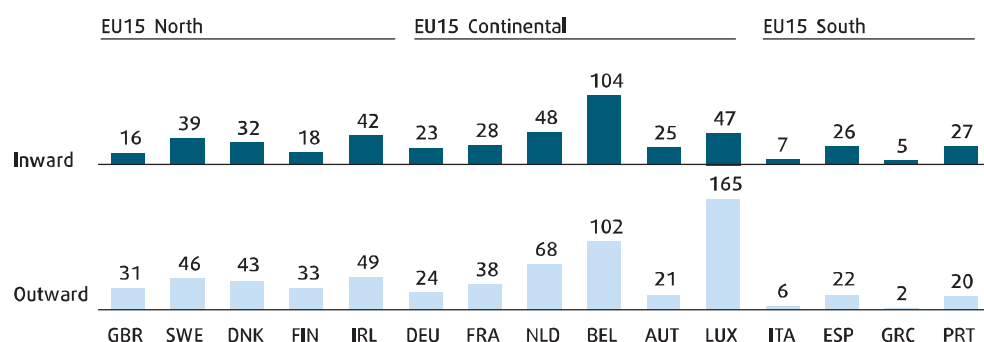


Note: Both productivity and FDI figures refer only to manufacturing industry. For France and United Kingdom, the period of time considered to calculate the productivity growth is 2002–07. For Greece, data over the period of 2003–07 are used to compute the growth rate.  
Source: World Bank staff calculations, based on Eurostat.

- **What firm features explain firm performance most in the EU15?** Italian manufacturing is illustrative. The average productivity growth gap between an Italian and a Finnish firm in manufacturing is 2.9 percent. However, considering companies with the same sector specialization, the gap declines to 2.4 percent. If firms in these two countries were similar in size, age, and ownership composition, the gap would be just 1.7 percent (table A4.3).<sup>38</sup> These results suggest that ownership, size, and sector are important.

Estimated coefficients of the firm characteristics in the regression model reveal other points. For EU15, ownership, size, and age are important firm features for productivity growth (table A4.3). Foreign-owned firms and affiliates of an international group grow more. Unlike within the EU12, scale is important in EU15 countries in both manufacturing and services: larger firms' productivity rises faster. Firms that have 50–499 employees grow faster than firms with 10–49 employees. Older firms in services expand faster than the youngest. In manufacturing, however, age does not seem to matter.

In the EU27 as a whole, workforce skills do not appear to be an important country characteristic to explain productivity growth at firm level. Using the Amadeus sample of firms, the correlation between estimated country dummies and workforce skills—measured as the proportion of the workforce with tertiary education—showed a positive but small effect for EU12 firms: 0.16 for manufacturing and 0.07 for services. For the EU15, the estimate was negative (but also small): –0.08 for manufacturing and –0.11 for services.



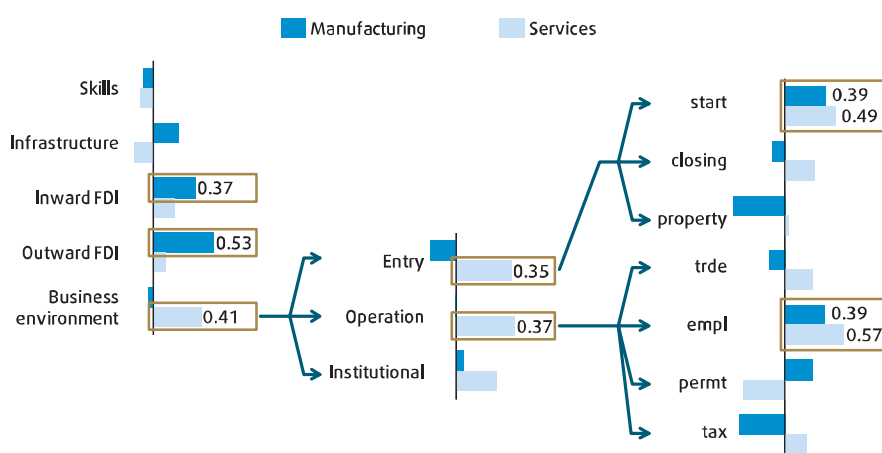
**Figure 4.19: Northern and Continental Europe get the bulk of FDI**

(EU15 FDI stock, percentage of GDP, 2008)

Source: World Bank staff calculations, based on Eurostat.

The results are somewhat surprising, because much evidence shows that human capital is an essential factor in economic growth. One possible reason for this result might be the indicator used to proxy skills. The outcome of education is composed of quantity and quality of educational capital. While quantity can be measured by the proportion of the workforce with a certain level of instruction, or even by the number of graduates, it is hard to accurately measure the quality of educational capital. Conceptually, quality is reflected in the performance of students and graduates, but it can be also measured by the perceptions about the quality of the educational system.

Using the quality of education systems reported by the World Economic Forum and performing the same exercise with the estimated country dummies provides somewhat different results. The quality of labor force does seem to matter for firm level productivity growth at firm level, particularly in EU12 countries.<sup>39</sup> It appears to matter even more among the non-EU countries of Europe (box 4.5).



**Figure 4.20: In the EU15, FDI and regulations are the closest correlates of productivity**

(correlation between country dummies and policy variables)

Source: World Bank staff calculations, based on Amadeus, Doing Business, WEF's Global Competitiveness Reports, and WDI.

#### Box 4.5: Productivity drivers are similar outside the European Union

Using the sample of surviving firms (with 10 employees or more) from the Amadeus dataset it is possible to study a few non-EU European countries such as Bosnia and Herzegovina, Croatia, Serbia, and Ukraine. By performing exactly the same set of exercises, a picture similar to the one for EU12 countries emerges.

First, country characteristics explain enterprise performance more, indicating that similar companies perform differently in different countries (table A4.4, columns 1 and 6). For example, the productivity of a manufacturing company operating in Croatia grows 8.6 percentage points higher than a similar manufacturer in Bosnia and Herzegovina. The results also show that country characteristics

are more important than firm features, a pattern that is similar for manufacturing and services. The exclusion of country dummies from the regression of productivity growth in manufacturing reduces the explanatory power of the model by 20 percent. For services, the model loses 16 percent. Excluding firm characteristics—size, ownership, sector of activity, and age—the model loses about 10 percent of its explanatory power in manufacturing, and 11 percent in services.

Second, the most important country characteristics are incoming FDI, availability of credit, and ease of conducting business operations (particularly trade and tax regulation). Similar results for manufacturing

and services indicate that for this group of countries, these “fundamentals” are more relevant for enterprise productivity.

Third, ownership is the most important firm-specific variable for productivity growth. Being part of an international group pays off. Foreign-owned firms grow faster than purely domestic ones, both in manufacturing and services. Home-based companies with an international presence grow 8 percent more than domestic-owned companies, but only in manufacturing. Older firms grow less than young companies, both in manufacturing and services, while size does not seem to matter for productivity growth (table A4.4, columns 1 and 6).

### Why the south is slow: inappropriate structures and burdensome regulations

Why did the southern countries in the EU15 not experience the productivity improvements that benefited the rest of Europe? The answer lies in both firm and country drivers of productivity. First, the mix of companies nurtured at home—skewed toward microenterprises—and the limited number of firms attracted from abroad explain part of the productivity gap. Second, an unfavorable set of country characteristics, including a more complex regulatory framework, also creates an environment that is not conducive to productivity growth. The two elements are connected: the “mix” of companies is largely driven by a country’s environment, and each requires analysis.

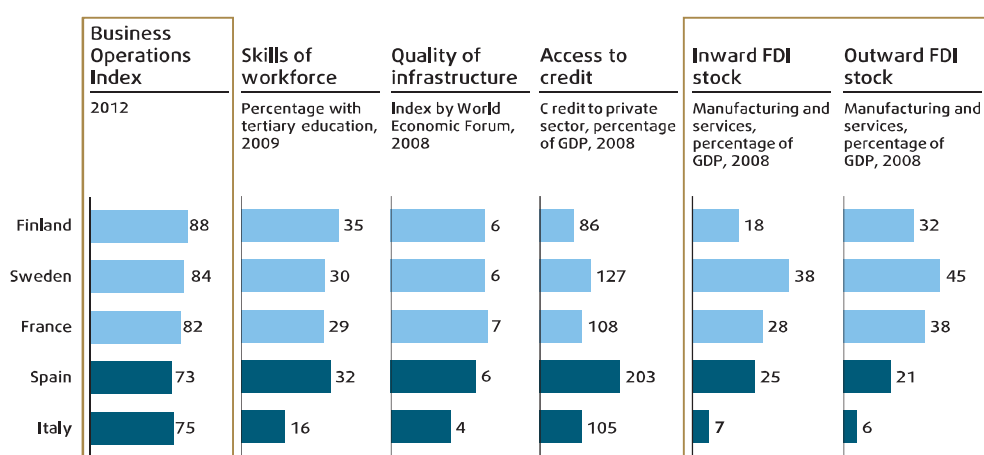
A comparison of the EU15 South with the rest of the EU15 shows that business regulations and FDI—the country-level variables positively correlated with firm performance in advanced Europe—consistently lag in Southern Europe (figure 4.21).

But size, too, plays an important role. The average size of firms in Greece, Italy, Portugal, and Spain is a little more than half that of firms in the rest of the European Union (according to Eurostat data). Size is a good proxy for the “type” of company and the sophistication of its operations. Microenterprises are mostly family-owned and have a limited division of tasks. Flexibility in the use of labor and limited overhead costs allow microenterprises to reach a basic level of efficiency. However, limited capital investments constrain microenterprises in scaling up operations, especially in capital-intensive sectors. Microfirms play a role in the economies of Southern Europe, which is uncommon in the other developed economies of Europe. One of two workers in the EU15 South is employed by microenterprises. In addition, about a third of the entire value added of the economy is generated by these firms. These figures are almost double those for the rest of Europe, where large enterprises have a more prominent role. The proportion becomes even higher when small and medium enterprises are added to microfirms: taken together, micro and small and

medium enterprises employ four of five workers in Southern Europe (figure 4.22).

Microenterprises are one of the factors behind the productivity gap between the EU15 South and the rest of the EU15. If the south had a size mix similar to that of the other countries in advanced Europe, and its microenterprises had a productivity level equal to that of its comparators, Southern Europe would reduce its productivity gap by 40 percent.

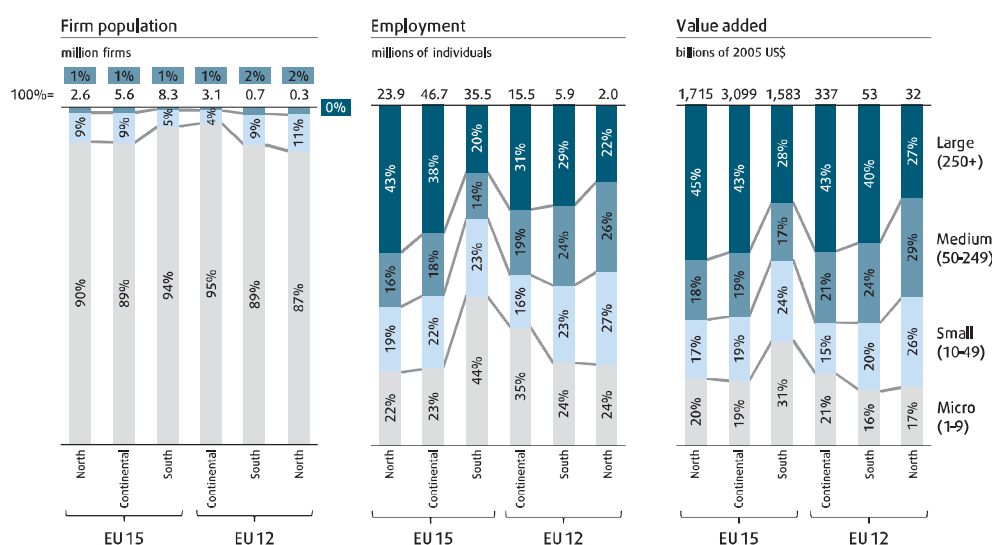
A smaller share of large firms explains not only Southern Europe's gap in productivity, but also the difference in export levels. Medium and large enterprises perform consistently better in exports than smaller enterprises, and Southern Europe is no exception. The export propensity of larger firms in Southern Europe is similar or better—as in Italy—than in the rest of advanced Europe (figure 4.23).



**Figure 4.21: Southern Europe underperforms the rest of the EU15 in all aspects but access to credit**

(country-level indicators, 2008-12)

Source: World Bank staff calculations, based on Doing Business, WEF's Global Competitiveness Reports, WDI.



**Figure 4.22: Microfirms generate half the employment and a third of the value added in the EU15 South**

(distribution of firm population, employment, and value added per firm size structure, 2008)

Source: World Bank staff calculations, based on Eurostat.

Box 4.6: The features of a global firm

Firm ownership is an important characteristic in the evolution of firm performance. Companies with international operations (a global headquarters of an international group or one of its domestic affiliates) have higher productivity growth than purely domestic-owned firms in the EU15, both in manufacturing and services. Size is the most important correlate of

internationalization. Firms with more than 1,000 employees are 35 percent more likely to be the global headquarters of a company in the EU15 (box table 1). Age is not important. But there is country-specific bias. For example, being in Italy and Spain significantly reduces the probability of being a global headquarters, while being in Sweden increases this likelihood. Why? Business regulations

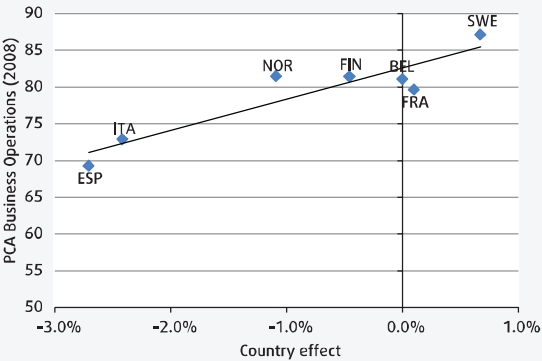
and related productivity differences. The probability of internationalizing is correlated with better business regulation (box figure 1). This might reflect the fact that firms in countries with better business regulation have higher productivity growth. “Global sourcing” models (Antràs and Helpman 2004, for example) suggest that as firms increase productivity, they tend to access international markets by producing abroad.

Box table 1: Average estimated marginal effects on the probability of being a global headquarters in EU15

Variable	dy/dx (percent)	P> z
Size (50–249)	7.25	0.000
Size (250–499)	18.34	0.000
Size (500–999)	22.92	0.000
Size (1,000 or more)	35.04	0.000
Age	–0.06	0.494

Note: Additional controls considered but not reported are sector (NACE) dummies. The omitted size category is (10–49). Source: World Bank staff calculations.

Box figure 1: Better business regulations aid successful globalization of enterprises



Source: World Bank staff calculations, based on Doing Business 2008.

If Southern Europe had a higher share of larger firms, its export gap could be filled (see Barba Navaretti and others 2011).

Similarly, larger companies are more inclined to invest in foreign markets. Larger firms are most likely to have an international subsidiary and to benefit from offshoring (box 4.6).

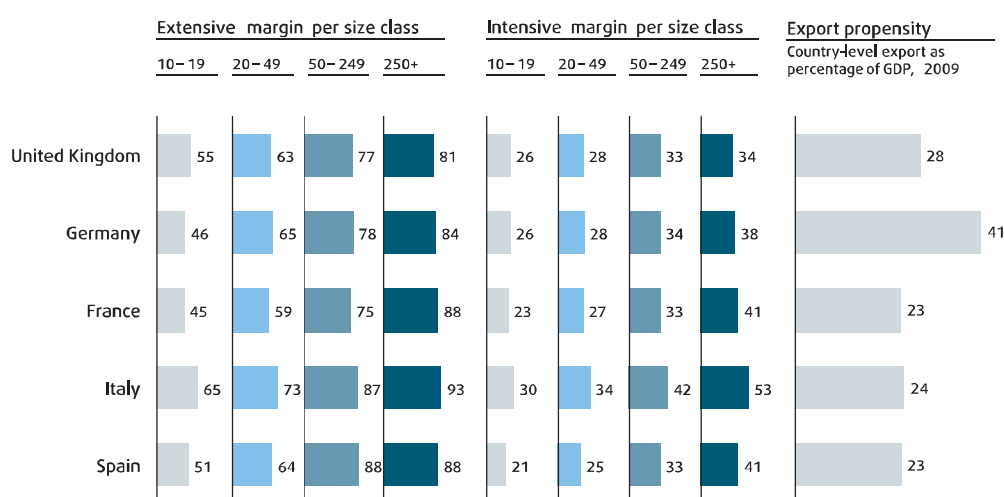
The industrial structure is not a given. For instance, the presence of foreign-owned firms is influenced by policy decisions and a country’s ability to attract FDI. The business environment is a critical driver in this process (box 4.4). Lagging in regulations, Southern European economies are making themselves less attractive to foreign firms. Additionally, microfirms in Southern Europe prefer to stay small and informal as a coping strategy, to simply bypass a complicated regulatory framework.

Comparing countries in advanced Europe, the correlation between a heavier regulatory framework (measured by a lower quality of regulations) and the share of employment in microenterprises becomes evident. On the one hand, microenterprises face simplified regulations in most countries.<sup>40</sup> On the other, weaker enforcement mechanisms are applied to microfirms,<sup>41</sup> which allow



them to more easily operate semiformally. This is corroborated by the relationship between density of microfirms and the share of the informal sector in the economy.<sup>42</sup> Both elements provide an incentive for firms to stay small (figure 4.24).

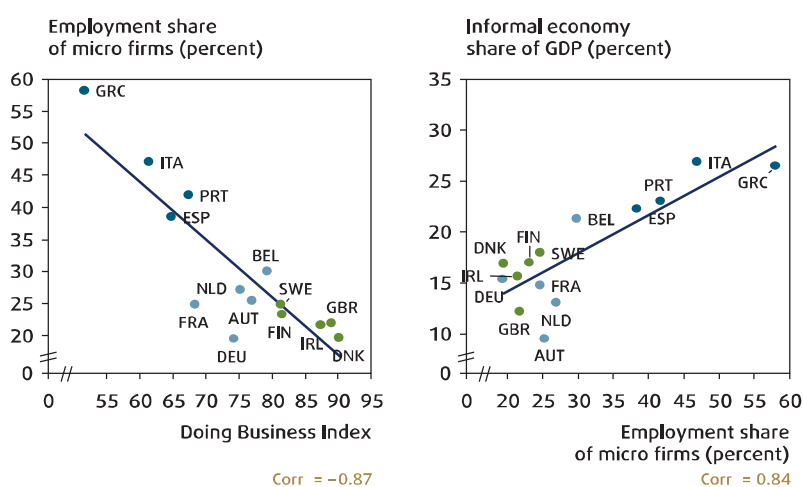
At the same time, faced with more complicated business regulations and competition from microenterprises, small and medium enterprises and larger firms in Southern Europe find it harder to grow. They are likely to survive but shrink in size. A healthy competitive process should select companies so the better ones survive and graduate toward larger classes while inefficient companies exit the market. This is not what happens in Southern Europe. Firms do not grow, they often downsize, but do not exit the market.



**Figure 4.23: In the EU15, size matters more than country for exports**

(percentage of exporting firms and share of export per size class, 2008)

Source: Barba Navaretti and others 2011; and Eurostat.



Note: For Ireland, data refer to 2005.

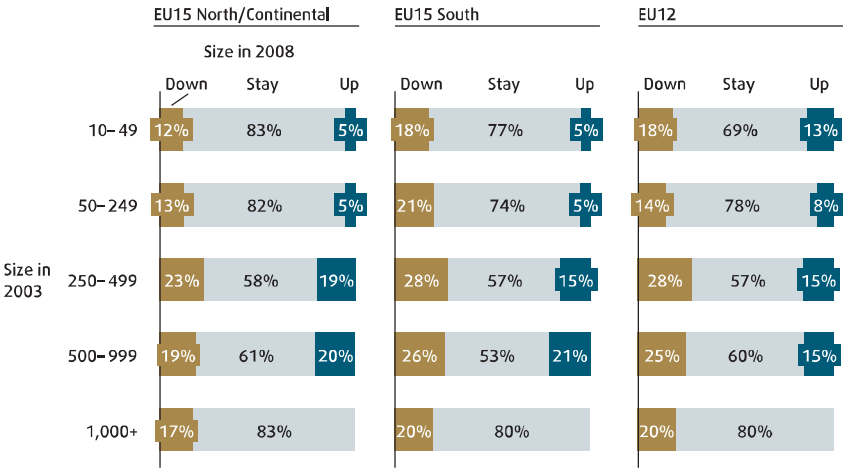
Source: World Bank staff calculations, based on Eurostat, Doing Business, and Schneider and others (2010).

**Figure 4.24: In a difficult business environment, firms stay small and operate more informally**

(business environment, share of informal economy and microenterprises in the EU15)

Figure 4.25: Firms in southern and emerging Europe are most likely to survive, but shrink

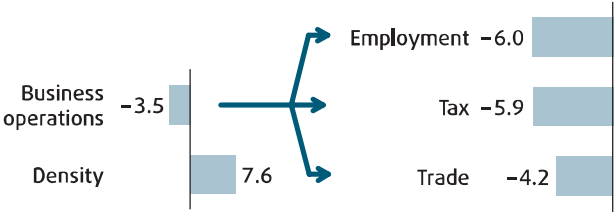
(share of firms that maintained (stay) or modified (down or up) their size between 2003 and 2008)



Source: World Bank staff calculations, based on Amadeus data.

Figure 4.26: In a better business environment, firms are less likely to shrink

(marginal effect of a 10-point improvement in business regulations and the density of microfirms)



Note: Data refer to the estimated marginal effects of varying, separately, the key variables used in the multinomial logit model: regulation on business operations and density of microfirms.  
Source: World Bank staff calculations, based on Amadeus.

The matrices in figure 4.25 show the distribution of firm size using the initial (2003) and final (2008) size for a given class. For instance, in the EU15 North/Continental, 83 percent of surviving firms with 10-49 employees in 2003 were in the same size category in 2008, while 12.4 percent were smaller (but still in business). In the EU15 South, this latter proportion was higher: 18.5 percent of firms of that size class had transited to a smaller size category by 2008.

By estimating the probabilities of a firm’s downsizing, staying in the same size category, or jumping to a higher size class from 2003 to 2008—based on the Amadeus panel of survival firms and relating these probabilities to country characteristics (regulations, industrial structures, and access to credit)—one sees what helps foster competition and creative destruction.<sup>43</sup>

Regulations seem related to this Southern European phenomenon, both directly and through their impact on microfirms. The industrial structure is approximated by the density of microenterprises in the country: the share of microfirms per 1,000 employable people. Credit-to-GDP is used to approximate access to financing.<sup>44</sup> Figure 4.26 presents the marginal effect of both business regulation (measured by each alternative indicator used in the model) and density of microfirms on the probability of decreasing in size class.

The probability that a firm transits to a smaller size class from 2003 to 2008 is negatively related to business regulation in the country where it is located, suggesting that better business regulation reduces the probability

of downsizing. For instance, improving regulation by 10 points decreases the probability of downsizing by 3.5 percent. When regulations are complicated, firms survive, but stay small. The existence of microfirms might even drag down firms that are larger, hampering their growth. An increase of 10 points in the density of microfirms is related to increases of about 8 percent in the probability that a firm will downsize. The effect of credit on the probability of downsizing did not seem to be statistically significant.

### What is the relationship between regulations and enterprise growth?

Parmalat, an Italian dairy and food corporation, became famous in 2003 for the biggest bankruptcy in Europe's history.<sup>45</sup> Parmalat was rescued, its business downsized, and the company brought back to market in 2005. In early spring 2011, Lactalis, a large French dairy group, expressed interest in acquiring Parmalat. The announcement spurred heated political discussion in Italy. After three months Lactalis was allowed to take over Parmalat, but not before politicians denounced the acquisition by foreign companies of Italy's "family jewels."

In July 2011, the Italian parliament approved a law regulating book sales, crafted along the lines of similar legislation in force in France since 1981 known as the "anti-Amazon Law." The law regulates the price of books (physical and digital) that can be sold in retail and wholesale outlets and over the Internet, restricting the timing and amount of discounts. The law protects small bookstores against competition from large chains and Internet sellers.

Regulations such as these are a major obstacle to business in Southern Europe. Consider a truck company operating in both the United Kingdom and Italy. The payroll slip of a truck driver in the United Kingdom consists of five lines, and costs about €5 to fill in. The payroll slip for a similar driver in Italy is a page long, requires the services of an accounting expert, and costs about €25–30 to fill in.

This section explores whether European enterprises are overregulated and whether these regulations are an obstacle to economic growth. The short answer is mostly not. Sweden shows how a heavily regulated country can, indeed, perform well (box 4.7).

Country and firm characteristics matter for performance, and business regulations are a significant part of the puzzle. On the one hand, regulations directly affect company performance in producing jobs, value added, and exports, because simplifying payroll filing requirements is likely to reduce costs and improve firms' productivity. On the other, regulations can change the type of businesses that succeed. An unnecessarily complex business environment breaks the virtuous circle encompassing productivity, enterprise growth, and internationalization. Faced with complicated regulations, firms tend to be smaller, less productive, and less inclined to operate in international markets.

The relationship between business regulation and enterprise growth can be disentangled into three (interrelated) threads: regulation for graduating small and medium enterprises; that for increasing productivity; and that for internationalizing firms (either through exports or offshoring) and attracting foreign companies.

**Box 4.7: The Swedish model**

Sweden has a total corporate tax rate of 50 percent but achieves employment participation rates above 70 percent. Swedish enterprises increased their productivity at 1.4 percent a year over the last 15 years, almost up to the level seen in the United States.

Sweden achieved its productivity growth by keeping regulation compliance requirements

to a minimum. According to Doing Business, firms in Sweden are only required to pay taxes twice a year—the fewest in the world. The time required for Swedish firms to fulfill their tax requirements is just 122 hours a year, significantly lower than the OECD average of almost 200 hours. (Italy requires 15 tax payments, taking small and medium

enterprises about 285 hours.) A simple tax system also reduces reliance on, for example, tax accountants. By eliminating a burden on firms, a simple tax system partially compensates for a higher tax rate.

Source: World Bank staff calculation, based on Doing Business 2011.

**Small firms are beautiful—when they are young**

“Small is beautiful” was the industrial development slogan of the 1970s in Italy. Italian family-run enterprises were praised for their dynamism, efficiency, and flexibility, which flowed mainly from their small size. But there is a minimum scale below which size becomes a constraint to growth. Growing is an important part in nurturing productivity growth and internationalizing firms. As seen, larger firms benefit from economies of scale, are more productive, and are likely to engage in international operations (through export and FDI).

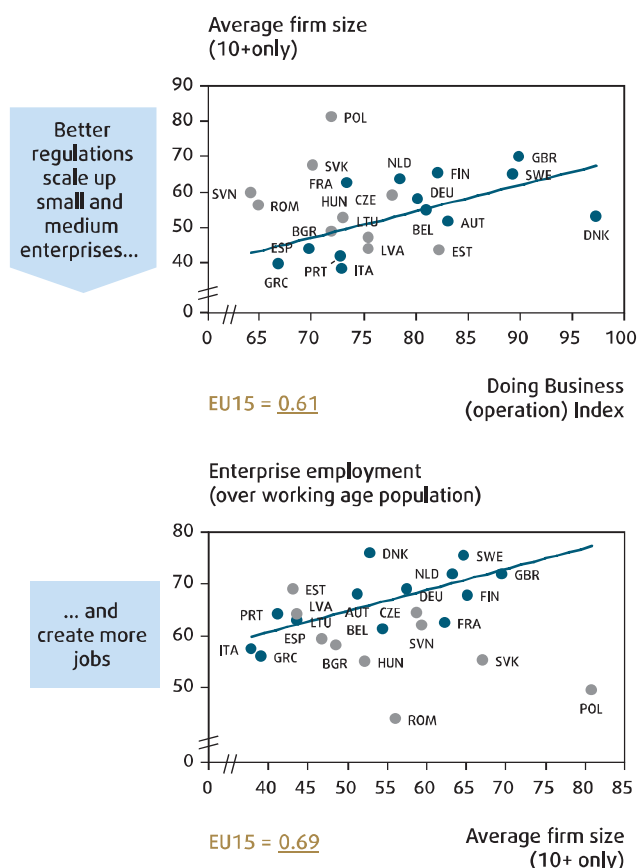
Business regulation plays an important role in this process (figure 4.27). A better regulatory framework affects the growth of firm size. Hence policies concerning the operation of firms, such as tax administration and labor regulation, can improve the firms’ cost structure. Reforms in these areas can be especially important in graduating small and medium enterprises to larger firms (Shiffer and Weder 2001).

The instruments that help firms grow bigger depend on the stage of development. In emerging Europe, improving access to credit and institutional development, such as greater judicial efficiency, by the late 1990s, moderates financial constraints and contributes to firm growth (Kumar, Rajan, and Zingales 1999).

**Reducing costs to increase firm productivity**

Enterprise productivity growth is largely associated with country characteristics where firms operate. The analysis of surviving firms showed that similar firms (in size, age, ownership, and sector) perform differently across countries, suggesting that the country and its policy environment are relevant to productivity performance. The same analysis highlighted some of the country characteristics related to productivity performance. Business regulation was important. As highlighted by Crafts (2006), business regulation can result in resources directed toward compliance rather than the creation of productive output, and can impose constraints on the choice of production techniques (such as preventing the use of inputs) or lead to a misallocation of resources.

The earlier empirical analysis shows that the size of the relationship between business regulation and productivity performance differs according to region (EU15 or EU12) and sector (manufacturing or services). In the EU12, business regulation, with infrastructure and credit, positively correlates with productivity



Note: For the Slovak Republic, data refer to 2005.

Source: World Bank staff calculations, based on Doing Business and Eurostat.

performance (both for manufacturing and services), with the strongest correlation with trade, employment, and taxes. In the EU15, business regulation, especially for services, is an important country factor, particularly through regulations on business start-ups and labor.

Ensuring that business regulation is well designed and targeted is likely to have a positive impact on the productive capacity of an economy and productivity at firm level. These important regulatory areas—trade, employment, taxes, and business start-ups—can be illustrative of how to design regulations to improve productivity performance.

For employment regulation, reducing the costs of hiring and firing workers would increase the incentives to innovate, and hence productivity growth (Scarpetta and Tressel 2002). Reforms that simplify tax regulations and reduce the administrative costs of compliance (which tend to be proportionately higher for smaller firms) will likely have a positive effect on productivity growth as resources are freed to create productive output. Reforms that reduce start-up cost for entrepreneurs, simplify company registration procedures and requirements, eliminate steps to register property, and streamline bankruptcy procedures (which facilitate exit of inefficient enterprises) are likely to increase

competition and contestability of markets. Increased competition will in turn provide an incentive for firms to adopt more advanced technologies, thereby increasing productivity (Klapper, Laeven, and Rajan 2006; Poschke 2010).

### Firms beyond borders

A regulatory environment conducive to private sector growth closely relates to international expansion, either through exports or through production abroad.

Reforms that make it easier for firms to export and run their business operations are likely to lift the export performance of an economy and therefore overall economic growth. Recent literature provides evidence that “behind the border” policies matter for trade performance (Hoekman and Nicita 2008) and that trade facilitation measures and the prevailing business environment in the trading countries have a significant effect on trade development. Anderson and Marcouiller (2002) find that weak institutions act as significant barriers to international trade. Francois and Manchin (2007) measure institutional quality through the lens of economic freedom, focusing on the size of government, freedom of trade, protection of property rights, and business regulation. They find that strong institutions are associated with increased trade at both the intensive and extensive margins.

Overall, aggregate data suggest that trade-specific regulation helps firms internationalize, either through exports or production abroad. Policy reforms to facilitate trade can enhance countries’ competitiveness, allowing them to trade goods and services on time and with low transaction costs. By the same token, policies that set certain requirements in some sectors for product quality—such as technical standards or safety requirements—can force firms to be internationally competitive and promote exports when such policies are harmonized with international standards.

Building a regulatory environment that is friendly to foreign investors is necessary (box 4.4). Even though enforced legal frameworks may not be the main drivers of foreign investment decisions, they can tip the balance in favor of one economy over another (World Bank 2010). Specifically, expropriation risks, lack of enforcement of contracts, poor provision of public goods, overregulation, and unreasonable costs of doing business are likely to deter private activities, domestic or foreign. Northern Europe is a good example of an environment in which more stringent rules and regulations are compatible with a thriving private sector because they are accompanied by efficient implementation procedures that minimize the burden for enterprises.

### Enterprises for a growing Europe

Enterprise is not a weak part of the European growth model. The overall soundness of the European enterprise model is indicated by its performance—European enterprises have largely delivered what they are expected to, with only a few qualifications.

European firms have created jobs at roughly the same pace as other developed economies around the world. The south has been particularly successful in creating jobs, but mostly in cyclical activities such as construction. The northern

and continental countries also increased labor participation rates—already among the highest in the world. In Eastern Europe, enterprises recovered from the transition and in many cases generated employment rapidly. Productivity patterns show that Western Europe has largely succeeded in keeping pace with other advanced economies. Eastern Europe impressively increased in its productivity, while the EU-15 North and Continental countries also benefited from eastward outsourcing of labor-intensive activities.

Lately, however, Southern Europe has moved away from such convergence, and its productivity growth has stalled. Northern and Eastern Europe, already more outward-oriented than the south, are expanding productivity and exports faster than the south. This internal divergence will strain the economic union, especially countries using the euro.

What has helped the countries that did better than others? In advanced Europe, northern and continental countries succeeded globally by developing pan-European and global businesses, both in sales and in sourcing. In emerging Europe, the winners are the countries that set aside a “fear of foreigners” and created an environment favorable for FDI. Southern Europe, however, was caught in a no man’s land. With an industrial structure dominated by smaller firms—largely because of unfriendly regulations—Southern Europe has fewer firms equipped to benefit from the single market, either in attracting foreign capital from the north or in making use of cheaper labor in the east. These experiences offer three lessons:

- **More Europe, not less.** Countries whose enterprises were ready to operate in the single market seem to be winning the race. When barriers to entry were eliminated and transaction costs cut, countries with industrial structures with larger and more outward-oriented enterprises did better. Enterprises in the former communist countries adjusted to this new European imperative better than those in the EU-15 southern states.
- **Regulations can upgrade industrial structures or degrade them.** The type of enterprises operating in each country—particularly their size and ownership—is a function of the design and enforcement of regulations. Good regulations provided the right incentives for firms to grow and reach an optimal size, and were as critical as the quality of the physical infrastructure in attracting FDI. Similar companies performed better when regulations were less burdensome. Of course, other aspects played a role. In countries at an earlier stage of development of the enterprise sector—like those of the former Soviet bloc—hard infrastructure and credit were as important as regulations. In advanced Europe, regulations were a critical competitive factor, especially in services.
- **Better entrepreneurial structures can be built—or imported.** Countries do not necessarily need to create domestic enterprises, especially when entire sectors need to be revamped, as was the case for emerging Europe. Successful countries did not enact protectionist policies, but welcomed FDI. Foreign companies modernized their subsidiaries and affiliates and connected them to international markets, but they also created spillovers among suppliers and competitors. Openness to FDI also helps advanced countries like Germany. Countries that took advantage of these opportunities fared better than those that did not.

If they continue to improve their regulations, financial sectors, and infrastructure, countries in emerging Europe will keep benefiting from the successful European convergence machine. Southern Europe must also deal with its entrepreneurial deficit. Greater openness to the rest of Europe seems to be the solution for the laggards: importing firms, capital, regulations, and institutions from the most advanced countries would help Southern Europe grow in line with its peers. Northern and continental countries should fix their sights on enterprises in North America and East Asia. Maintaining their position at the frontier requires efficiency and an outward orientation. Future growth will require reestablishing the momentum for regulatory reform last seen in the mid-1990s and early 2000s, this time aimed at services. And it will require improving Europe's innovation performance, addressed in chapter 5.

For now, the answer to the main question asked at the beginning—are regulations an obstacle for enterprise in Europe?—is a qualified no. Outside the EU15 southern states, European enterprises have created jobs, added value, and generated exports over the last decade.

#### Answers to questions on page 187

- Workers expect enterprises in Europe to create jobs, shareholders to generate value added, and governments to bring in sizable export earnings.
- In most parts of Europe, firms have taken advantage of greater regional integration to decentralize production, attract foreign investment, and expand the markets for their products.
- In Western and Eastern Europe, industrial structures were better suited for a single market; Southern European enterprises have been slower to offshore activities and to attract foreign investors.
- In advanced European economies, many governments have to streamline regulations to make doing business easier; in emerging Europe, most have to improve infrastructure and credit as well.



## Chapter 4: Annexes

### Annex 4.1: Using the Amadeus dataset

Amadeus is a comprehensive, pan-European, firm-level database of financial information for more than 11 million public and private companies throughout Europe, provided by Bureau van Dijk. A 2010 version of the Amadeus database is used for the firm-level analysis in this chapter.

Although rich and detailed in balance sheet information, the Amadeus database does not necessarily reflect the underlying population. In most countries Amadeus did not have a satisfactory coverage of microfirms. For this reason we focused our research on companies with 10 or more employees, small and medium enterprises, and large firms.

Another limitation of the Amadeus database is that firms are not removed from the database unless they fail to report financial information for at least five years. Companies that exit the market or stop reporting their financial statements are represented as “not available/missing” for four years following their last filing. Amadeus does not distinguish firms that close their activities from those that exit the sample because they either fall below a size threshold or were reorganized through a merger, for example. This limitation drove our choice to focus our analysis on a (balanced) sample of surviving firms that were present in the database for the entire period of observation. In addition, firms that were involved in merger and acquisitions operations during 2003–08 were excluded in order to eliminate meaningless growth measures.

To ensure that the sample is representative of the firm population and supports the application of inferences to the broader population, a resampling technique was applied. Population weights were computed using the Eurostat database for the year 2006 for every size, sector, and country stratum.<sup>46</sup> Random draws were taken from each size-sector-country stratum in the sample (targeting firms with 10 employees or more) in order for each stratum to correspond to its population weight. Once the sample was drawn, a two-step procedure was implemented to control for extreme outliers. First, observations for which the employment growth rate was larger than 300 percent (if the firm had fewer than 50 employees) or 50 percent (if the firm had more than 50 employees) were excluded from the analysis. Second, companies with annual productivity growth more than three standard deviations away from the average value in each country were excluded.

The Amadeus dataset was used to collect information on the following:

- **Company characteristics:** The main sector of activity and year of registration and ownership were collected to verify differential performance. For ownership, information on the global ultimate owner contained in the Amadeus database was used to distinguish companies that are purely domestic, part of a domestic group operating on a European or global scale, or foreign-owned.
- **Company performance indicators:** Value-added data<sup>47</sup> and total number of employees included in the company’s payroll<sup>48</sup> were collected to perform calculations of productivity and employment growth over time.

Table A4.1 shows the composition of the final sample of surviving firms adopted in the empirical analysis.

**Table A4.1: Sample composition**

Country	Number of firms per year
Bosnia and Herzegovina	590
Belgium	2,485
Czech Republic	2,410
Estonia	561
Spain	16,850
Finland	1,035
France	15,029
Croatia	1,211
Italy	17,143
Norway	1,523
Poland	3,811
Romania	4,249
Serbia	1,465
Sweden	2,436
Slovenia	526
Ukraine	6,782

## Econometric results

To analyze productivity growth in Europe, while disentangling the impact of firm level from country-level characteristics, we start from estimating the following firm-level equation:

$$\Delta \ln(Prod)_{i,03-08} = \alpha + \beta_1 \ln(Prod)_{i,03} + \beta_2 Age_{i,03} + \beta_3 Size_{i,03} + \beta_4 OwnType_{i,03} + \sum \varphi Sector_m + \sum \gamma Country_j + \varepsilon_i$$

where  $\Delta \ln(Prod)_{i,03-08}$  is the annualized growth rate of productivity (defined as value added per employee) of the  $i$  firm from 2003 to 2008.<sup>49</sup> On the right side, besides the error term we include some observable firm characteristics such as size, age, and ownership. *Size*, as in 2003, is expressed in number of employees on the company's payroll, defined by the categories 10–49 total employees, 50–249, 250–499, 500–999, and 1,000 or more. *Age* (in years), as in 2003, is defined by the categories of 1–5 years old, 6–10, 11–20, 21–30, and older than 30. *Ownership type*, in 2003, is defined by a categorical variable distinguishing whether the firm is: a global headquarter of a group with international presence or one of its local subsidiaries, a foreign-affiliated firm,<sup>50</sup> or a purely domestic-owned firm.<sup>51</sup> As we control for (initial) firm characteristics in 2003, we also include as a right-side variable the (log of) productivity level in baseline as a way to control for the fact that firms that start at a higher level may grow at a slower rate.  $Sector_m$  is a vector of sector dummy variables defined at NACE 1.1 level and  $Country_j$  is a vector of country fixed effects.

Estimations are produced using ordinary least squares, and errors are clustered by country to allow for possible correlations in growth rates across firms in the same country. Regressions are run separately for EU15, EU12, and other countries as a way to better search for the sources explaining the differences between the two regions. Besides, in order to explore the sector

heterogeneity—mainly related to different technologies used—we also separate the regressions by manufacturing and services, which highlight the drivers of productivity growth in different sectors of the real economy.<sup>52</sup> Results are then presented separately for EU12 and EU15 as well as for manufacturing and services (except construction) industries separately.

**Table A4.2: Firm-level productivity growth, 2003–08, EU12 countries**

	Manufacturing				
	All controls	Ownership + sector + baseline prod + country dummies	Sector + baseline prod + country dummies	Baseline prod + country dummies	Only country dummies
	(1)	(2)	(3)	(4)	(5)
Ln(prod) 2003	−0.1237*** (0.005)	−0.1242*** (0.005)	−0.1227*** (0.005)	−0.1167*** (0.005)	
Size (50–249) <sup>1</sup>	−0.0156** (0.007)				
Size (250–499) <sup>1</sup>	−0.0530*** (0.012)				
Size (500–999) <sup>1</sup>	−0.0229 (0.019)				
Size (1,000+) <sup>1</sup>	−0.0582** (0.029)				
Age (6–10) <sup>2</sup>	−0.001 (0.009)				
Age (11–20) <sup>2</sup>	−0.0027 (0.009)				
Age (21–30) <sup>2</sup>	0.0102 (0.021)				
Age (older than 30) <sup>2</sup>	0.0079 (0.018)				
Global head. <sup>3</sup>	0.0670** (0.033)	0.0589* (0.033)			
Foreign aff. <sup>3</sup>	0.0298*** (0.010)	0.0269*** (0.009)			
Czech Republic	0.0384*** (0.010)	0.0371*** (0.010)	0.0457*** (0.009)	0.0466*** (0.009)	0.0666*** (0.010)
Estonia	−0.0371** (0.017)	−0.0346** (0.017)	−0.0201 (0.015)	−0.0280* (0.015)	0.0436*** (0.017)
Poland	−0.0209*** (0.008)	−0.0242*** (0.008)	−0.0212*** (0.007)	−0.0237*** (0.007)	0.0051 (0.008)
Romania	−0.1437*** (0.010)	−0.1440*** (0.010)	−0.1408*** (0.009)	−0.1488*** (0.009)	0.0057 (0.009)
_cons	1.2183*** (0.049)	1.2161*** (0.048)	1.2039*** (0.048)	1.1768*** (0.049)	0.0438*** (0.006)
NACE dummies	Yes	Yes	Yes	No	No
R-squared	0.2185	0.2153	0.2124	0.2002	0.0128
Number of observations	3,925	3,925	3,925	3,925	3,981

	Services (except construction)				
	All controls	Ownership + sector + baseline prod + country dummies	Sector + baseline prod + country dummies	Baseline prod + country dummies	Only country dummies
	(6)	(7)	(8)	(9)	(10)
Ln(prod) 2003	-0.1122*** (0.003)	-0.1120*** (0.003)	-0.1108*** (0.003)	-0.1053*** (0.003)	
Size (50-249) <sup>1</sup>	-0.0130*** (0.004)				
Size (250-499) <sup>1</sup>	-0.0269*** (0.009)				
Size (500-999) <sup>1</sup>	-0.014 (0.015)				
Size (1,000+) <sup>1</sup>	-0.0217 (0.032)				
Age (6-10) <sup>2</sup>	0.0013 (0.005)				
Age (11-20) <sup>2</sup>	-0.0017 (0.005)				
Age (21-30) <sup>2</sup>	-0.0132 (0.018)				
Age (older than 30) <sup>2</sup>	-0.0036 (0.010)				
Global head. <sup>3</sup>	0.0309* (0.018)	0.0253 (0.018)			
Foreign aff. <sup>3</sup>	0.0276*** (0.005)	0.0270*** (0.005)			
Czech Republic	0.0344*** (0.007)	0.0349*** (0.007)	0.0437*** (0.007)	0.0475*** (0.007)	0.0893*** (0.007)
Estonia	-0.0384*** (0.010)	-0.0365*** (0.010)	-0.0233** (0.009)	-0.0258*** (0.009)	0.0457*** (0.011)
Poland	-0.0152*** (0.005)	-0.0171*** (0.005)	-0.0152*** (0.005)	-0.0110** (0.005)	0.0241*** (0.005)
Romania	-0.1114*** (0.007)	-0.1105*** (0.007)	-0.1078*** (0.007)	-0.1054*** (0.007)	0.0533*** (0.006)
_cons	1.0991*** (0.029)	1.0923*** (0.029)	1.0819*** (0.028)	1.0681*** (0.028)	0.0212*** (0.005)
NACE dummies	Yes	Yes	Yes	No	No
R-squared	0.2007	0.1998	0.1975	0.1839	0.0122
Number of observations	5,927	5,927	5,927	5,927	5,927

1. 10-49 is the omitted size category.

2. 1-5 is the omitted age category.

3. Domestic-owned is the omitted ownership category; Slovenia is the omitted country.

Significance: \*\*\* 1 percent, \*\* 5 percent, \* 10 percent. Standard errors are clustered by country.

Table A4.3: Firm-level productivity growth, 2003-08, EU15 countries

	Manufacturing				
	All controls	Ownership + sector + baseline prod + country dummies	Sector + baseline prod + country dummies	Baseline prod + country dummies	Only country dummies
	(1)	(2)	(3)	(4)	(5)
Ln(prod) 2003	-0.0896*** (0.004)	-0.0888*** (0.004)	-0.0860*** (0.004)	-0.0796*** (0.004)	
Size (50-249) <sup>1</sup>	0.0059** (0.003)				
Size (250-499) <sup>1</sup>	0.0148* (0.008)				
Size (500-999) <sup>1</sup>	-0.0046 (0.013)				
Size (1,000+) <sup>1</sup>	0.0037 (0.013)				
Age (6-10) <sup>2</sup>	-0.0018 (0.003)				
Age (11-20) <sup>2</sup>	0.0021 (0.003)				
Age (21-30) <sup>2</sup>	0.0031 (0.003)				
Age (older than 30) <sup>2</sup>	0.0046 (0.003)				
Global head. <sup>3</sup>	0.0228*** (0.005)	0.0254*** (0.005)			
Foreign aff. <sup>3</sup>	0.0185*** (0.004)	0.0203*** (0.004)			
Belgium	-0.0001 (0.007)	0.0005 (0.007)	-0.003 (0.007)	-0.0077 (0.007)	-0.0297*** (0.007)
Spain	-0.0630*** (0.005)	-0.0632*** (0.005)	-0.0694*** (0.005)	-0.0728*** (0.005)	-0.0532*** (0.005)
France	-0.0224*** (0.005)	-0.0213*** (0.005)	-0.0224*** (0.005)	-0.0236*** (0.005)	-0.0225*** (0.005)
Italy	-0.0167*** (0.005)	-0.0167*** (0.005)	-0.0237*** (0.005)	-0.0291*** (0.005)	-0.0288*** (0.005)
Norway	-0.0723*** (0.009)	-0.0730*** (0.009)	-0.0801*** (0.009)	-0.0857*** (0.009)	-0.1222*** (0.009)
Sweden	-0.0306*** (0.007)	-0.0300*** (0.007)	-0.0343*** (0.007)	-0.0319*** (0.007)	-0.0152** (0.007)
_cons	1.0112*** (0.048)	1.0049*** (0.048)	0.9822*** (0.047)	0.9162*** (0.047)	0.0502*** (0.005)
NACE dummies	Yes	Yes	Yes	No	No
R-squared	0.136	0.1353	0.1318	0.1052	0.0181
Number of observations	16,800	16,800	16,800	16,800	16,800

1. 10-49 is the omitted size category.

2. 1-5 is the omitted age category.

3. Domestic-owned is the omitted ownership category; Finland is the omitted country.

Significance: \*\*\* 1 percent, \*\* 5 percent, \* 10 percent. Standard errors are clustered by country.

	Services (except construction)				
	All controls	Ownership + sector + baseline prod + country dummies	Sector + baseline prod + country dummies	Baseline prod + country dummies	Only country dummies
	(6)	(7)	(8)	(9)	(10)
Ln(prod) 2003	-0.0850*** (0.003)	-0.0842*** (0.003)	-0.0817*** (0.003)	-0.0743*** (0.003)	
Size (50-249) <sup>1</sup>	0.0057*** (0.002)				
Size (250-499) <sup>1</sup>	0.0118* (0.006)				
Size (500-999) <sup>1</sup>	-0.0081 (0.008)				
Size (1,000+) <sup>1</sup>	0.0256* (0.015)				
Age (6-10) <sup>2</sup>	-0.003 (0.002)				
Age (11-20) <sup>2</sup>	0.0016 (0.002)				
Age (21-30) <sup>2</sup>	0.0049** (0.002)				
Age (older than 30) <sup>2</sup>	0.0065*** (0.002)				
Global head. <sup>3</sup>	0.0287*** (0.004)	0.0307*** (0.004)			
Foreign aff. <sup>3</sup>	0.0236*** (0.002)	0.0245*** (0.002)			
Belgium	0.0091* (0.005)	0.0096* (0.005)	0.0046 (0.005)	0.0031 (0.005)	-0.0218*** (0.005)
Spain	-0.0302*** (0.004)	-0.0308*** (0.004)	-0.0378*** (0.004)	-0.0414*** (0.004)	-0.0244*** (0.004)
France	-0.006 (0.004)	-0.0038 (0.004)	-0.0058 (0.004)	-0.0067* (0.004)	-0.0157*** (0.004)
Italy	0.0089** (0.004)	0.0091** (0.004)	0.0012 (0.004)	-0.0035 (0.004)	-0.0123*** (0.004)
Norway	0.0161*** (0.005)	0.0149*** (0.005)	0.008 (0.005)	0.0022 (0.005)	0.0044 (0.006)
Sweden	-0.0074 (0.006)	-0.007 (0.006)	-0.0124** (0.006)	-0.0113** (0.006)	-0.0025 (0.006)
_cons	0.9349*** (0.033)	0.9299*** (0.033)	0.9116*** (0.032)	0.8331*** (0.031)	0.0308*** (0.004)
NACE dummies	Yes	Yes	Yes	No	No
R-squared	0.1115	0.1107	0.1066	0.0851	0.0024
Number of observations	28,366	28,366	28,366	28,366	28,366

1. 10-49 is the omitted size category.

2. 1-5 is the omitted age category.

3. Domestic-owned is the omitted ownership category; Finland is the omitted country.

Significance: \*\*\* 1 percent, \*\* 5 percent, \* 10 percent. Standard errors are clustered by country.

Table A4.4: Firm-level productivity growth, 2003-08, non-EU countries

	Manufacturing				
	All controls	Ownership + sector + baseline prod + country dummies	Sector + baseline prod + country dummies	Baseline prod + country dummies	Only country dummies
	(1)	(2)	(3)	(4)	(5)
Ln(prod) 2003	-0.1397*** (0.007)	-0.1365*** (0.007)	-0.1352*** (0.007)	-0.1300*** (0.006)	
Size (50-249) <sup>1</sup>	0.0043 (0.016)				
Size (250-499) <sup>1</sup>	0.0059 (0.025)				
Size (500-999) <sup>1</sup>	0.0079 (0.045)				
Size (1,000+) <sup>1</sup>	0.0486 (0.036)				
Age (6-10) <sup>2</sup>	-0.0277* (0.017)				
Age (11-20) <sup>2</sup>	-0.0205 (0.017)				
Age (21-30) <sup>2</sup>	-0.068 (0.062)				
Age (older than 30) <sup>2</sup>	-0.0708*** (0.019)				
Global head. <sup>3</sup>	0.0810*** (0.027)	0.0884*** (0.020)			
Foreign aff. <sup>3</sup>	0.0337** (0.014)	0.0523*** (0.013)			
Croatia	0.0857*** (0.030)	0.0854*** (0.029)	0.0897*** (0.029)	0.0886*** (0.029)	-0.0401 (0.028)
Serbia	-0.0579** (0.028)	-0.0609** (0.027)	-0.0311 (0.025)	-0.0239 (0.025)	-0.0453* (0.027)
Ukraine	-0.1749*** (0.028)	-0.2050*** (0.022)	-0.2036*** (0.022)	-0.1985*** (0.022)	-0.0448* (0.025)
_cons	1.2556*** (0.055)	1.1993*** (0.054)	1.1917*** (0.054)	1.1720*** (0.051)	0.0571** (0.024)
NACE dummies	Yes	Yes	Yes	No	No
R-squared	0.1966	0.1913	0.1881	0.1764	0.0014
Number of observations	3592	3592	3592	3592	3690

1. 10-49 is the omitted size category.

2. 1-5 is the omitted age category.

3. Domestic-owned is the omitted ownership category; Bosnia and Herzegovina is the omitted country.

Significance: \*\*\* 1 percent, \*\* 5 percent, \* 10 percent. Standard errors are clustered by country.

	Services (except construction)				
	All controls	Ownership + sector + baseline prod + country dummies	Sector + baseline prod + country dummies	Baseline prod + country dummies	Only country dummies
	(6)	(7)	(8)	(9)	(10)
Ln(prod) 2003	-0.1419*** (0.004)	-0.1396*** (0.004)	-0.1391*** (0.004)	-0.1345*** (0.004)	
Size (50-249) <sup>1</sup>	0.0123 (0.012)				
Size (250-499) <sup>1</sup>	0.0314* (0.019)				
Size (500-999) <sup>1</sup>	0.0194 (0.033)				
Size (1,000+) <sup>1</sup>	0.0149 (0.034)				
Age (6-10) <sup>2</sup>	-0.0322*** (0.010)				
Age (11-20) <sup>2</sup>	-0.0288*** (0.010)				
Age (21-30) <sup>2</sup>	-0.0713 (0.044)				
Age (older than 30) <sup>2</sup>	-0.0726*** (0.011)				
Global head. <sup>3</sup>	0.031 (0.115)	0.0405 (0.114)			
Foreign aff. <sup>3</sup>	0.0225*** (0.008)	0.0377*** (0.007)			
Croatia	0.0830*** (0.014)	0.0761*** (0.013)	0.0875*** (0.013)	0.0822*** (0.013)	-0.0502*** (0.013)
Serbia	-0.0103 (0.013)	-0.0134 (0.013)	0.007 (0.012)	0.0188 (0.012)	0.0065 (0.014)
Ukraine	-0.1760*** (0.014)	-0.2093*** (0.011)	-0.2087*** (0.011)	-0.2000*** (0.011)	-0.0395*** (0.013)
_cons	1.2687*** (0.039)	1.2222*** (0.039)	1.2197*** (0.039)	1.2379*** (0.036)	0.0741*** (0.012)
NACE dummies	Yes	Yes	Yes	No	No
R-squared	0.2305	0.2262	0.2248	0.2045	0.0038
Number of observations	4519	4519	4519	4519	4519

1. 10-49 is the omitted size category.

2. 1-5 is the omitted age category.

3. Domestic-owned is the omitted ownership category; Bosnia and Herzegovina is the omitted country.

Significance: \*\*\* 1 percent, \*\* 5 percent, \* 10 percent. Standard errors are clustered by country.



## Annex 4.2: Measures of business regulation

As a proxy of the quality of the business regulatory framework and its institutions, this chapter uses a set of cross-country Doing Business indicators. Several factors support the choice of the Doing Business data. First, they provide a comprehensive database of regulations for most countries in the world. The Doing Business dataset allows for time and cross-country comparisons because the data in it have been collected in every European country since 2003. Second, a complication in evaluating the regulatory framework is distinguishing between the quality of the underlying legislation and the effectiveness of the government body that is responsible for its implementation. The indicators partly address this issue by measuring the quality of basic regulations across countries, based on the experience of actual users. For example, the so-called Doing Business “time and motion” indicators measure the actual steps taken by local enterprises when complying with the business regulations. They are therefore able to measure the quality of both the regulation and the implementing bodies.

This chapter considers all 10 topics covered by Doing Business: starting a business, dealing with construction permits, registering property, getting credit, protecting investors, paying taxes, trading across borders, enforcing contracts, employing workers, and closing a business. Each of these indicators is constructed on several subindicators, such as procedures, time, and cost required to open a business. The analysis utilizes a number of indices based on the Doing Business indicators to study the combined effect of these indicators on private sector performance. These indices were created using a principal components analysis for each Doing Business topic. The principal components analysis indices are linear combinations of Doing Business subindicators, where each subindicator is multiplied by an optimal weight. The weights are optimal in the sense that they produce the index that best accounts for the variance of the indicators. For example, the principal components analysis index for the enforcing contracts indicator is calculated through the following equation:

$$\text{Enforcing contracts principal components analysis index} = w_0 * \text{Procedures} + w_1 * \text{Time} + w_2 * \text{Cost},$$

where the weights  $w_0$ ,  $w_1$ , and  $w_2$  are the ones that lead to the greatest variance of the enforcing contracts principal components analysis index. All principal components analysis indices are coded so higher numbers indicate less complex regulation.

Using the principal components analysis methodology, the chapter also constructs a synthetic index including all Doing Business indicators.<sup>53</sup> Finally, to assess the impact of different aspects of the business environment on enterprises development, three combined principal components analysis indices reflecting the following aspects of business regulations are defined:

- 1. Business Entry** includes the indicators for starting a business, closing a business, and registering property. This indicator measures the complexity of a number of procedural aspects related to the entry and exit process. Starting a business measures the bureaucratic and legal obstacles that an

entrepreneur must overcome to incorporate and register a new firm. It examines the procedures, time, and cost involved in launching a commercial or industrial firm with up to 50 employees and start-up capital of 10 times the economy's per capita gross national income. Closing a business identifies weaknesses in existing bankruptcy laws and the main procedural and administrative bottlenecks in the bankruptcy process. It focuses on the time, cost, and outcome of insolvency proceedings involving domestic entities and estimates the recovery rate on the dollar. Registering property examines the steps, time, and cost involved in registering property, assuming a standardized case of an entrepreneur who wants to purchase land and a building that is already registered and free of dispute title.

**2. Business Operations** covers the aspects of paying taxes, trading across borders, employing workers, and obtaining construction permits. This indicator measures the burden of regulations faced by an enterprise in managing recurrent operations. Paying taxes addresses the taxes and mandatory contributions that a medium-size company must pay or withhold, as well as measures of administrative burden in complying with these regulations. Trading across borders looks at the procedural requirements for exporting and importing a standardized cargo of goods. Documents associated with every official procedure are counted—from the contractual agreement between the two parties to the delivery of goods—along with the time necessary for completion. Employing workers measures the regulation of employment, specifically as it affects the rigidity of hiring, the cost of redundancy of workers, and the rigidity of working hours.<sup>54</sup> Last, dealing with construction permits tracks the procedures, time, and costs to build a warehouse, including necessary licenses and permits, completing required notifications and inspections, and obtaining utility connections.

**3. Institutional Environment** covers the rules for protecting investors, getting credit, and enforcing contracts. The indicator measures the quality of the legal and institutional framework. Protecting investors measures the strength of minority shareholder protections against misuse of corporate assets by directors for their personal gain. This indicator covers three dimensions of investor protections: transparency of related-party transactions, liability for self-dealing, and shareholders' ability to sue officers and directors for misconduct. Getting credit explores two sets of issues: credit information registries and the effectiveness of collateral and bankruptcy laws in facilitating lending. The first set of indicators describes how well collateral and bankruptcy laws facilitate lending. The second set measures the coverage, scope, and accessibility of credit information available through public credit registries and private credit bureaus. Last, enforcing contracts looks at the efficiency of contract enforcement by following the evolution of a sale of goods dispute and tracking the time, cost, and number of procedures involved from the moment the plaintiff files the lawsuit until actual payment.

The principal components analysis indexes for the countries considered are normalized to range from 0 to 100, where 100 indicates the country with the best business environment over the observation period. The principal components analysis indices allows not only a ranking of countries according to the Doing Business indicators, but also an objective measurement of

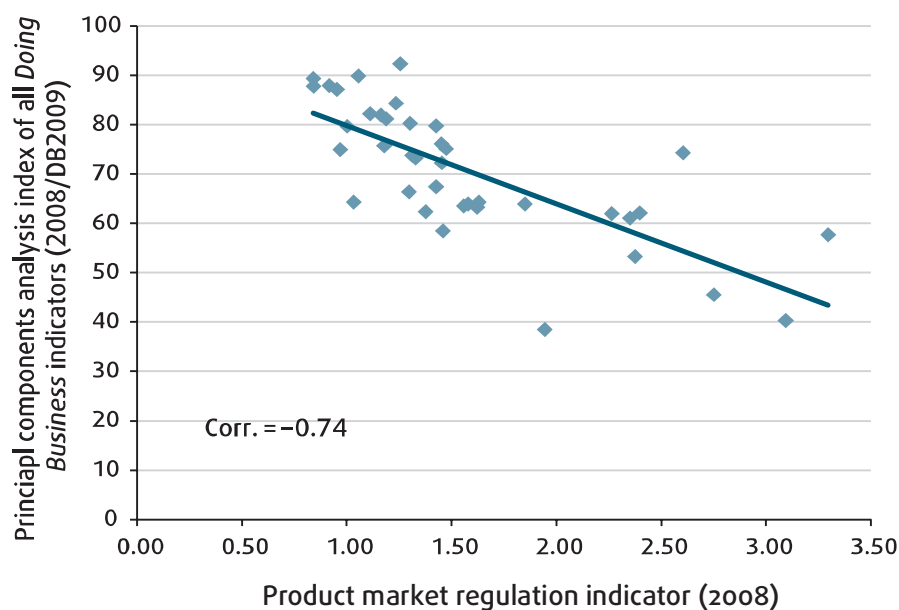


Figure A4.1: Correspondence between product market regulation indicator and principal components analysis index

Source: World Bank staff calculations, based on Doing Business and OECD (2011).

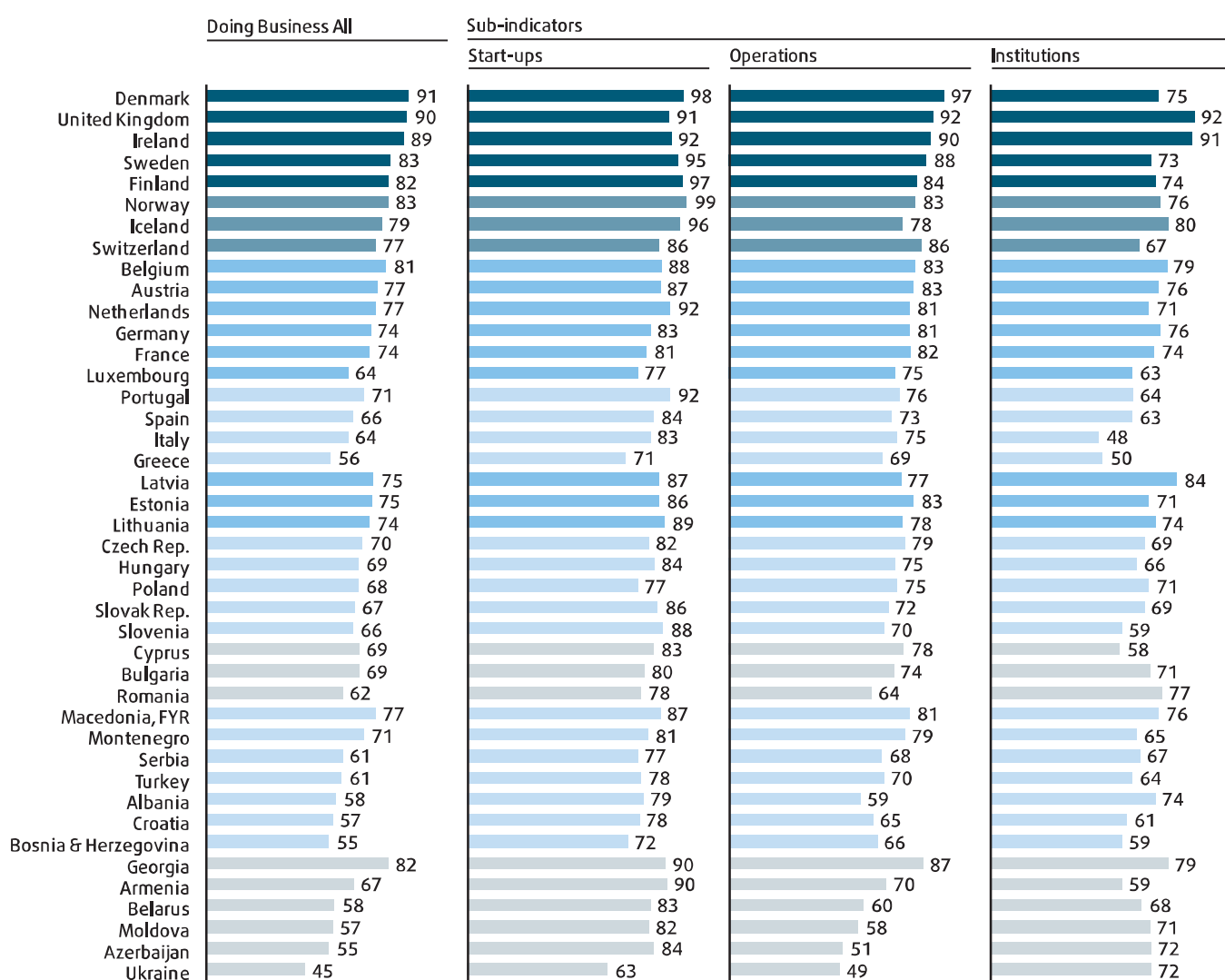
the improvements achieved over the period.<sup>55</sup> The Doing Business principal components analyses are highly correlated with the country ranking provided by Doing Business. For example, the correlation between the comprehensive principal components analysis index and the overall rank in Doing Business 2010 was  $-0.91$ , using all 150 countries for which both variables are available.<sup>56</sup>

Given that the principal components analysis is built on the basis of the indicators, they share methodological limitations.<sup>57</sup> To verify the quality of the principal components analysis indicator, we compare it with alternative measures of the quality of business regulation. The chapter utilizes what is considered a well-regarded methodology, the Product Market Regulation indicators constructed by the Organisation for Economic Co-operation and Development (OECD 2011). The analysis indicates that the two indicators are similar proxies of the quality of the business environment: the correlation between the comprehensive principal components analysis index of Doing Business indicators and the economywide Product Market Regulation indicator is very high:  $-0.74$ , using Doing Business 2008 data for the 39 countries for which both indicators are available (figure A4.1). But one of the advantages of the Doing Business indicators is their availability for a comprehensive set of countries and on a yearly basis.<sup>58</sup>

When analyzing the effects of business regulation on firm performance based on the Amadeus panel of incumbent firms, the last two principal components analysis indices—on business operations and institutional environment—are used. For these companies that managed to survive over the period, entry and exit regulation tend to matter less. For other types of analysis, especially when using country-level data from Eurostat, the principal components analysis of overall business regulation and also the three combined indices are considered.

**Figure A4.2: Quality of regulations index based on Doing Business indicators, 2012**

Source: World Bank staff calculations, based on Doing Business.



## Annex 4.3: Transition matrices for EU countries

Table A4.5: Transition matrix of survival firms, by subregion (percent)

EU15 North and Continental Size in 2008						
Size in 2003	0–9	10–49	50–249	250–499	500–999	1,000+
10–49	12.4	82.9	4.6	0.0	0.0	0.0
50–249	0.8	12.2	81.9	4.4	0.6	0.0
250–499	0.4	0.0	23.7	57.6	16.8	1.5
500–999	0.7	0.7	3.5	13.2	61.8	20.1
1,000+	0.0	0.0	2.0	2.0	10.2	85.7
EU15 South Size in 2008						
Size in 2003	0–9	10–49	50–249	250–499	500–999	1,000+
10–49	18.5	76.9	4.5	0.1	0.0	0.0
50–249	1.7	19.6	73.9	4.0	0.8	0.1
250–499	0.0	1.9	25.0	57.2	13.6	2.3
500–999	0.9	0.0	3.7	21.1	53.2	21.1
1,000+	0.0	0.0	2.1	0.0	14.9	83.0
EU12 Size in 2008						
Size in 2003	0–9	10–49	50–249	250–499	500–999	1,000+
10–49	19.3	68.0	12.7	0.1	0.0	0.0
50–249	3.1	11.7	77.5	6.6	1.0	0.1
250–499	1.2	2.7	25.0	55.1	14.5	1.6
500–999	1.0	2.0	5.0	19.0	58.0	15.0
1,000+	0.0	0.0	0.0	2.3	18.2	79.6

Note: Consider all sectors

Source: World Bank staff calculations, based on Amadeus.

## Notes

- 1** The European Working Time Directive requires member states to limit the maximum length of a work week, including overtime, to 48 hours in seven days. In the United States, employers can ask workers to work more than the standard 40 hours a week with appropriate compensation; the law sets no limit.
- 2** The average total corporate tax rate in Western Europe is 48 percent, compared with an average of about 40 percent in other OECD countries. This is the total tax rate, including local taxes and mandatory social contributions paid by enterprises as calculated according to the “Paying Taxes” indicator in 2010 (Source: Doing Business database, [www.doingbusiness.org](http://www.doingbusiness.org)). Data exclude Luxembourg.
- 3** According to Eurostat “Economy and Finance” Statistics (2007), the remaining 28.9 percent of jobs are in public administration, health, education, other services, and households.
- 4** “Value added” is defined as sales revenues minus the value of intermediate outputs. It includes the contribution to sales from both labor and capital. Value-added growth can be decomposed in the growth of employment and in the growth of value added per employee—that is, labor productivity.
- 5** See annex 2 for a detailed presentation of the Quality of Regulations Index, method of construction, and components: Start-up Index, Business Operations Index, and Institutional Quality Index.
- 6** Source: Access to credit measured by private sector credit over GDP (WDI); quality of infrastructure measured by a survey to business leaders (WEF); skills of the workforce measured as percent of workforce with tertiary education (WDI); and FDI inward and outward stock measured as stock over GDP on six sectors that this chapter focuses on (Eurostat).
- 7** Due to data availability, years covered vary for some countries. See table 4.1 note for details.
- 8** Given data availability, productivity is calculated as value added per worker employed in manufacturing and services, including the government and financial sectors. In the rest of the chapter, productivity considers the six sectors (see endnote 12).
- 9** Given limited data coverage and size of the economies, Cyprus and Malta are excluded from the analysis (as well as Luxembourg in the EU15).
- 10** Data are taken from the Italian National Institute of Statistics.
- 11** Marin (2010, p. 4).
- 12** Analysis based on Eurostat Structural Business Statistics database. Using the Eurostat microeconomic data, we consider private and public enterprises operating in six main sectors (manufacturing, construction, hotels and restaurants, retail and wholesale trade, transport and telecommunications, and real estate and other services) according to NACE 1.1 classification. We exclude social services, which are mainly provided by the government, extractive industries, utilities, agriculture, and the financial sector. These data cover EU countries plus Norway. Cyprus, Ireland, Luxembourg, and Malta are not included in the analysis due to limited data coverage. The analysis measures the gross effect of changes in labor and value added within the six selected sectors. As such, the impact of a new job created in one sector does not distinguish whether the job results from the reallocation of labor from agriculture to industry or is a new one.
- 13** The analysis in this chapter focuses on the countries of the European Union, for which the best data are available. Wherever possible the analysis is extended to countries outside the European Union.
- 14** For example, labor could become scarcer, but the quality of other inputs could improve if foreign companies enter the market.
- 15** The analysis is for the gross job creation by the six industries considered, and does not distinguish which jobs are new ones for the economy and which ones are reallocated from other industries.

- 16** Includes construction, wholesale and retail trade, hotels, and transport.
- 17** This is shown by exit rates data from Eurostat Business Demographic Statistics. Exit rates for firms smaller than 10 employees are 10.6 percent in the south, and 8.9 percent in the rest of EU15. Equivalent numbers for larger firms are 2.2 percent in the south, and 1.7 percent in the rest. Note that entry/exit rate is not available from Eurostat for all countries. The south includes Italy, Portugal, and Spain, and the rest includes Austria, France, Germany, Luxembourg, the Netherlands, and the United Kingdom.
- 18** The productivity growth figures presented in this section are based on the Eurostat Structural Business Statistics database for contestable sectors (manufacturing, construction, transport and telecommunications, wholesale and retail trade, hotels and restaurants, and real estate services). As such, these data do not exactly mirror the aggregate ones presented in table 4.1, which rely on WDI/ILO data and include mining, energy utilities, financial intermediation, government, and other services such as education and health. In addition, the data reflect different time coverage (1995–2009 versus 2002–08, respectively). These data also differ from the Eurostat data for the same sectors, but based on national accounts. The gap between two data sources remains evident for a few countries, most evidently Greece. This discrepancy—acknowledged also by Eurostat—could be due to the fact that value-added figures relying on national accounts data include an estimate for the informal economy. In addition, value added in Eurostat is computed at factor cost while in national accounts value added is expressed in basic prices. Moreover, the statistical unit is different in the two data sources: national accounts normally use the kind-of-activity unit whereas in the Eurostat Structural Business Statistics the unit is the enterprise, so part of the value added for a certain activity in Eurostat can in fact be attributed to another activity in national accounts.
- 19** Bernard and Jensen (1995), Bernard and Wagner (1997), and Aw and others (2000) provide evidence that export-oriented firms are closer to the efficiency frontier than nonexporters.
- 20** See Volkswagen annual report.
- 21** Variation of FDI stock (UNCTAD 2010).
- 22** The data refer to a panel of surviving firms with 10 employees or more from the Amadeus database. Foreign-owned firms are defined as enterprises with more than a 50 percent stake held by a foreign owner. A detailed description of the panel data is presented in annex 4.1.
- 23** Figure 4.12 describes all FDI, including finance; figure 4.13 limits itself to the six sectors.
- 24** Except for Estonia and Romania, though in Romania, foreign firms depart from a higher level.
- 25** The countries included in the sample are the Czech Republic, Poland, Estonia, Romania, and Slovenia. A detailed description of the panel data is presented in annex 4.1.
- 26** The results refer to manufacturing and services separately. Given the cyclical nature of the construction sector, it is excluded from the analysis. Within manufacturing and services, the model distinguishes firms belonging to different NACE 1.1 codes.
- 27** See annex 4.1 table A4.2, columns 1 and 6.
- 28** Country data measured in 2005. See endnote 6 for a detailed explanation of the data sources.
- 29** Results also show that increasing supply of credit and of skilled workforce lead to productivity growth at firm level.
- 30** See results for Czech dummy, in table A4.2, columns 1 to 5.
- 31** Global headquarters based in one of the EU12 countries or their domestic affiliates.
- 32** FDI inflows are a measure of both the amount of FDI received—not possible at firm level—and positive spillovers toward firms that are not direct recipients of FDI.
- 33** Considering companies with 10 employees or more based on the Amadeus sample. Purely domestic companies are considered as independent companies or the ones belonging to a domestic group, foreign-owned companies and companies belonging to a group with international presence in Europe.
- 34** Excluding Luxembourg, where most FDI was in the financial sector.
- 35** The EU15 countries included in the sample are Belgium, France, Finland, Italy, Norway, Spain, and Sweden. A detailed description of the panel data uses is presented in annex 4.1.
- 36** For manufacturing, the 7 percentage points refer to the difference between the largest and smallest country dummy (respectively, –0.01 percent for Belgium, and –7.23 percent for Norway). See table A4.3, columns 1 and 6.
- 37** Within manufacturing and services, the model distinguishes firms belonging to different NACE 1.1 codes.
- 38** See results for Italian country dummy, table A4.3, columns 1 to 5.
- 39** In EU12 countries the correlation between the estimated country dummies and the measure of quality of education system is 0.63 for manufacturing and 0.65 for service companies. For EU15 correlations are 0.46 and 0.15 respectively.
- 40** Typical examples are a simplified filing system for taxes and more flexible employment regulations.
- 41** The enforcement mechanism of business regulations in developed countries is usually based on risk-based systems, and larger businesses are subject to higher scrutiny than microenterprises. Several country-specific studies refer to the relationship between the size of the enterprise and compliance, for example, with tax regulations.
- 42** Share of informal economy over GDP calculated by Schneider, Buehn, and Montenegro (2010).
- 43** The probabilities are estimated using a multinomial logit model.

- 44** All of the explanatory variables are lagged to 2003. Region dummies (EU15 North/Continental, EU15 South, and EU12) are included as well as sector dummies. Standard errors are clustered to allow for possible correlations in the related probability across firms within the same country.
- 45** Parmalat's accounts were forged for a number of years and—upon discovery—the company went bankrupt, leaving a hole in its account of €14 billion, eight times the sum originally stated in the audited accounts.
- 46** For Bosnia and Herzegovina, Croatia, Serbia, and Ukraine the population weights were computed using the World Bank's Business Environment and Enterprise Performance Survey database for 2007.
- 47** Value added is defined in the Amadeus dataset as profit for period plus depreciation plus taxation plus interest paid plus cost of employees. The value-added figures (originally in local currency) were deflated by an appropriate 2005 output deflator obtained from the United Nations Economic Commission for Europe and then converted to 2005 US\$ using the annual exchange rate obtained from WDI dataset.
- 48** The reported number of employees includes all part-time and full-time employees on the company payroll, both temporary and permanent.
- 49**  $\Delta \ln(\text{Prod})_{t_{03-08}}$  is calculated as  $[\ln(\text{Prod}_{t_{08}}) - \ln(\text{Prod}_{t_{03}})] / (2008 - 2003)$
- 50** We classify foreign-owned firms as those with a global ultimate owner (outside the country of firm's registration), as defined by Bureau van Dijk. We can identify the specific ownership share for 66 percent of those firms, and in this case, firms have at least 51 percent of foreign stake. For the remaining 34 percent of firms that are classified as foreign-affiliated by Bureau van Dijk, we cannot identify the exact ownership stake. However, as they are mostly small firms, we assume they are not publicly traded firms for which parent's ownership can be diluted, and we then assume they are managerially fully in control of the foreign parent.
- 51** We use the latest ownership status (based on the mapping of firm ownership available in the 2010 Amadeus version) to create these ownership dummies for 2003. As our sample excludes all firms that were involved in merger and acquisitions operations, we assume that the ownership structure of a firm observed in 2009 is the same in 2003. But note that we could not control for cases where the firm ownership structure has changed due to a joint venture in 2003–08.
- 52** Given the cyclical nature of the construction sector, it is excluded from the analysis. Within manufacturing and services, the model distinguishes firms belonging to different NACE 1.1 codes.
- 53** Since Doing Business already provides a summary index for projecting investors, this index is used directly in the analysis (reverse-coded, as mentioned earlier). It is also included in the construction of the comprehensive principal components analysis index of all indicators.
- 54** Data related to this indicator are still being calculated and reported, though the indicator is no longer included in the Doing Business overall ranking.
- 55** This is one of the main differences between the index and the ranking provided by the Doing Business report. The latter creates a yearly (relative) ranking of the different countries. As a result of the relative ranking, one country might reduce its position simply because other countries have improved their environment. The Doing Business principal components analysis is modified only when an objective change is realized in the country.
- 56** At individual indicator level, the lowest correlation among the calculated Doing Business principal components analysis indices and Doing Business ranks occurs for the paying taxes principal components analysis index and the paying taxes Doing Business rank:  $-0.85$ .
- 57** For a comprehensive review of the Doing Business methodology, see [www.doingbusiness.org](http://www.doingbusiness.org).
- 58** Product Market Regulation indicators are only available for 2003 and 2008 during the time period analyzed in this study and their country coverage is more limited.



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## Chapter 5

### Innovation

Google did not exist in 1995. Today, its market value is about \$150 billion. Google's story epitomizes the success of the American "innovation machine." In 1999, roughly a third of the world's 1,000 largest firms by market capitalization were based in the United States, and of these, 35 percent were founded after 1950. Europe had only 181 firms among the 1,000 largest, and of these, only 14 percent were founded after 1950 (Cohen and Lorenzi 2000). Europe is a "convergence machine" but not an innovation machine. Over the past 15 years, with a few exceptions in the north, Europe has started falling behind the United States in productivity growth (see spotlight one).

Europe's most successful companies seem to grow by doing what they are already doing—but better. Following the slogan of the German car manufacturer Audi—*Vorsprung durch Technik* (Leading through Technology)—they have developed ever-more efficient versions of traditional technology hits. But European companies have not shifted to radically new technologies, especially information and communications technologies (ICT).

As the Google success story unfolded, another was in the making in tiny Estonia. In 2003, four Estonian programmers, along with a Swedish and a Danish entrepreneur, founded Skype.<sup>1</sup> A U.S. venture capital firm, Draper and Company, provided seed capital and further investments before eBay took over the company in 2005. Despite ups and downs and disputes among the founders and subsequent owners, the company was sold for \$8.5 billion to Microsoft in 2011. Skype's success demonstrates that Europe can produce young, innovative companies.

But the average productivity gap between Europe and the United States will likely persist until Europe's larger continental economies emulate their intrepid northern neighbors in innovative enterprises. Europe's most successful new entrepreneurs are small: while Europe does produce internationally competitive innovators in niche markets, the United States dominates among the world's leading innovators, and this has Europe-wide effects.

- How much does Europe's innovation deficit matter?
- Why does Europe do less R&D than the United States, Japan, and the Republic of Korea?
- What are the special attributes of a successful European innovation system?
- What should European governments do to increase innovation?



This chapter asks whether Europe has fundamental flaws in its economic environment that make its innovation deficit a fact of life. It looks at both the degree of innovative activities and the way innovative firms grow. In dimensions important for innovation, such as the availability of venture capital funding for European innovators, the business orientation of scientific research, and the share of people with tertiary education, Europe lags the United States. Denmark, Finland, Germany, Sweden, and Switzerland have been building strong national innovation systems that go toe-to-toe with the best in North America and East Asia, suggesting that there are other factors holding Europe's leading innovators back from growing to a global scale. One big obstacle is Europe's fragmented internal market for services. Until Europe realizes the gains from market integration and continentwide competition, it is unlikely that enterprises in innovation-intensive sectors such as ICT will match the growth of U.S. enterprises like Amazon, Apple, Facebook, Google, and Microsoft.

In analyzing Europe's innovation performance and comparing it with Europe's peers in America and Asia, this chapter answers four questions:

- **How much does Europe's innovation deficit matter?** The innovation deficit explains why Europe has lagged the United States in productivity growth since the mid-1990s—but it is not the only factor. Using various measures of innovation, such as research and development (R&D), patent registration, and the introduction of new products and processes, this chapter shows that these measures correlate with the rate of productivity growth across both countries and firms. But the relationship is complex. Productivity growth depends on firms' performance at the frontier as well as below it. Having leading innovators in fast-developing sectors, as the United States does, is important to push out the technological frontier. For companies below the frontier and for Europe's lagging economies, lifting barriers to general investment and human capital formation may be as important as reducing barriers specific to innovation.
- **Why does Europe as a whole do less R&D than the United States, Japan, and the Republic of Korea?** The short answer is that Europe has fewer innovators in sectors that require a lot of investment in R&D. Otherwise identical enterprises are as likely to engage in R&D in Europe as they are in other advanced countries, but in Europe leading innovators are less likely to engage in R&D-intensive sectors like biotech and the Internet. So, what keeps entrepreneurs from venturing into new activities? While this chapter offers no definite answer, it suggests that one reason may be the lack of an integrated market for digital services, which leads Europe's entrepreneurs to benefit less from clustering together than their peers in Silicon Valley or Tokyo.
- **What are the special attributes of a successful European innovation system?** Successful European economies—Denmark, Finland, Germany, Sweden, and Switzerland—have essentially downloaded the “killer apps” that have made the United States a powerhouse for innovation. The apps include incentives for enterprise-based private R&D, an abundant supply of workers with tertiary education, and public funding mechanisms and intellectual property regimes that foster links between universities and firms. But Europe's leaders are constrained by their market's small size and incomplete integration.

### Box 5.1: Google—a uniquely American innovation

Europe wonders what it takes to raise fast growers. The story of Google's birth and growth is instructive.

Google began as part of a project at Stanford University on investigating the technological requirements for a single, universal digital library. The project was funded by U.S. federal government agencies, including the National Science Foundation. A Stanford Ph.D. student, Larry Page, had the insight that a better search engine—using the analogy of academic citations—would rank web pages by the number of times they were linked to other web pages, rather than how many times the searched word or phrase appears on a web page. He was encouraged to follow this line of inquiry by his supervisor, Terry Winograd, and was joined by another graduate student, Sergey Brin.

By 1998, with a \$100,000 contribution from Andy Bechtolsheim of nearby Sun Microsystems, Google Inc. was operating out of a Menlo Park garage. The next year, it got \$25 million in equity funding from venture capital firms who, by 2001, forced it to hire a CEO. Three years later, in August 2004, with help from Morgan Stanley and Credit Suisse

First Boston, Google went public, raising \$1.67 billion in its initial public offering. In 2005, Google was valued at more than \$50 billion, making it one of the world's largest media companies, allowing Google to raise \$3.5 billion in the stock market to acquire complementary businesses and technologies. In 2006, Google became one of Standard and Poor's 500 Index. The same year, Merriam-Webster and Oxford dictionaries officially added "google" as a verb.

Besides the ideas and technical expertise of its two founders, Google's success is the result of an unparalleled environment for innovation in information technology. Its four main attributes are these:

- First, universities that—through close links to firms—start and nurture the agglomeration of expertise and enterprise. In this case, the university is Stanford, and the agglomeration is Silicon Valley in the San Francisco peninsula, which radiates outward from the university. The university itself, founded privately in 1891, helped create Silicon Valley by leasing land to entrepreneurs, and then by providing human capital. Close to half of Silicon Valley firms are started by Stanford alumni.

- Second, financial support from the U.S. government for such projects as the Stanford Digital Library Project. The National Science Foundation is a major supporter of innovation in U.S. universities, as are other federal agencies such as the departments of Commerce, Defense, Energy, and Transportation.
- Third, proximity to investors who specialize in information technology ventures—who take a chance on new ideas and enterprises and provide management oversight. A culture of risk-taking and a tolerance for failure provides a conducive climate for such long shots as Google.
- Fourth, the ability to attract global talent. Bechtolsheim grew up in Germany before coming to the United States on a Fulbright scholarship, and he stayed on after his studies. Had he returned, he might not have been worth \$2 billion, and Page and Brin might not have received a big check to get started.

Source: Google.

- **What can European governments do to increase innovation where it is most needed?** The answer is a two-pronged approach. First, reform the innovation ecosystem—regulations, finance, science, and incentives—to ease entry and reward risk-taking. Second, increase the size of the market for European innovators by strengthening the single market for digital and other modern services, which would allow agglomeration.

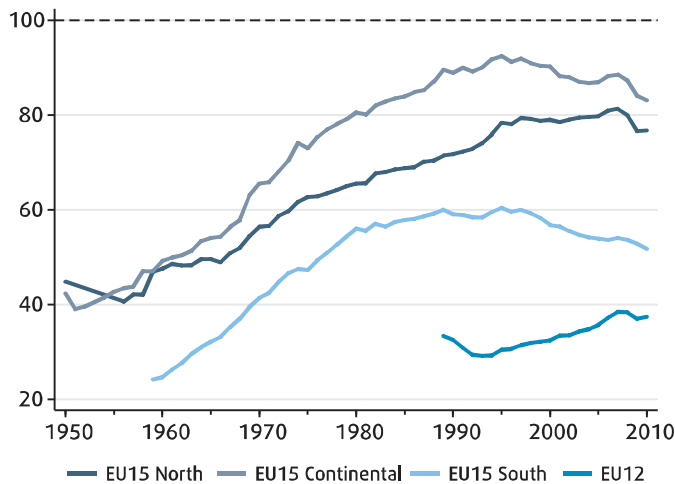
Google's success provides some clues about priorities and payoffs (box 5.1). The most important may be that to compete with the United States, Japan, and soon China, Europe has to bring together academic intellect, public funding, and private finance on a European scale.

## Europe's innovation deficits matter—but not equally for everyone

In 1950–73, the Golden Age of European growth, productivity in Western and Eastern Europe converged rapidly toward that in the United States, the world's leading industrial economy. Growth and income convergence slowed over 1973–95, but for productivity it continued, as European working hours fell to less than those of the United States. During this period, the cohesion countries of Southern Europe and Ireland caught up rapidly with the European Union's founding members. Since 1995, the "old" EU members (EU15) have recorded slower productivity growth than the United States and have essentially stopped converging, while the new member

**Figure 5.1: Mind the gap: convergence followed by slowdown in Europe's productivity relative to the United States**

(GDP per hours worked in Geary/Khamis \$, United States = 100)



Note: EU15 North = Denmark, Finland, Sweden, and the United Kingdom; EU15 Continental = Austria, Belgium, France, Germany, and the Netherlands; EU15 South = Greece, Italy, Portugal, and Spain.

Source: World Bank staff calculations, based on Conference Board 2011.

states in Eastern Europe have started to catch up rapidly. As chapter 4 shows, productivity growth in Europe's south has been especially disappointing since 1995, while the north kept pace with the United States until the crisis (spotlight one; figure 5.1).<sup>2</sup>

### Innovation as a source of long-term growth differentials

Innovation as a driver of long-term productivity growth has contributed to the EU-15's failure to close its productivity gap with the United States. Economists have long linked long-term growth to technological improvements (for example, Solow 1956), but how technology improved remained a black box. More recently, Romer (1990) and Aghion and Howitt (1992 and 1998) proposed theories that link an economy's growth rate to its innovation rate. Aghion and Howitt's theory is of particular interest, because it accounts for empirical phenomena that characterize economic growth and convergence in Europe (Aghion and Howitt 2006):

- Productivity growth results from improvements in product quality, as firms that innovate substitute old, obsolete production with new, better-quality production. This "creative destruction," described first by Joseph Schumpeter, has led to accelerated structural change and productivity catch-up in Eastern Europe (Alam and others 2008).
- Firms innovate both by pushing out the technological frontier and by adapting technologies from the stock of global knowledge. As the stock grows, so too do the returns to innovation for all technological followers. Innovation has positive spillovers that can account for long-term growth differentials among economies. The European Union has targeted an increase in R&D investments as a key policy variable for improving long-term growth prospects.
- The forces driving innovation at or below the frontier differ. Competition spurs firms at the frontier to innovate to "escape" competitors, but for firms

well below the frontier, competition may discourage technological adaptation, because it reduces the rents available from adapting better technologies.<sup>3</sup> As a result, policies to promote productivity growth through innovation depend on whether a country's firms are below or at the technological frontier. For instance, comprehensive secondary education may be critical during catch-up, but tertiary education acquires greater weight once a country has reached the frontier; bank-led relationship-based financing may be optimal during catch-up, but for innovation at the frontier, equity (or venture capital) financing is likely better suited. Europe moved from below the frontier in the period of rapid convergence to close to it by the mid-1990s, and therefore the same policies that were good for growth before may not be optimal now (Abramovitz 1986; Eichengreen and Vazquez 2000; Aghion and Howitt 2006).

Considerable empirical literature supports the importance of structural change and innovation for productivity growth. Van Ark, O'Mahony, and Timmer (2008) decomposed economic growth in the United States and Europe into the contribution of several inputs to understand the productivity gap between the United States and the EU15 since 1995. The authors find that the key factor is the different rate of multifactor productivity growth in market services, such as retail trade, finance, and business.<sup>4</sup> Jorgenson and Timmer (2011) further show that the United States has benefited from much faster total factor productivity (TFP) growth in distribution and personal services than has the European Union. While the different rate of investment in ICT made a small contribution, organizational changes and product and process innovation in services—rather than capital deepening as a result of the introduction of ICT—lie behind the divergence in performance between the United States and Europe. In short, the United States gets a bigger productivity kick out of ICT than does Europe.

In addition, vast empirical literature investigates innovation's role in productivity and growth across enterprises or sectors of an economy. Hall, Mairesse, and Mohnen (2009) and Hall (2011) estimate the return on investments in R&D from those that link innovation to productivity growth through qualitative measures of product and process innovation (see box 5.2 for definitions of the various forms of innovation). The distinction is important because measures of investment in innovation, such as R&D spending, might not fully capture the nature of innovation in service industries such as retail or finance, which have been important in driving productivity growth differences between Europe and the United States. The conclusion from the empirical literature confirms the intuition behind recent

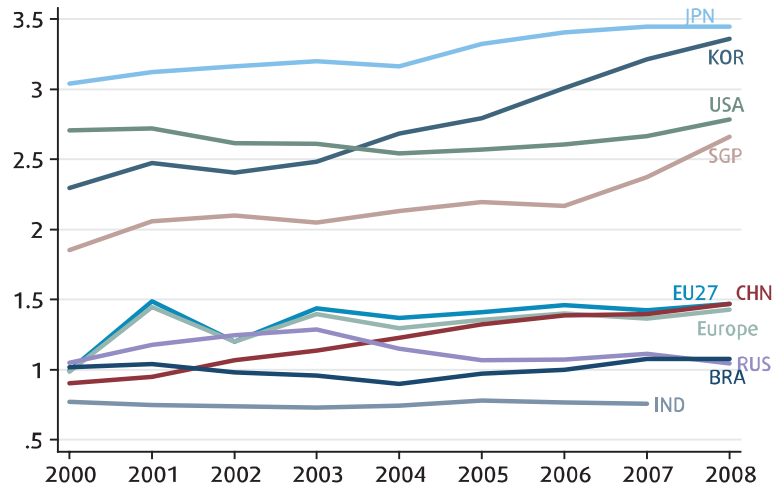
### Box 5.2: Defining innovation

- **Innovation:** The development and commercialization of products and processes that are new to the firm, the market, or the world. Activities involved range from identifying problems and generating new ideas and solutions to implementing those solutions and diffusing new technologies.
- **Product innovation:** The development of new products representing discrete improvements over existing ones.
- **Process innovation:** The implementation of a new or greatly improved production or delivery method, or of a new organizational method in firms' business practices, workplace organization, or external relations. This includes "soft innovation," such as layout reorganization, transport modes, management, and human resources.
- **Incremental innovation:** Innovation that builds closely on technological antecedents and does not involve much technological improvement upon them.

Source: Goldberg and others (2011), based on the Organisation for Economic Co-operation and Development.

**Figure 5.2: Europe has a large innovation deficit relative to both the United States and East Asia's high-income economies**

(R&D expenditures as share of economic output of selected countries, 2000–08)



Note: Europe includes the EU27, EFTA, and EU candidate countries.  
Source: UNESCO.

endogenous growth literature: innovation is positively associated with higher firm productivity and growth, and the social rate of return on innovation exceeds the private rate of return because of positive spillovers from growth in the available stock of knowledge.<sup>5</sup>

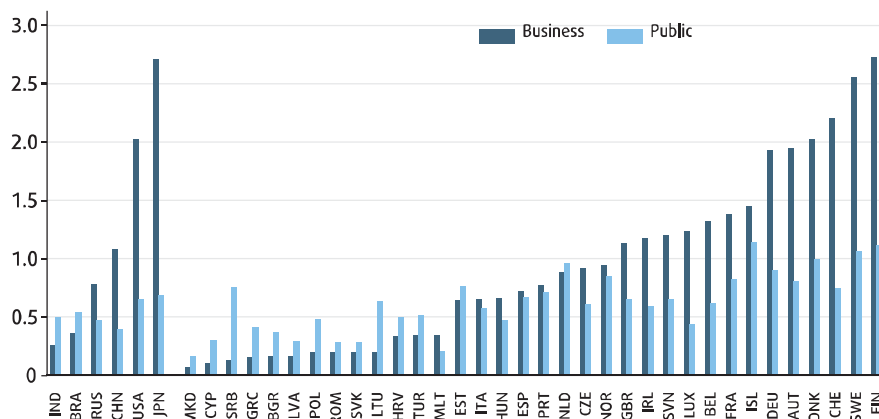
### How large is Europe's innovation deficit?

Given the role of innovation in productivity growth, how does Europe measure up? Comparing the share of R&D investment in GDP in Europe with that in the United States and East Asia's high-income economies, Europe as a whole does less R&D (figure 5.2). Moreover, China has increased its R&D investment rapidly over the past decade, closing the gap with the EU15 and exceeding the new member states (EU12), EU candidate countries, and European partnership states. As chapter 1 shows, Europe's gap in R&D investments is due entirely to the lower R&D investments of Europe's business sector.

Aggregate comparisons, however, may be misleading. Innovative activity varies across European countries, and a wider range of indicators depicts a more varied landscape than a simple comparison of aggregate investment rates in R&D. One recent comparative data collection effort is the Innovation Union Scoreboard (IUS) prepared by the European Commission (European Commission 2011b), which compares innovation efforts across countries in Europe and is benchmarked against the United States and Japan.<sup>6</sup>

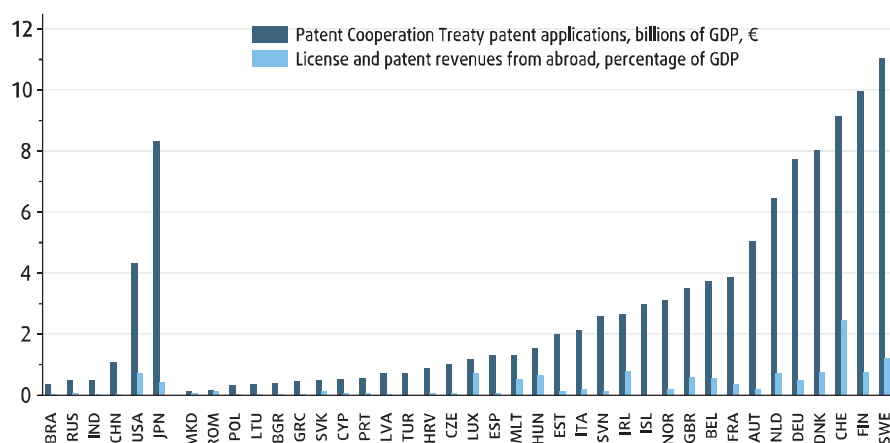
R&D investments and patent counts are the measures of innovation used most in enterprise-level studies linking innovation with productivity (Hall, Mairesse, and Mohnen 2009; figure 5.3). The leading countries in business investment in R&D are also the leading countries in patent counts.<sup>7</sup> Europe's leaders in both fields perform as well as or better than the United States and Japan.<sup>8</sup> The data on public R&D investments and international revenues from patents and licenses present a less clear pattern. Austria, France, the Netherlands, and





**Figure 5.3: Europe's leaders invest as much in innovation as the United States and Japan**

(business and public R&D expenditure, percentage of GDP)



(patent counts and revenues from international licenses and patents)

Note: Data refer to different years by country.

Source: European Commission 2011b; UNESCO; and IMF BOPS.

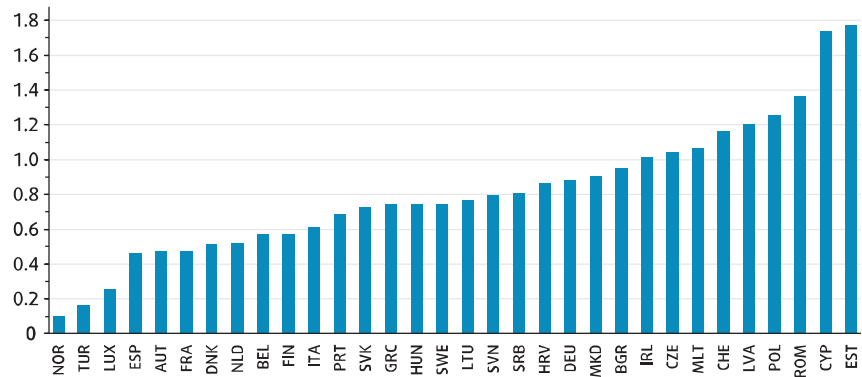
Norway are among Europe's leaders and have higher spending on public R&D than do the United States or Japan. License and patent revenues from abroad show a diverse pattern, with the Benelux, Hungary, Ireland, Malta, and the United Kingdom performing well alongside Japan, Switzerland, Scandinavia, and the United States. Overall, these four measures are highly correlated: the correlation coefficient between a country's business and public R&D investment is 0.71, between a country's business R&D investment and its international patent count is 0.91, and between business R&D investment and international license and patent revenues is still 0.63.

The European Commission also collects data for non-R&D innovation spending, as well as the share of companies undertaking product, process, and organizational innovation. These data are collected only for European countries. Non-R&D innovation spending is high in Europe's emerging economies, such as Bulgaria, Croatia, Estonia, Poland, and Romania (figure 5.4).<sup>9</sup> Interpretations are speculative, but one possibility is that firms in emerging economies, particularly in the



**Figure 5.4: In Europe's catching-up economies innovation is not always R&D**

(non-R&D innovation expenditure, percentage of turnover of all enterprises)



Note: Data refer to different years by country.

Source: European Commission 2011b.

transition economies of the former Soviet bloc, now are trying harder to adapt advanced technologies to local circumstances.

The Community Innovation Survey collects data on the share of companies undertaking innovative activities, measuring countries' share of all companies undertaking some kind of innovation, collaborating with partners outside Europe (China, India, and the United States), and collaborating with other companies or research institutions as opposed to doing it in-house (table 5.1). The survey measures collaboration with other companies to gauge the extent of innovation spillovers within and outside Europe. Several observations follow from looking at this survey alongside parallel data on small and medium enterprises (SMEs) (from the IUS but also based on Community Innovation Survey data).

There is a high correlation between the overall share of companies innovating and the share of SMEs innovating (0.85). The country with the largest share of companies innovating overall is Germany (close to 80 percent). The lowest proportion of innovating companies, as well as innovating SMEs, is in the transition economies of Eastern Europe: Latvia, Poland, Hungary, Lithuania, Bulgaria, and Romania.

There is also a close correlation between the share of companies undergoing process and product innovation and the share undertaking marketing and organizational innovation (0.79). As Hall (2011) summarizes, at the firm level, distinguishing the type of innovation is important, because firms may have different effects on productivity. At the country level, the data suggest countries that have innovative firms tend to have more of innovation overall.

The share of companies collaborating with others is also consistent across all firms and the subpopulation of SMEs (correlation of 0.81). Top performers are the United Kingdom, Denmark, Belgium, Estonia, and Slovenia. The least cooperation takes place in Romania, Latvia, and Bulgaria.<sup>10</sup> German and Italian companies are far less likely to cooperate and consequently appear to be doing most of their innovation in-house. When looking at where companies' partners are located, a distinct group of countries emerges that cooperate more internationally than others. This group includes Finland and Sweden as

Table 5.1: A large share of companies in Europe innovate, less so in the east

	SMEs innovating in-house	Innovative SMEs collaborating with others	Total innovating SMEs	SMEs introducing product or process innovation	SMEs introducing marketing/organizational innovation	Total share of innovating enterprises	All types of cooperation	Cooperation with United States	Cooperation with China and India
	IUS	IUS	IUS	IUS	IUS	CIS	CIS	CIS	CIS
Denmark	40.8	22.7	63.5	37.6	40.0	51.9	56.8		
Finland	38.6	15.3	53.9	41.8	31.5	52.2	36.9	11.1	6.7
Ireland	38.8	9.8	48.6	27.3	41.6	56.5	24.1	2.5	2.8
Sweden	37.0	16.5	53.5	40.6	36.7	53.7	39.9	11.2	7.3
United Kingdom		25.0		25.1	31.1	45.6			
<b>EU15 North</b>	<b>38.8</b>	<b>17.9</b>	<b>54.9</b>	<b>34.5</b>	<b>36.2</b>	<b>52.0</b>	<b>39.4</b>	<b>8.3</b>	<b>5.6</b>
Austria	34.4	14.7	49.1	39.6	42.8	56.2	38.8	3.1	1.8
Belgium	40.2	22.2	62.5	44.0	44.1	58.1	48.8	9.4	5.8
France	30.0	13.5	43.5	32.1	38.5	50.2	42.4	5.2	2.4
Germany	46.0	9.0	55.0	53.6	68.2	79.9	20.7	2.4	1.3
Luxembourg	37.4	12.3	49.7	41.5	53.0	64.7	30.1	8.7	3.7
Netherlands	26.3	13.0	39.2	31.6	28.6	44.9	40.2	7.4	3.1
<b>EU15 Continental</b>	<b>35.7</b>	<b>14.1</b>	<b>49.8</b>	<b>40.4</b>	<b>45.9</b>	<b>59.0</b>	<b>36.8</b>	<b>6.0</b>	<b>3.0</b>
Greece	32.7	13.3	46.0	37.3	51.3				
Italy	34.1	6.0	40.1	36.9	40.6	53.2	16.2	1.3	0.8
Portugal	34.1	13.3	47.4	47.7	43.8	57.8	28.4	1.8	1.1
Spain	22.1	5.3	27.4	27.5	30.4	43.5	18.7	1.0	0.4
<b>EU15 South</b>	<b>30.8</b>	<b>9.5</b>	<b>40.2</b>	<b>37.4</b>	<b>41.5</b>	<b>51.5</b>	<b>21.1</b>	<b>1.4</b>	<b>0.8</b>
Bulgaria	17.1	3.5	20.6	20.7	17.4	30.8	16.6	1.1	0.5
Cyprus	41.6	21.3	62.9	42.2	47.3	56.1	51.4	3.6	3.2
Czech Republic	29.6	11.3	40.9	34.9	45.9	56.0	32.9	2.8	2.0
Estonia	34.0	22.3	56.3	43.9	34.1	56.4	48.6	2.7	1.4
Hungary	12.6	7.2	19.8	16.8	20.5	28.9	41.3	3.1	2.7
Latvia	14.4	3.3	17.7	17.2	14.0	24.3	16.6	1.2	0.1
Lithuania	19.4	8.0	27.4	21.9	21.4	30.3	38.7	4.5	2.6
Malta	21.6	5.2	26.8	25.9	25.6	37.4	19.8	3.1	2.0
Poland	13.8	6.4	20.2	17.6	18.7	27.9	39.3	4.2	2.0
Romania	16.7	2.3	18.9	18.0	25.8	33.3	13.8	1.4	0.8
Slovak Republic	15.0	5.8	20.7	19.0	28.3	36.1	32.2	4.0	3.5
Slovenia		14.2		31.0	39.4	50.3	48.0	6.6	4.1
<b>EU12</b>	<b>21.4</b>	<b>9.2</b>	<b>30.2</b>	<b>25.8</b>	<b>28.2</b>	<b>39.0</b>	<b>33.3</b>	<b>3.2</b>	<b>2.1</b>
Iceland		14.1							
Norway	25.4	13.1	38.5	28.9	30.8	49.2	35.1	4.3	2.2
Switzerland	28.2	9.4	37.6	57.0					
<b>EFTA</b>	<b>26.8</b>	<b>12.2</b>	<b>38.1</b>	<b>43.0</b>	<b>30.8</b>	<b>49.2</b>	<b>35.1</b>	<b>4.3</b>	<b>2.2</b>
Croatia	25.6	11.9	37.5	31.5	32.5	44.2	38.1	2.3	1.1
Macedonia, FYR	11.3	9.6	20.9	39.2	30.8				
Serbia	27.8	3.5	31.3	18.3	18.1				
Turkey	28.2	5.3	33.5	29.5	50.3				
<b>EU candidates</b>	<b>23.2</b>	<b>7.6</b>	<b>30.8</b>	<b>29.6</b>	<b>32.9</b>	<b>44.2</b>	<b>38.1</b>	<b>2.3</b>	<b>1.1</b>

Note: Data refer to different years by country and data source.

Source: European Commission 2011b; and sixth Community Innovation Survey (CIS).

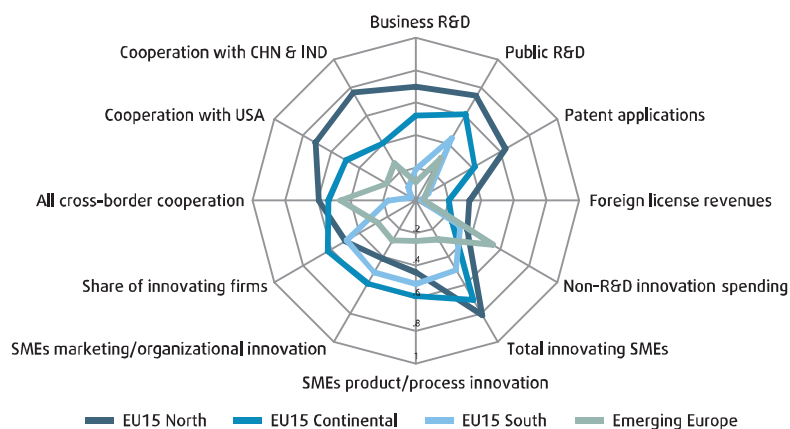
leading international cooperators, but also the Benelux, Slovenia, and—to less extent—France. The United Kingdom does not report which countries its firms collaborate with, but likely belongs with this group.

In sum, there appears to be a group of leading innovators in Europe, distinguished by sizable investments in business R&D, a strong record in international patent registrations, and a substantial proportion of companies that undertake one type of innovation or another. This group does not have an innovation deficit relative to the United States or Japan, though it still lags behind the United States in productivity, particularly in services. Many other European countries do, however, have an innovation gap. Among the top performers in Europe, there is a distinct difference between the pattern in Germany—with many firms innovating mostly in-house—and the pattern in Scandinavia or the Benelux, where there is a stronger propensity for firms to innovate through collaboration with other companies or research institutes. Europe's emerging economies in the east are lagging behind on most indicators of innovation (with some notable exceptions such as Slovenia and Estonia) except for investments in non-R&D-related innovation.

### The North innovates more than others; in the East investment matters more

Do these patterns help to explain the strong economic performance of Europe's northern economies relative to the less impressive performance in the south, as demonstrated in chapter 4? And how can we account for strong productivity growth in Eastern Europe, given that most transition economies do not seem to invest a lot in innovation or have a large share of innovative firms? The answer to the first question is to some extent. The answer to the second is that innovation is only one input into the productivity of firms, and the rate of return on innovation investments varies not only across companies but also across countries.

**Figure 5.5: Innovation: another north-south gap in Europe**



Note: Data are normalized to lie between zero (worst) and one (best) and refer to different years by country.

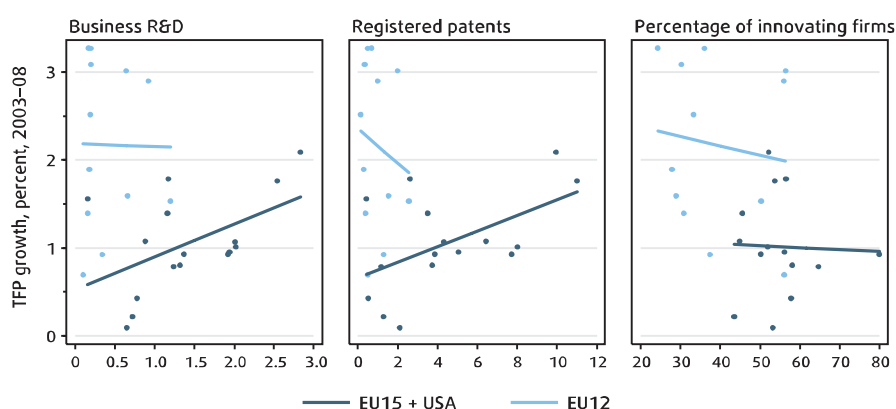
Source: European Commission 2011b; sixth Community Innovation Survey (CIS); UNESCO; IMF BOPS.

A word of caution: this chapter makes no attempt at a robust growth-accounting exercise that would allow the contribution of country-level innovation to be disentangled from other factors such as investments in physical and human capital. We undertake two simple exercises. The first shows the average scores by geographical country groups across all indicators used to measure innovation in figures 5.2 and 5.3 and table 5.1 (figure 5.5). The country groups are the same as used in chapter 4: the EU15 split into a northern group (Ireland, Scandinavia, and the United Kingdom), a continental group (Austria, Benelux, France, and Germany), and a southern group (Greece, Italy, Portugal, and Spain), and all of the new EU member or candidate countries in the sample (not distinguished here between subgroups among the emerging European countries). These scores tell a clear story: across most innovation measures the southern group lags the northern and the continental (figure 5.5). The only exception is the share of SMEs that introduce product and process innovation or marketing and organizational innovation.

The emerging economies in Eastern Europe score poorly on most dimensions of innovation, despite their strong productivity growth record, though they outperform the south in the share of enterprises cooperating with others inside and outside Europe and in non-R&D spending.

The second simple exercise correlates the measures of innovation introduced above with a measure of TFP, drawn on the ECFIN-AMECO database for TFP calculations available annually for 1998–2008 (figure 5.6).<sup>11</sup> In the EU15, there is a clear positive correlation between TFP growth and two of the three measures of innovation in figure 5.6: business R&D and registered international patents. The total share of firms innovating is not correlated with TFP growth in the EU15. In the EU12, the correlation between innovation and TFP growth is slightly negative. In other words, while innovation matters, it matters much more in “old” Europe than in “new” Europe to explain differences in productivity growth.<sup>12</sup>

In sum, there is no single innovation and productivity gap between Europe and the United States. Europe’s leading innovators in the north (and to less extent, the continental countries) have kept pace with U.S. productivity growth and seem



**Figure 5.6: Innovation matters much more in “old” Europe than in “new” Europe in explaining differences in productivity growth**

(innovation and TFP growth—different patterns in east and west)

Note: Business R&D is expressed as percentage of GDP and registered patents refer to patent applications per billions of GDP in euro. Data refer to different years by country and indicator.

Source: World Bank staff calculations, based on European Commission 2011b; and European Commission’s annual macro-economic database (AMECO).

to be matching U.S. innovative investment and activity. For these countries, the question is how to become global productivity leaders. Europe’s south innovates less and has fallen behind in productivity. These countries have an innovation and productivity gap to close with their Northern and Continental European peers and with the United States. Europe’s east is catching up in productivity, but remains far behind in innovation. For these countries, sustaining productivity growth is what matters, but the innovation gap so far has not been a binding constraint.

Evidence from other emerging markets confirms that returns on innovation vary in relation to both the stock of complementary investments in physical and human capital (box 5.3) and a country’s position relative to the global technological frontier (box 5.4). Chapter 4 analyzed the variation in enterprise performance in relation to a wider range of factors, including the business climate, the availability of skills, the quality of a country’s infrastructure, and

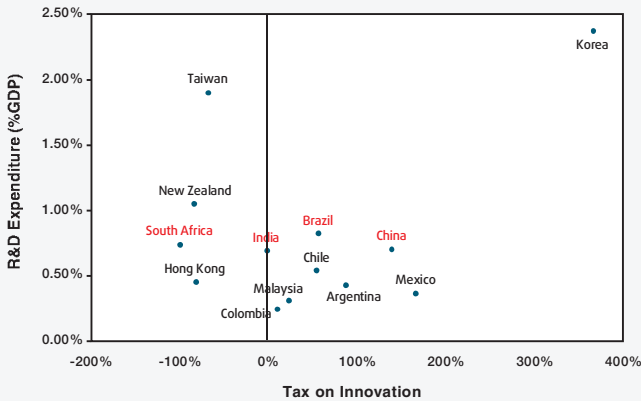
Box 5.3: Is R&D/GDP a good measure of innovation performance?

It is common to rank innovation performance by the share of R&D investment in GDP. But intuitively it cannot be true that, given huge differences in the sophistication of the private sector, the optimal level of investment in R&D should be the same in Albania and Germany. Generally, the question is whether countries face a barrier to accumulating knowledge capital, or to all factors of production. To approach the question of whether Latin America showed innovation shortfalls, Maloney and Rodríguez-Clare (2007) used a model developed and calibrated by Klenow and Rodríguez-Clare (2005) that allows for both types of barriers and captures

interactions in accumulating different types of capital, including “knowledge capital.” To extend this to additional countries, we compare the conventional measure of R&D investment (box figure 1, vertical axis) with the degree to which, controlling for other factors of production, it appears that innovation is inhibited (taxed) or, if to the left of the origin, subsidized (box figure 1, horizontal axis). Although the analysis depends on notoriously fickle measures of relative TFP, it suggests several interesting findings. For instance, even though China is far above Colombia in R&D spending, the analysis suggests that it could

invest more given the accumulation of human and physical capital. But Hong Kong SAR, China—below China in R&D spending—appears to be innovating more than expected given the other factors accumulated; it may not be efficient to push toward a higher share of R&D. The analysis is only suggestive, but it makes an important point: innovation does not exist independent of other factors of production. When barriers to accumulation are high and binding, additional R&D spending may yield few benefits. Source: World Bank staff, based on Maloney and Rodríguez-Clare 2007.

Box figure 1: R&D level may not show innovation problem



Note: R&D expenditure (percentage of GDP) is average for 1995–99. Tax on innovation is the calibration of the model by Maloney and Rodríguez-Clare (2007), adjusting for natural resources activities. The calibration is done using data for the 1990s, except for Hong Kong SAR, China (1980s). Source: World Bank staff calculations, based on WDI; statistical yearbook (Taiwan, China); and UNESCO (South Africa).

others. When these factors are binding, innovation may matter less. Comparing Europe's leading innovating companies with those in the United States and Japan, how does Europe perform "at the frontier"?

## Why European enterprises do less R&D—not enough Yollies

If Europe's most innovative countries invest as heavily in R&D as the United States and Japan, comparing favorably with these peers on innovation indicators, why don't we find Googles and Apples in Sweden and Finland? One answer is that Europe's leading innovators are mostly older companies operating in less innovation-intensive sectors. Europe struggles to nurture young, innovative companies in sectors characteristic of the "new" economy, such as ICT, biotechnologies, or medical services, which would grow into global leaders. Europe's leading innovators are more

### Box 5.4: Why don't lagging countries do more R&D?

Although R&D spending is associated with inventions at the frontier, Cohen and Levinthal (1989) stress the "second face" of R&D, which facilitates the adoption of existing technologies from abroad. Griffith, Redding, and Van Reenen (2004) test this using sectoral time series data from 11 OECD countries. They find that countries further from the frontier had rates of return almost twice those at the frontier. For instance, the United States had a total rate of return of 57 percent while Finland and Norway had rates of return close to 100 percent, with 50 percent due to enhanced learning. These numbers are extraordinarily high, but not necessarily out of line with those found in other studies (see Jones and Williams 1998, and Hall, Mairesse, and Mohnen 2009). Jones and Williams (1998) calculate that at these returns, the United States should be investing roughly four times what it does

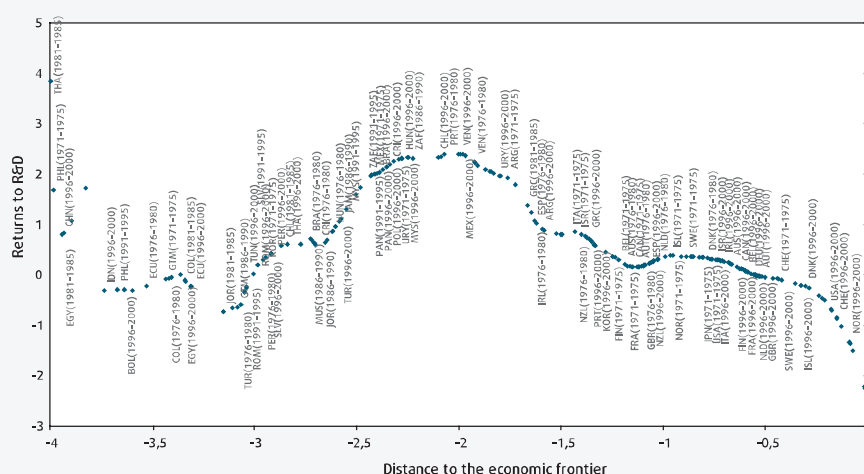
presently. The question arises, if returns increase as we get further from the frontier, why would lagging countries invest in anything besides R&D? Shouldn't the southern and eastern countries of Europe invest more than those at the frontier?

Using a country-level panel, Goñi, Lederman, and Maloney (2011) confirm previous findings that, up to a point, returns rise with distance from the frontier (box figure 1). Each point corresponds to a distance from the frontier represented by a particular country in a particular five-year period, though the estimates, based on a rolling window, do not correspond to that particular country-time combination per se. To the right, we see rich countries with returns consistent with the literature, and then as we move left and away from the frontier to countries such as the Republic of Korea and Greece in 1996–2000,

the returns rise. Beyond the distance corresponding to Mexico, Chile, and Hungary in 1996–2000, returns begin to fall. At Romania's distance from the frontier, countries actually experience negative returns to R&D. Perhaps the finance minister of Romania is reasonable not to see a 3-percent-of-GDP target as a good use of his resources.

Why is this the case? As we get further from the frontier, the business climate is likely to worsen and the private sector become less sophisticated, such that even the best of ideas will yield limited fruit. Moreover, progressively weaker human capital in both the public and private sector could imply few good ideas that actually result from R&D investments. To the degree that they displace more feasible investments in education or infrastructure, the overall return on R&D could be negative.

Box figure 1: Rate of return on R&D versus distance from the frontier



Source: Goñi, Lederman, and Maloney 2011.

likely to push out the technological frontier in established sectors by developing better-quality versions of the same basic product. But they are less likely than their American counterparts to push into new fields.

A word of caution: this section does not directly examine the link between the presence of young, leading innovators and economywide productivity growth. However, the basic argument linking productivity and innovation to the age, size, and sectoral structure of an economy has received significant empirical support (O'Sullivan 2007; Aghion and others 2008). Bartelsman, Haltiwanger, and Scarpetta (2004) found, for instance, that postentry performance differs markedly between Europe and the United States, suggesting barriers to firm growth as opposed to barriers to entry. New European firms' inability to grow large manifests in the high-tech, high-growth sectors, most notably the ICT sector (Cohen and Lorenzi 2000).<sup>13</sup> This correlates with a lower specialization of the European economy in R&D-intensive, high-growth sectors, most notably the ICT sectors (O'Mahony and van Ark 2003; Denis and others 2005; Moncada-Paternó-Castello and others 2010).

The global expenditures of leading innovators by age cohort and sector, taken from the JRC-EC-IPTS Industrial R&D Scoreboard (Hernández Guevara and others 2008), demonstrates Europe's lower rate of investment in R&D compared with the United States. Comparing the innovative profile of young, leading innovators (which we will call "Yollies") with that of old, leading innovators ("Ollies") shows how the lower share of Yollies contributes to Europe's lagging business innovation performance.<sup>14</sup>

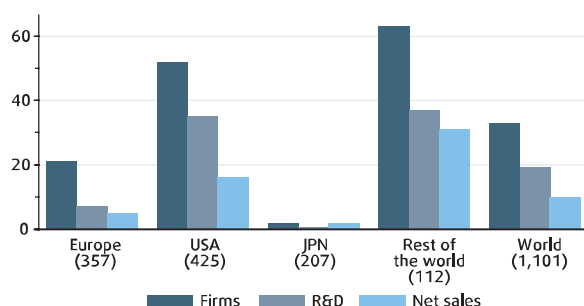
### Europe has fewer Yollies than the United States, and its Yollies invest less in R&D

Among the United States' leading innovators in the Industrial R&D Scoreboard, more than half are "young" (born after 1975; figure 5.7). U.S. Yollies include Microsoft, Cisco, Amgen, Oracle, Google, Sun, Qualcomm, Apple, Genzyme, and eBay. By contrast, only one in five leading innovators in Europe is "young." In the United States, Yollies account for 35 percent of total R&D of leading innovators; in Europe, a mere 7 percent! Notably, Japan has almost no young firms among its leading innovators. The remaining firms in the sample of leading innovators (mostly from emerging Asia) have a high share of young firms, to be expected given the recent economic take-off of these countries.

Of the 74 European Yollies in the Scoreboard, 20 are based in the United Kingdom. France, Germany, and Switzerland each hold nine, the Netherlands has eight.<sup>15</sup> In relative terms, when looking at the share of Yollies in a country's total R&D of leading innovators, Italy does poorest with only 3 percent, but Germany and Sweden have surprisingly low shares at 4 percent, way below the European average. The Netherlands, with 15 percent, is above average. Switzerland scores highest in Europe with 24 percent. But even this share is far below the United States' 35 percent. European Yollies include U.K.-based Vodafone in telecom services, UK Shire in specialty biopharma, Swedish Hexagon in measuring technologies, Dutch ASML in semiconductors, and French Ubisoft in entertainment software.

**Figure 5.7: The role of Yollies among leading innovators is bigger in the United States than in Europe or Japan**

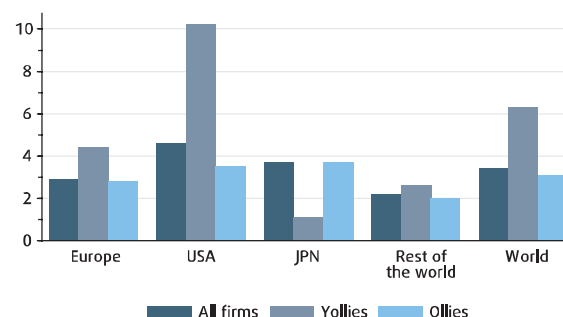
(percentage of young firms in leading innovators, 2007)



Note: The total numbers of firms in the sample are in parentheses.  
Source: Bruegel and World Bank staff calculations, based on European Commission's IPTS R&D Scoreboard.

**Figure 5.8: Yollies spend the most on R&D and U.S. Yollies are the most R&D-intensive of all firms**

(R&D intensity, percent, 2007)



Note: R&D intensity is defined as R&D to total sales ratio.  
Source: Bruegel and World Bank staff calculations, based on European Commission's IPTS R&D Scoreboard.

The share of Yollies in R&D is higher than in net sales, indicating that Yollies have a higher R&D intensity than their older counterparts (figures 5.7 and 5.8). Once again, the United States stands out, with the highest relative R&D intensity of its Yollies. While on average, Yollies are about twice as R&D-intensive as Ollies, for the United States this ratio stands at almost 3. And for Europe, it is only 1.5. U.S. Yollies are by far the most R&D-intensive firms. Moreover, the gap between the United States and Europe in R&D intensity is larger for Yollies (57 percent) than for Ollies (20 percent).

Compared with their U.S. and European counterparts, Yollies from Japan and the rest of the world are less R&D-intensive. Not only does Japan have far fewer Yollies, but its Ollies are more R&D-intensive than its Yollies. This is a remarkable difference from the United States pattern, considering that Japan has just as high a share of business R&D in GDP as the United States. Japanese companies such as Toyota and Sony have retained global leadership through heavy investments in product and process innovation, while maintaining core focus areas. To some extent, the same can be said of firms in Europe's export champion, Germany. While the United States has Amazon, eBay, Google, and Microsoft, Japan has Toyota and Germany has BMW and Mercedes Benz. Germany's success relies on consumers in emerging markets who aspire to traditional quality consumer durables from Germany, and investors who prefer German machine tools. For Europe as a whole, as for Japan, the lack of Yollies does, however, reflect lower structural flexibility, reducing its economic competitiveness.

Three facts explain the lower overall R&D intensity of Europe's leading innovators:

- Europe has fewer Yollies than the United States, which matters because Yollies have higher R&D intensity than Ollies.
- Europe's Yollies are less R&D-intensive than their U.S. counterparts.
- Europe's Ollies are less R&D-intensive than their U.S. counterparts, though to a lesser extent than its Yollies.



**Table 5.2: Europe specializes in sectors with medium R&D intensity, the United States in high intensity**

(relative technological advantage (RTA) indices by sector, ratio, 2007)

	Europe	United States
<b><i>Aerospace and defense</i></b>	1.50	1.13
Automobiles and parts	1.26	0.58
<b><i>Biotechnology</i></b>	0.32	2.20
Chemicals	1.31	0.64
Commercial vehicles and trucks	1.30	1.06
<b><i>Computer hardware and services</i></b>	0.08	1.39
Electrical components and equipment	1.56	0.18
Electronic equipment and electronic office equipment	0.18	0.37
Fixed and mobile telecommunications	1.53	0.20
Food, beverages, and tobacco	0.92	0.74
General industrials	0.61	1.49
<b><i>Health care equipment and services</i></b>	0.70	1.86
Household goods	0.84	1.60
Industrial machinery	1.84	0.24
Industrial metals	1.00	0.30
<b><i>Internet</i></b>	0.00	2.54
Oil	1.00	0.85
Personal goods	1.44	0.69
<b><i>Pharmaceuticals</i></b>	1.27	1.16
<b><i>Semiconductors</i></b>	0.50	1.72
<b><i>Software</i></b>	0.51	2.05
Support services	0.78	1.19
<b><i>Telecommunications equipment</i></b>	1.38	1.09

Note: Relative technological advantage is calculated as the region's share in total sectoral R&D relative to the region's share in overall R&D. A value in relative technological advantage that is higher than 1 means that the region is technology-specialized in this sector. Japan and the rest of the world are not reported because of too few observations when disaggregating to individual sectors. Innovation-based growth sectors are bold and in italics.

Source: Bruegel and World Bank staff calculations, based on European Commission's IPTS R&D Scoreboard.

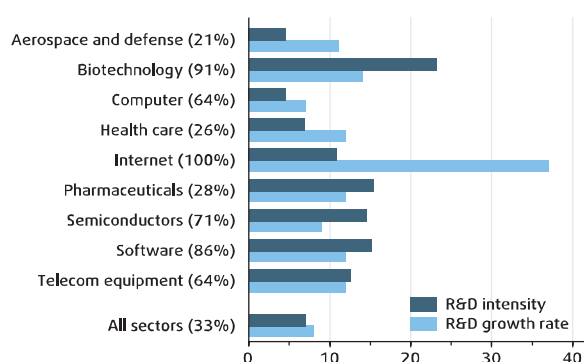
Because the difference in R&D intensity between Europe and the United States is small for Ollies, the explanation falls to the Yollies. Not only does Europe have fewer Yollies, but those that Europe has are less R&D-intensive.<sup>16</sup>

### Europe's Yollies are in less innovative sectors so they invest less in R&D

Why do Europe's Yollies have lower R&D intensity than those in the United States? Europe specializes in less innovative sectors. Comparing Yollies within the same sectors shows that Europe's Yollies are just as R&D-intensive as their U.S. competitors, as expected given the global markets for many of their inputs and outputs.

**Figure 5.9: Innovation-based growth sectors**

(percentage of total sales, 2007, and annual percent growth, 2004–07)

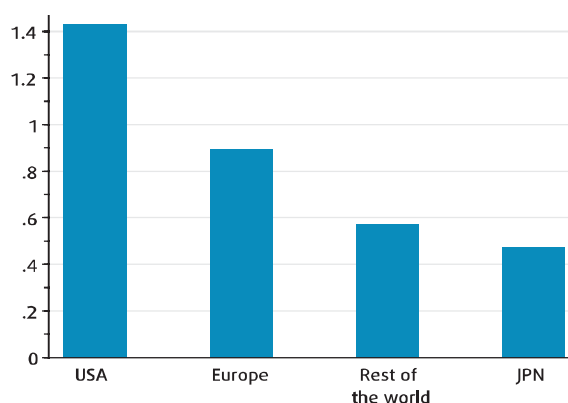


Note: R&D intensity is expressed as percentage of total sales. R&D growth is average annual growth over 2004–07. The percentages of Yollies among all firms in a sector are in parentheses.

Source: Bruegel and World Bank staff calculations, based on European Commission's IPTS R&D Scoreboard.

**Figure 5.10: Only the United States focuses its R&D efforts in innovation-based growth sectors**

(average relative technological advantage in innovation-based growth sectors, ratio, 2007)



Source: Bruegel and World Bank staff calculations, based on European Commission's IPTS R&D Scoreboard.

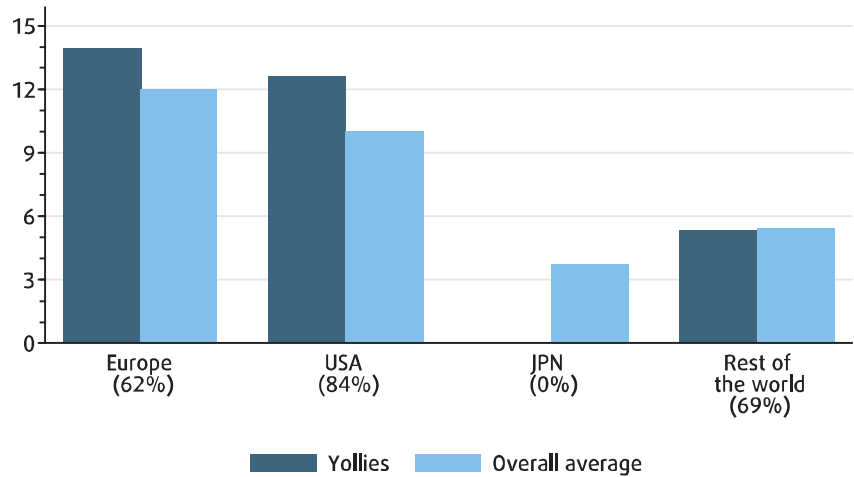
Disaggregating the R&D Scoreboard by sector—listing all that have above-average R&D intensity, above-average R&D growth, or an above-average share of young companies among its leading innovators—can show whether or not Europe specializes in innovation-intensive sectors (figure 5.9).<sup>17</sup> The innovation-based growth sector includes aerospace, biotech, computer hardware and services, health care equipment and services, Internet, pharmaceuticals, semiconductors, software, and telecom equipment—all in the ICT and the health nexus (innovation-based growth sectors).

With the innovation-based growth (IBG) sectors identified, where are Europe's R&D efforts concentrated? Europe spends a larger share of its R&D investments in sectors characterized as medium-R&D-intensive, as found by Moncada-Paternò-Castello and others (2010; table 5.2). These include automobiles, chemicals, electrics, industrial machinery, and telecom services. None of these sectors is young or has a high R&D intensity; all are older with medium R&D intensity. Further, automobiles, chemicals, and electrics have below-average R&D growth.

When looking at individual IBG sectors, it can be seen that Europe has a technological advantage (as indicated by an RTA > 1) in aerospace, pharmaceuticals, and telecom equipment. Of these three, only telecom equipment is a “young” sector. The United States, by contrast, specializes in all IBG sectors (figure 5.10).

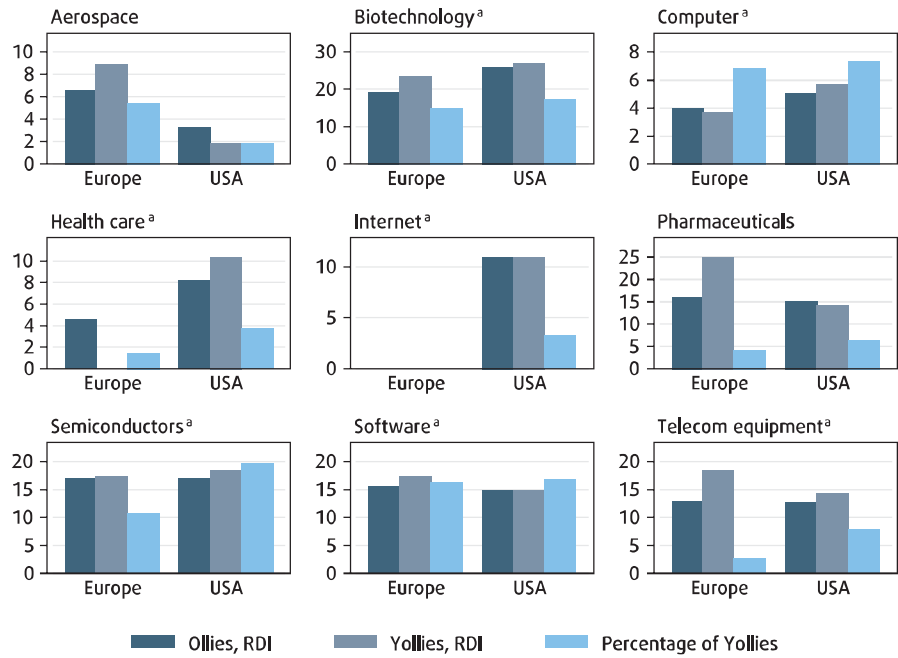
The final step in this decomposition analysis is comparing the relative importance and R&D intensity of Yollies in the IBG sectors across regions. Europe has significantly less of its Yollies in sectors with the highest opportunities for innovation-based growth (figure 5.11, top panel). But the ones it has in these

**Figure 5.11: Europe has fewer Yollies in innovation-based growth sectors, but they are as R&D-intensive as in the United States**  
(R&D intensity in innovation-based growth sectors, percent, 2007)



Note: The shares of Yollies in innovation-based growth sectors are in parentheses.

(relative weight of innovation-based growth sectors in the overall population of Yollies, 2007)



a. Cells with fewer than five observations.  
Note: In the top panel, the shares of Yollies in innovation-based growth sectors are in parentheses. In the bottom panel, disaggregating the data into sectors, geographic areas, and age groups leaves few observations for analysis, calling for caution when interpreting results. Shaded cells are the young sectors. RDI refers to R&D intensity, which is, as defined above, R&D as percentage of total sales.  
Source: Bruegel and World Bank staff calculations, based on European Commission's IPTS R&D Scoreboard.

sectors are as R&D intensive as their United States counterparts, if not more. In other words, European Yollies are less R&D-intensive than their United States counterparts because they operate in less R&D-intensive sectors.

Across most IBG sectors, Europe's Yollies are just as R&D-intensive as their U.S. counterparts, with a notable advantage in aerospace (figure 5.11, bottom panel). But Europe has a much smaller share of Yollies in the most conspicuous representatives of the knowledge-based economy, such as the Internet (where not one European company makes the list of leading innovators), telecom equipment, biotechnology, and health care.<sup>18</sup> Europe's comparable innovation deficit is due to a structural composition effect, not an intrinsically lower propensity to innovate among its firms (Veugelers and Cincera 2010b).

Japan demonstrates an alternative strategy to achieve productivity growth in traditional industries and to maintain global leadership. Germany might be following a similar route. But for Europe as a whole, greater success in innovation-intensive sectors such as ICT, biotech, and health care will be needed to catch up with the technological frontier represented by the United States.

## European innovation systems need updating

What makes the United States better at generating new technological, organizational, or scientific ideas and applying them successfully in business? Many factors influence the innovation process. We call the interaction of these factors a country's National Innovation System. The fundamentals include the actors—managers and firms—and the main inputs: capital, skills, and ideas. A review of these fundamentals shows that Europe has several economies that do as well as the United States at creating the basis for innovation—if not better.

### National innovation systems

Firms decide whether to innovate using existing technologies. In deciding, a firm will typically start by examining its competitive position. Firms facing limited competitive pressure are less likely to innovate, since innovation needs both effort and money (Aghion and Howitt 1998 and 2006).<sup>19</sup> The firm will want to know whether it faces a reasonably stable or highly uncertain outlook in its major markets, since innovation is a long-term business. The firm will consider its access to markets with the necessary income level and density of potential customers and suppliers to allow economies of scale inherent in many innovative technologies to be used to their potential. The firm may also respond to opportunities presented by public sector contracts. And last but not least, company managers decide whether to innovate. Quality of management differs, influencing these decisions and whether innovations succeed (Bloom and Van Reenen 2010).

A potential innovator will also examine the availability of new ideas that may present a business opportunity, though it is often a scientific discovery or intuition that generates a business idea. An innovator has to assess whether it has the necessary skilled workers to realize this opportunity. The innovator may also be spurred by upward shifts in an industry's quality standards or by the

### Box 5.5: Where does entrepreneurship flourish?

A hundred years ago, the Austrian economist Joseph Schumpeter published his first major work, *The Theory of Economic Development*, laying the foundation for a large literature examining the role of the entrepreneur in economic development. For most economists, entrepreneurship is an activity responsive to material incentives such as competition, income taxes, or bankruptcy laws, and their influence on risk (Aghion and Howitt 2006). Some economists offer cultural theories of entrepreneurship, which emphasize how value systems encourage people to invest their talents in economic activities (rather than achieving cultural excellence, for instance; for a useful summary, see Shiller 2005).

To explain why some regions develop economic clusters and others do not, Glaeser, Kerr, and Ponzetto (2010) examine the supply

of entrepreneurship versus the relative role of economic incentives stimulating demand for entrepreneurial activity, using an established empirical correlation between average company size and employment growth across locations in the United States. Their findings indicate that the supply of entrepreneurship matters. Some regions have a higher density of enterprises to start, reducing costs for others, and allowing clusters to grow (see also Delgado, Porter, and Stern 2010). But some regions are simply lucky to have more entrepreneurial people who, at the right juncture, were able to exploit new economic opportunities. This insight seems confirmed by evidence that attitudes toward values associated with entrepreneurship—such as risk-taking, thrift, and preference for work over leisure—vary across not only countries but also

regions within a country (Shiller 2005).

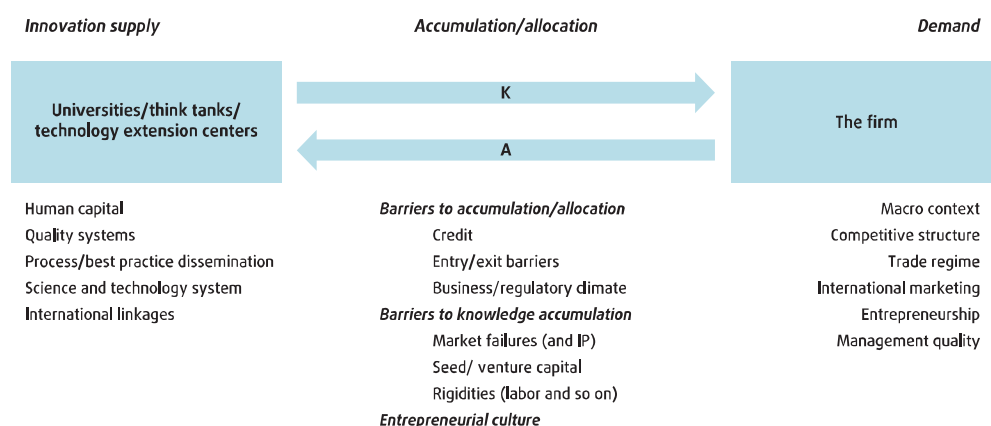
It is likely that a combination of cultural, structural, and economic factors foment entrepreneurial clusters such as Silicon Valley or route 128. In the United States, such clusters have grown to international significance because labor is more mobile, venture capital more developed, and the home market large enough to nurture domestic companies to a global scale. Whether Europeans as a whole are less entrepreneurial than Americans is not clear. The challenge for Europe is to create a network of smaller innovation clusters that achieves the global reach of Silicon Valley. If Europe integrates its services markets, the livability of its historic cities and the quality of its transport network may enable it to compete with California (Crescenzi, Rodríguez-Pose, and Storper 2007).

example of other innovators operating in similar markets. These are factors that influence the supply of ideas that innovators can use.

Intermediating between supply and demand are a host of other factors, some specific to innovation, some affecting any investment. Key among these are: the availability of credit, venture capital and “angel” investors (for innovators specifically), and direct public support; intellectual property rights (IPR); regulatory barriers that may discourage innovation (for example, the costs of licensing new technologies, starting up or closing a business, and changed complementary inputs such as hiring and firing labor); and other factors such as the structure and efficiency of the tax or legal system, which influence the probability that an innovator will retain profits. Another factor influencing both supply and demand—and recently receiving considerable attention—is the existence of an “entrepreneurial culture.” There is strong evidence suggesting that attitudes to entrepreneurship vary across countries and regions (box 5.5). Moreover, the presence of other entrepreneurs may stimulate innovators to start a new venture. This explains the interest of policymakers in creating innovation clusters (Lerner 2009; Delgado, Porter, and Stern 2010).

Below are three additional observations on the National Innovation System framework (figure 5.12):

- Discussions of National Innovation Systems often overemphasize supply-side factors and inputs into the innovation process, neglecting the fact that the best test for any innovation is its success with customers. Understanding and reinforcing incentives for firms to innovate and for entrepreneurs to enter new markets is key to a successful innovation system. Without “market pull,” resources can be wasted. The painful transformation of public R&D institutes



**Figure 5.12: The supply of innovation gets a lot of attention, supply-demand interactions too little**

Source: Based on a framework developed by William Maloney, World Bank Development Economics Research Group.

in Eastern Europe and the Russian Federation—well known for their scientific achievements under Soviet rule—is a case in point (Goldberg and others 2011).

- Due to the potentially large spillovers of R&D, there is often ample public support. Moreover, coordination failures in “discovering” a country’s competitive advantage have motivated calls for government intervention to promote particular sectors or industries assumed to have high positive spillovers (Rodrik 2004). Although well motivated by empirical examples, these calls should not divert attention from the more mundane barriers to investment, as detailed in chapter 4. “Setting the table” well is necessary for a successful National Innovation System (Lerner 2009).
- The interaction between supply and demand matters most. A comprehensive diagnosis is needed to understand what requires fixing. For Europe as a whole, there are important gaps in supply and demand, as well as in the links between them. But in each area where Europe is weak, several countries already achieve global best practice. To understand what might constrain leading innovators in these European top performers, we must turn to Europe-wide factors.

### The fundamentals: management quality, adventurous capital, and skills

How do European countries compare with their peers—most importantly the United States—in key dimensions of their National Innovation Systems? Using the framework of figure 5.12, a survey of evidence highlights where Europe lags. The survey is selective rather than comprehensive, and is based on findings in the literature rather than original research. Aggregating the data across more dimensions to rank European countries against their peers confirms the findings of Europe’s main innovation weaknesses.

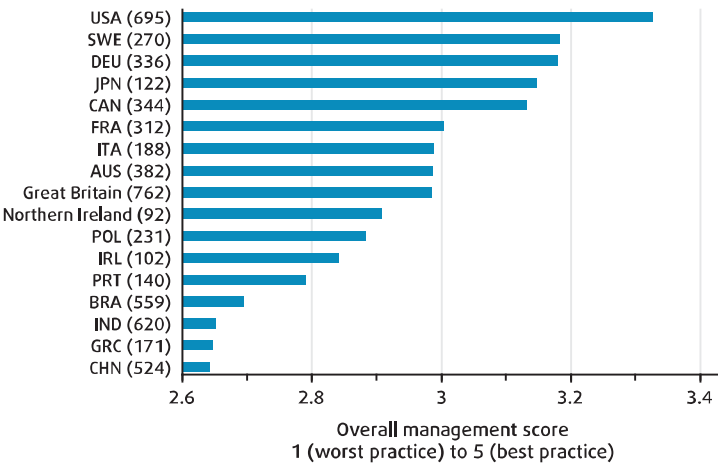
Management quality in the United States is higher than in Europe

In natural selection, the fittest organisms survive, adapting to their environment in unexpected ways.<sup>20</sup> What is true in nature is also true for market economies, though many factors intervene in the selection process. Aghion and Howitt (1992 and 1998) stress competition’s importance in stimulating the innovation in companies near or on the technological frontier. But how competition stimulates innovation has only recently begun to be investigated in depth.

Bloom and Van Reenen (2010) report the results of research that scores the quality of company management in several thousand companies in 17 countries (figure 5.13). Managers in the United States scored the highest, while many European countries scored quite poorly (see Iwulska 2011 for a summary of the literature). Indeed, Greek companies seem to be as poorly managed as those in Brazil, China, or India. Germany and Sweden do almost as well as the United States—and better than Canada and Japan. The index can be broken down into subindices measuring the extent that managers monitor what is going on, manage human resources with appropriate incentives, and set the right targets and take action when outcomes deviate. The main reason for the United States’ lead is its higher score in managing human resources. Bloom and Van Reenen (2010) attribute the country’s greater use of incentives as management tools to its lighter labor market regulations, which allow poor performers to be more easily removed and top talent more easily attracted and retained. As chapter 6 shows, there are big differences among European countries in the quality of labor market regulations, but as a whole Europe struggles to attract and retain global talent.

Another important insight from the research on management quality is that weaker average management scores tend to be associated with tolerance of poorly managed companies, which allows these companies to stay in the

Figure 5.13: The United States outperforms Europe on management quality



Note: Numbers of firms are in parentheses. Data refer to 2006–08.  
Source: Bloom and Van Reenen 2010. For data, see Nicholas Bloom’s website at Stanford University, [www.stanford.edu/~nbloom](http://www.stanford.edu/~nbloom).

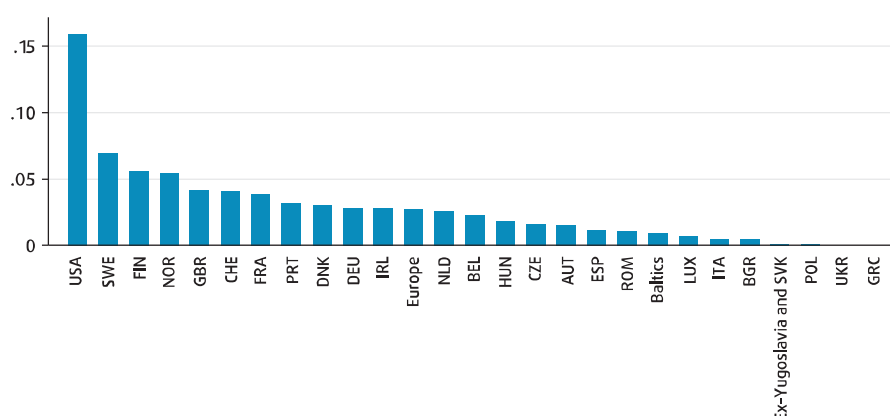
market (Van Reenen 2011). This insight can be linked to evidence showing that in industries with higher exit rates, productivity growth is faster (Aghion and Howitt 2006). Competition spurs managers to innovate to escape their competitors, pushing poorly performing firms out of the market and raising a country's aggregate performance. As chapter 4 shows, the survival of poorly performing microenterprises and SMEs is one reason for the poor productivity of Southern European countries such as Italy. Multinational firms and exporters are better managed than domestic firms and nonexporters—in line with results in chapter 4 on the role of foreign direct investment, internationalization, and export orientation for firm performance.

A final insight from this research is that better management may increase returns to new general purpose technologies such as ICT. Bloom, Sadun, and Van Reenen (2007) argue that greater use of managerial incentives in U.S. companies has led to better use of the reduction in information costs to decentralize key decisions within the firm hierarchy. This explains why the United States got a larger kick than Europe out of roughly the same levels of information technology investments during the second half of the 1990s, particularly in wholesale, retail, and financial services (van Ark, O'Mahony, and Timmer 2008).

### Venture capital markets in Europe are thinner than in the United States

One of the most frequently cited explanations for the differences in dynamic structure between Europe and the United States is a greater willingness on the part of U.S. financial markets to fund the growth of new firms in new sectors (O'Sullivan 2007). Survey evidence from the German Community Innovation Survey confirms the importance of financial constraints for innovating firms in general, and particularly for young innovating firms (Schneider and Veugelers 2010).

The importance of access to external finance—particularly for young, fast-growing innovators—should not come as a surprise. Risk and informational asymmetries create capital market imperfections, and a firm's lack of reputation and collateral



**Figure 5.14: The United States has the largest venture capital market in the world**

(venture capital investment, percentage of GDP, 2010)

Source: EVCA (European Private Equity and Venture Capital Association) 2011; and Thomson Reuters via PricewaterhouseCoopers/National Venture Capital Association MoneyTree Report, based on Kelly 2011.



**Table 5.3: Average deal size of venture capital investment**

(euro, millions, 2003–06)

Investment stage (EVCA)	Europe	Investment stage (NVCA)	United States
Seed	0.425	Seed/start-up	2.181
Start-up	1.425	Early stage	3.499
Expansion	2.652	Expansion	6.011
Replacement capital	7.208	Later stage	7.699

Note: Investment stages in Europe and the United States are defined by EVCA (European Private Equity and Venture Capital Association) and NVCA (National Venture Capital Association), respectively.

Source: Raade and Dantas Machado 2008.

become crucial to how these asymmetries disadvantage it. Although young, highly innovative companies are rich in intangible assets such as technology and specialized knowledge, they lack the collateral assets that could help them access external finance. Young innovators, combining the disadvantages of small scale, short history, risky innovative projects, and less or no retained earnings, can be expected to be more affected by financial barriers.

The venture capital market is most adept to address the need of external financing for highly innovative growth projects coming from young companies lacking internal funds. The high risk profile of young, highly innovative growth companies often impedes other modes of external financing, like bank loans.

The United States has by far the largest and most developed venture capital market, about twice the size of that of Europe's leading innovators, Switzerland and Sweden, as a share of GDP (figure 5.14).<sup>21</sup> It is not clear, however, whether this disparity reflects the supply side (insufficient funding for potentially profitable projects) or the demand side (insufficient profitable investment opportunities). The evidence provides arguments for both.

Kelly (2011) shows that European venture capital, while smaller, chases more deals—leading to fragmentation and smaller investment volumes per deal than in the United States. There is a substantial difference in average investment sizes between the United States and Europe, particularly at the initial stage of seed capital, where the average European investment is just €0.4 million against €2.2 million in the United States (table 5.3). There is also qualitative evidence suggesting that fewer venture capital investors in Europe have an entrepreneurial or engineering background themselves, potentially weakening links with investee companies (Kelly 2011). Venture capital investment in Europe is more diversified and less focused on ICT and biotechnology than in the United States, where I&D sectors account for 75 percent of all venture capital investments. Finally, the lower development of European equity markets means investments may be more costly (box 5.6). These factors put European innovators and especially European Yollies at a disadvantage to their U.S. counterparts in raising financing.

Yet Skype's story suggests that venture capital is internationally mobile. In principle, a European yollie should have no difficulty raising financing in the deeper U.S. capital markets. For many years, returns on venture capital investments in the European Union were considerably worse than in the United States, though this gap may now be declining (Kelly 2011; Brandis and Whitmire 2011). Low returns explain low investment flows, and low returns might themselves reflect nonfinancing-related barriers to innovation. Indeed, a likely explanation for limited venture capital financing is that markets for venture capital are too thin. A limited number of investors and entrepreneurs have difficulties contracting with each other at reasonable costs. In European innovation leaders such as Sweden or Finland, though the size of the venture capital market relative to GDP is smaller, availability of financing may no longer be a binding constraint.

### Europe's university research lags the United States' in quality and business linkages

An available labor force with the skills to use new technologies is a key factor in encouraging innovation—whether by pushing out the technological frontier or by adopting global best practice in the domestic market. Universities play a key role in educating future cohorts of workers, but they also generate scientific

#### Box 5.6: Role of financial systems in convergence and innovation

Relationship-based financial (RBF) systems played a key role in countries where income convergence was the main challenge, as well as in the reconstruction of Europe after World War II. The main motive was technology absorption. By contrast, arms-length financial (ALF) systems better enable innovation and have gradually risen in importance in continental Europe's more advanced economies. ALF systems have also played a central role in making the United States and the United Kingdom leaders in innovation.

##### The differences

An ideal RBF system emphasizes long-term relationships between customers and financial institutions, with transactions conducted and priced in the context of these relationships. Reputation is integral to this system. The underlying legal framework is less important, and informal enforcement plays a more prominent role, so the institutional and information requirements are fewer. Ownership structures tend to be more concentrated.

An ideal ALF system treats financial transactions as stand-alone decisions, each structured and priced according to its merits and provided by the financial institution that can offer the best service. The institutional framework is more demanding, due not only to the necessary legal and regulatory

frameworks but also to the enforcement mechanisms that such frameworks require.

In reality, the two systems often commingle. RBF systems are characterized by an above-average importance of banks, small bond and equity markets, and limited emphasis on formal disclosure and corporate governance standards. This is an efficient arrangement to collect savings, monitor borrowers, and select investment projects. ALF systems have smaller specialized banks, a greater importance of capital markets, and extensive formal disclosure and corporate governance standards.

##### The advantages and disadvantages

Long-term relationships in RBF systems, often enhanced by equity stakes and board positions, help generate information, providing banks with the opportunity and incentive to obtain in-depth knowledge of their customers, reducing information asymmetry, and facilitating monitoring. The option value for both financial firms and customers of maintaining the long-term relationship provides an incentive to resolve contract disputes that might arise while funding borrowers during lean periods, therefore facilitating longer-term planning and reducing the need for self-insurance. But RBF systems also have disadvantages. The

desire to maintain the value of the investment in existing relationships creates a preference for funding projects in established firms. Borrowers with intangible assets and start-ups with disruptive technologies or strategies challenging incumbents are less likely to be supported. Some analysts even argue that RBF systems stifle innovation by limiting competition (Rajan and Zingales 2002).

ALF systems have different advantages. The existence of a broad range of alternative funding sources, coupled with a lower inherent preference for continuing existing financial relationships, raises the likelihood of funding new technologies and firms. It also provides incentives for adjusting rapidly to new economic conditions—and thus to permanent shocks. The reduced importance of lock-in effects for both financial firms and customers generates an incentive for stringent disclosure requirements. But there are disadvantages, too. ALF systems have less repeat business and thus an increased need for self-insurance. Because of the requirement for frequent disclosure, the management compensation structures are tilted toward short-term results. Finally, the transient nature of financial transactions reduces the incentive to resolve disputes internally. An efficient legal system is crucial for an ALF system to function effectively.

**RBF still dominates in Europe, but ALF are on the rise**

Examining private sector credit and stock market capitalization, after controlling for the characteristics of individual countries—population, demographics, and other features such as being a transition country or an offshore financial center—indicates that banking sectors in Continental Europe are overdeveloped and that equity markets are underdeveloped (box figures 1 and 2). But this is not true for all countries. For instance, banking systems in the Baltic States, Bulgaria, Croatia, Hungary, and Slovenia perform above the world’s benchmark for private sector credit but have underdeveloped equity

markets (except for Bulgaria and Croatia). The southern periphery of the European Union followed a similar path before the financial crisis. For instance, Spain has overdeveloped banking and equity markets, but Italy lags the “old” EU cohesion countries in stock market development.

From the standpoint of innovation finance, only a few countries in emerging Europe appear to have excessively expanded their credit markets. And sustained growth differentials relative to the EU15 have narrowed the productivity gap and increased the share of firms with characteristics more amenable to external financing through capital

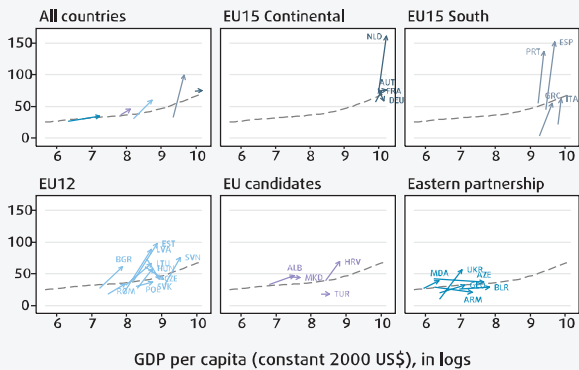
markets. Moreover, the supporting legal system is more open to ALF systems due to the nature of EU regulatory requirements.

Whether a country develops financially is more important than the relative weight of ALF and RBF systems. The experience of emerging Europe is interesting since foreign banks have become a part of RBF systems. But improvements in supporting institutions suggest greater scope for ALF systems in the future.

Source: This box draws on Wolf (2011), on the features of RBF and ALF systems, and on Sugawara and Zaldueño (2011), on the benchmarking of banking and capital markets.

**Box figure 1: Private sector credit**

(percentage of GDP, 1997–2008)

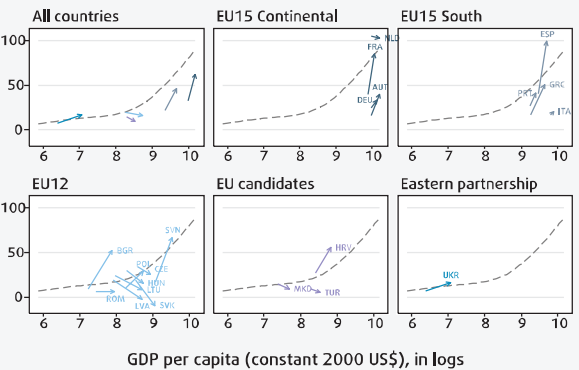


Note: Arrows begin in 1997 and end in 2008, except for Ukraine, which begins in 1998. The arrows in the top-left panel are median values for each country group. The y-axis reflects the indicator referenced in the title of each chart after all effects of structural factors are filtered out and plotted against per capita income with cubic splines (dash lines). Specifically, each of the two indicators is regressed on the mentioned income and structural factors using median estimates of quartile regressions.

Source: World Bank staff calculations, based on Beck, Demirgüç-Kunt, and Levine 2000 and 2010.

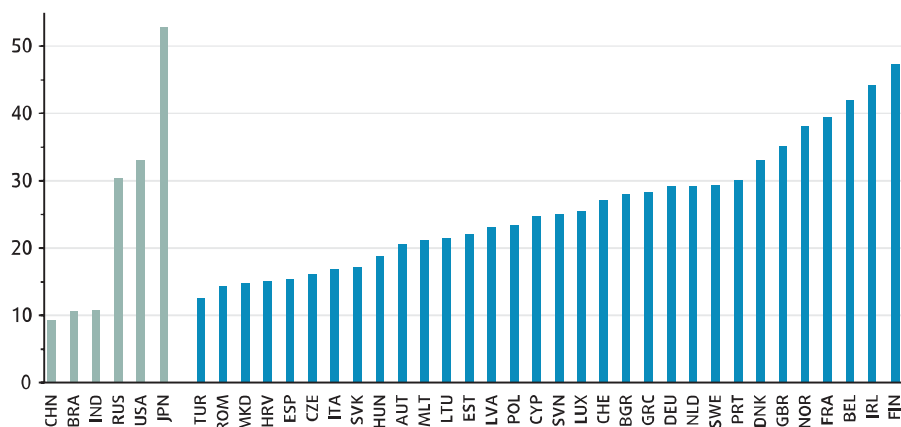
**Box figure 2: Stock market capitalization**

(percentage of GDP, 1997–2008)



knowledge that becomes available for business applications. Close links between research institutes, universities, entrepreneurs, and venture capital investors are key ingredients of a successful National Innovation System. And universities are an important vehicle for countries that wish to attract global talent—both academics and students. The United States outperforms Europe on all three counts.

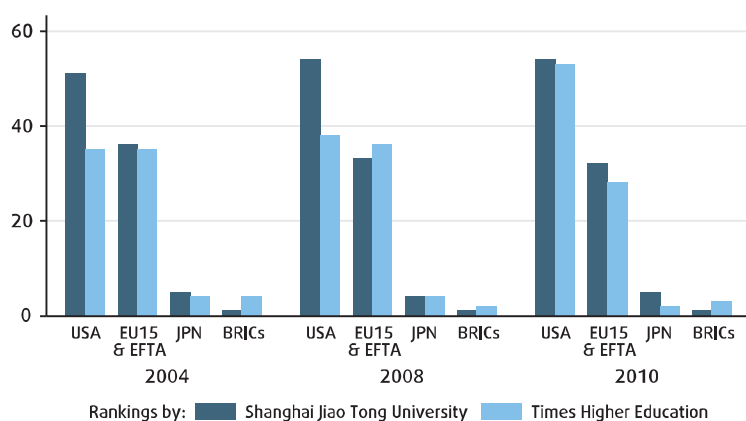
European governments regard scientific research as a primary responsibility of the public sector, placing less emphasis on leveraging private funding for scientific discovery. While total funding per student correlates closely with GDP per capita, in the United States the average ratio of spending per student to GDP per capita was 58 percent, against 55 percent in Canada and between 40 and 50 percent in most advanced European countries (Italy lags with less than 30 percent). Differences in private funding explain the bulk of spending



**Figure 5.15: Most European countries produce fewer graduates than the United States or Japan**

(percentage of the population ages 30–34 that has completed tertiary education, 2010)

Source: International Institute for Applied Systems Analysis and Vienna Institute of Demography (IIASA/VID), via World Bank Education Statistics (EdStats).



**Figure 5.16: Europe is falling behind the United States in top university rankings**

(world's top 100 universities)

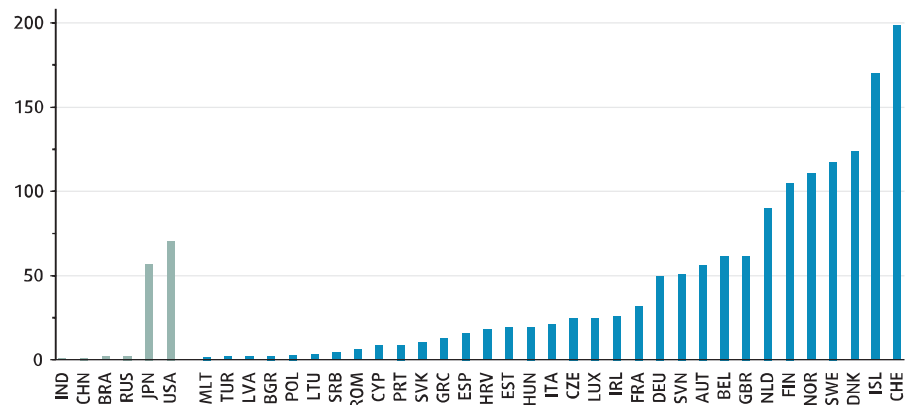
Source: World Bank staff calculations, based on data from Shanghai Jiao Tong University and Thomson Reuters/Times.

differences per student. Similarly, while public funding for researchers in the United States and Europe is roughly the same, Europe's per capita funding per scientist is only around 40 percent of the United States' level because the United States has far fewer publicly funded researchers. The European Research Council, with a budget of around €1 billion a year, attempts to provide more targeted and scaled-up research grants to European centers of excellence to overcome fragmentation.

Greater public funding has not led to a larger share of the workforce with higher education. Japan has the highest share of graduates in its population, with a mixed funding system (figure 5.15). The United States has a better average than the European Union, though several European countries with predominantly public funding outperform the United States.<sup>22</sup> Public funding often comes with less flexible governance, allowing for less diversification in courses offered and weaker ability to attract, remunerate, and retain top faculty (Aghion and others 2005).

**Figure 5.17: Science-business links are as strong in Europe's top performers as in the United States**

(public-private co-publications, per millions of population)



Note: Data refer to different years by country.

Source: European Commission 2011b.

The consequences of this policy choice: First, Europe's universities underperform their United States peers in indicators measuring the quality of scientific output and the education opportunities offered. Second, the links between scientific research and business are more developed in the United States, and the U.S. system is more likely to generate scientific discoveries that turn into commercial "hits." Third, the United States outperforms Europe in attracting and retaining global talent to boost the quality of its workforce.

According to the rankings of the world's top 100 universities produced by the Shanghai Jiao Tong University and the Times Higher Education Supplement index, European universities lag behind the United States—particularly at the top (figure 5.16).<sup>23</sup> Moreover, both rankings show Europe losing to the United States over 2004–10. While in absolute numbers the United States dominates in quality universities, some European countries do well relative to their population. The United Kingdom, with two top 20 universities (Oxford and Cambridge), is an obvious example, but Belgium, Denmark, the Netherlands, Sweden, and Switzerland all have a higher share of top 200 universities per 1 million population than does the United States. Once again, within Europe there are innovation leaders that match the quality of the U.S. National Innovation System, even if Europe as a whole is falling behind.

Emerging technologies are often built on insights from frontier research, developed at universities or research institutes. The links between science and business are thus as critical as the quality of the science. Such links are forged more easily when researchers and entrepreneurs are close to one another, leading to attempts to create global innovation clusters around centers of academic excellence. The obvious examples are Silicon Valley in California for ICT, the greater Boston area and the area around Cambridge in the United Kingdom for biotech, and the Munich and Zurich areas for engineering. The United States is fortunate to have top research universities producing frontier research. The U.S. National Innovation System is unique in how its top research universities interact productively with businesses.

Interactions between science and industry can take various forms—including formal relationships, such as collaborative agreements between science and

industry; R&D contracting, but also own licensing policies and intellectual property management; and spin-off activities of science institutions. Behind this group of formal links are myriad informal contacts, personnel mobility, and science-business networks on a personal or organizational basis. These informal contacts and human capital flows exchange knowledge between enterprises and public research, creating spillovers. While more difficult to quantify, informal contacts are nonetheless important, often instigating more formal contacts.

There are few available quantitative indicators that demonstrate the strength of links between industry and science across countries.<sup>24</sup> The IUS reports public-private co-publications as a measure for science-business links (figure 5.17). It shows that the top countries in Europe in co-publications are Switzerland and the Scandinavian countries, which are also the innovation leaders overall, indicating that strong links between universities and the private sector are necessary for a well-functioning innovation system.

University patents illustrate the capacity of a nation's science system to contribute to technological development (table 5.4).<sup>25</sup> When measured by quantity and use by the corporate sector, different profiles for Europe, Japan, and the United States emerge.

**Table 5.4: United States universities produce more patents, and if picked up by business, the patents have greater impact**

(citation-based statistics for all countries with at least 100 university patents)

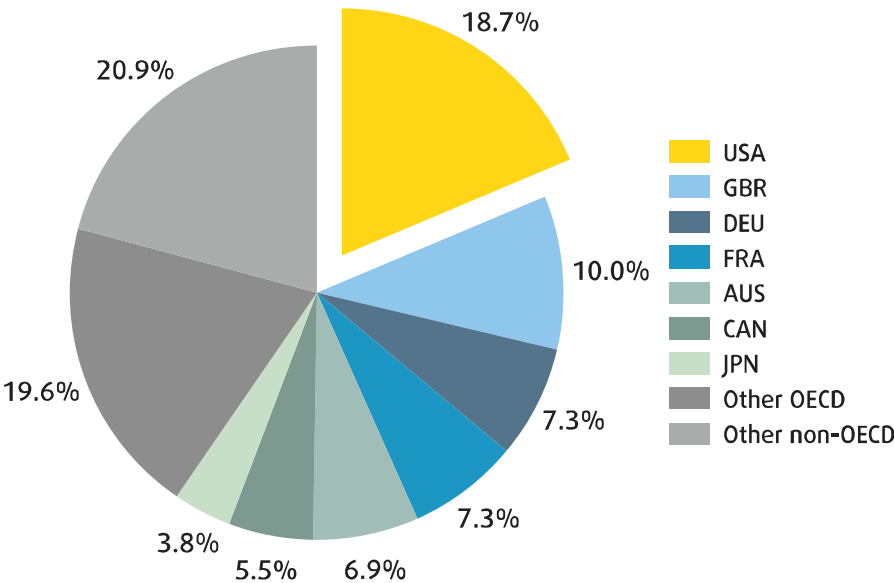
Note: The analysis uses application data from the European Patent Office for 1980–2000, which allows a citation window of 10 years (until 2010). Citations are from all patent systems (United States Patent and Trademark Office; European Patent Office). The patent impacts are measured by the amount of citations received per cited patent.

Country	University patents	Country share in university patents (percent)	Country share in corporate citations of university patents (percent)	Percentage of university-owned patents that are cited by company patents	Impact of cited university-owned patents
United States	13,088	69.8	66.8	14	6.03
United Kingdom	1,813	9.7	6.5	15	3.96
Canada	868	4.6	3.1	14	4.34
Australia	605	3.2	1.2	9	3.90
Belgium	553	2.9	6.2	36	5.17
France	455	2.4	2.3	28	3.03
Netherlands	427	2.2	3.0	28	4.26
Germany	278	1.5	1.4	22	3.89
Japan	272	1.4	3.8	49	4.77
Switzerland	180	1.0	1.1	23	4.29
Spain	124	0.7	0.9	40	2.98
Italy	101	0.5	0.5	21	3.90
EU15 average	4,062	21.7	22.8	28	3.74

Source: Veugelers and others 2011.

In quantity, the United States dominates, producing a large volume of university patents and leaving the EU15 behind. But just 14 percent of U.S. academic patents are cited by the corporate sector, compared with 28 percent for the EU15 and 48 percent for Japan. These countries have fewer but more frequently

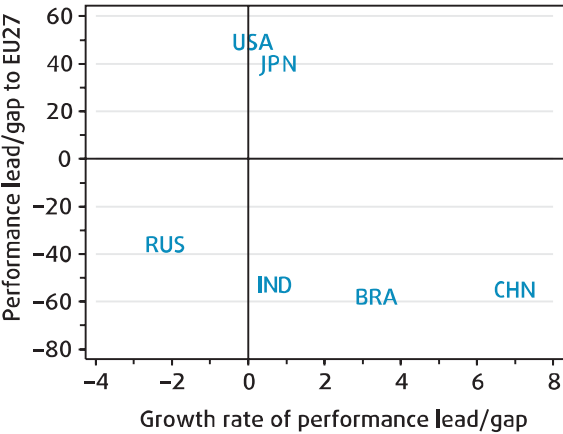
**Figure 5.18: The United States has the largest market share for international students**  
(percentage of all foreign tertiary students, 2008)



Source: OECD 2010.

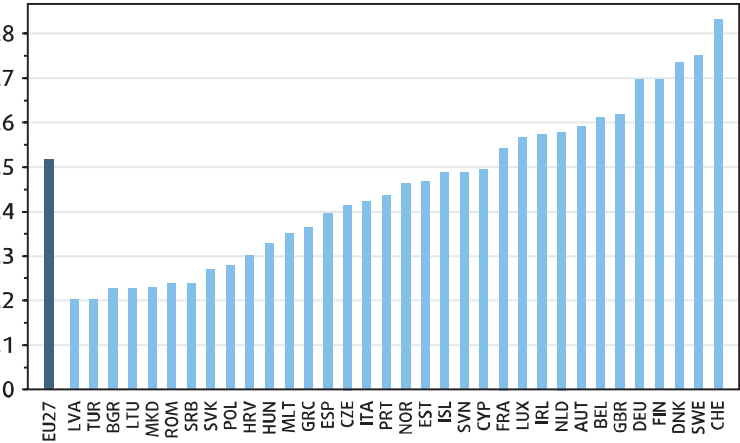
**Figure 5.19: Switzerland, Scandinavia, and Germany are global innovation leaders**

(EU27 and non-European states, percent, 2010)



Source: European Commission 2011b.

(index for individual European countries, 2010)



cited university patents. When looking at the average number of citations received, conditional on being cited, the United States again leads the EU15 and Japan, as their university patents have a higher average impact.

The U.S. model of technical innovation is one of experimentation on a massive scale. U.S. universities generate a large volume of patents, but few are “used” in creating corporate technology. At the same time, this large volume provides fertile ground for university patents to turn into commercial “hits.” The biotech (pharmaceutical) field employs this experimentation process. The profile of Europe suggests more mediocrity: universities are much less active in generating patents, only bringing out ideas more likely to be used commercially. However, with less experimentation, European universities are less likely to register “high-impact” patents. In Europe, there is considerable heterogeneity, which can be traced back to IPR legislation and institutional set-up (Veugelers and others 2011).<sup>26</sup> Japan’s university patents are the most likely to be cited by company patents, but—conditional on being cited—their average impact is not exceptionally high.

Moreover, the total share of corporate citations traced back to U.S. university patents is almost as high as the share of U.S. universities in the quantity of all patents produced. The higher probability of patent citations by U.S. companies suggests that U.S. universities provide more truly global knowledge, despite the predominance of local science-business links in all countries. The citation flow also shows that U.S. corporations are more likely to source knowledge globally, citing patents registered by non-U.S. universities. Not only does the United States have the strongest local science-business links of any country, it leads in globalizing these links, building on experience gained at home.

Europe’s lower success in attracting global scientific talent and students is the third consequence of its underperforming science and university complex. The United States dominates the market for international students (figure 5.18). In advanced U.S. research programs, close to a third of all students are international. Many of Europe’s most promising researchers are attracted to the United States by better remuneration packages (Salmi 2009), better teaching and research facilities, and the greater density of talented colleagues and students.

## Europe’s innovation systems ranked and compared

The evidence surveyed so far points to four distinct country groups in Europe. First, there are the leading innovating countries, including the Nordics, Switzerland, and Germany. On many dimensions, this group either equals or outdoes the United States and Japan. Second, there are the continental economies, the United Kingdom, and Ireland, which are performing reasonably well, though not at the level of global leaders on most dimensions. Third, there are the Southern European economies, which have struggled to increase productivity, reflected in relatively weak innovation systems. And fourth, there are the emerging economies in Eastern Europe, including front-runners in the EU12, who have on most dimensions exceeded the south and economies where innovation does not appear to be a policy priority given general constraints to the business environment (Goldberg and others 2011).

We now summarize this evidence by using the European Commission’s IUS indicator—a composite indicator using some data in this report and a few additional



measures.<sup>27</sup> On the aggregate IUS indicator, Europe as a whole performs poorly (figure 5.19, left panel). The United States has the highest IUS score, followed closely by Japan. The United States score in 2010 was 49 percent higher than that of the EU27. This gap persisted over 2006–10 (in 2006, the United States score was 46 percent higher). Relative to the main emerging market economies, Europe still has a considerable lead. But except for the Russian Federation, the BRIC countries—especially China—are catching up fast. This aggregate result confirms that Europe’s National Innovation Systems need updating.

Europe’s best are performing as well as the United States, while its least innovation-friendly economies are not different from emerging economies elsewhere, and may even lag the BRICs. The IUS for 33 European countries, covered by all 25 subindicators (essentially most of the EU27, the European Free Trade Association, and candidate countries), shows that Switzerland had an IUS score about 60 percent higher than the EU average (figure 5.19, right panel). Although the data are not strictly comparable since not all subindicators are available for non-European countries, Switzerland is arguably on par with the United States on most dimensions of its National Innovation System. Finland, Germany, Denmark, and Sweden also do well.

The weakest group includes mostly transition or EU candidate countries. The bottom seven are Latvia, Turkey, Bulgaria, Lithuania, the former Yugoslav Republic of Macedonia, Serbia, and Romania. But the innovation divide in Europe does not follow a simple transition divide. Among the innovation laggards are some older member states, notably Spain and Italy, while Estonia and Slovenia have already joined Europe’s more innovative half.<sup>28</sup>

The rankings in figure 5.19 are thus consistent with the pattern observed by looking at the individual dimensions of the IUS score, as well as other rankings of innovation capacity within Europe, such as the World Competitiveness Indices. The rankings are also persistent over time—the top five countries in 2006 were the same as in 2010, though Sweden ranked ahead of Switzerland in the top spot. The bottom five did not change either.

## Achieving global leadership for Europe’s best

The Nordic economies, Switzerland, and Germany are getting the innovation fundamentals right, combining public support for innovation with private incentives to profit from it. Is there something Europe’s other countries can learn from its leaders? Does Europe’s failure to specialize more in IBG sectors, and thus benefit from the spillovers that come from innovation-intensive activities, reflect an industrial policy failure, even among its leading countries? The answer to the first question is yes, but implementing public support for innovation is difficult and institutionally demanding. Failure abounds and caution is in order. The answer to the second question is no. Instead, Europe’s failure to achieve global leadership in IBG sectors has more to do with three factors: its segmented labor and services markets; the nature of incentives for innovation resulting from European antitrust legislation and the absence of an integrated public procurement market; and unnecessary transaction costs imposed by the absence of a single European patent or greater bundling of public funding for scientific research. This does not exclude a role for cultural or other

idiosyncracies that might have helped create technology clusters in the United States, such as Silicon Valley. But there is much that Europe can do at the policy level to encourage its own clusters to grow to a global scale, without appeal to good luck or good weather.

## An industrial policy for the 21st century?

Finland is a top innovator in Europe. Its total investment in R&D was 3.9 percent of GDP in 2009 (European Commission 2011b), the highest in Europe and second-highest in the world. Finland has the second-highest registration of patents per euro of GDP in Europe, and the second-largest share of innovating companies cooperating with firms outside Europe. Over 1995–2009, Finland's annual productivity growth was 1.5 percent and its rate of job creation 1.3 percent, making for one of the fastest GDP growth rates in Europe (chapter 4).

Finland's innovation success is the result of conscious national policy.<sup>29</sup> At the heart of this policy is public support for commercially targeted R&D through the National Technology Agency of Finland. This organization provides matching grants and subsidized and convertible loans geared to early-stage technological development. And, administering around a third of the public sector's R&D spending (\$1.9 billion in 2009, or slightly more than 1 percent of GDP), it is complemented by a publicly owned venture capital fund (SITRA). SITRA provides funding for preseed start-ups; a public applied research institute that, while publicly owned, obtains a third of its revenues from sales to the private sector; and basic research through the Academy of Sciences and universities. Political leadership is an important factor: the prime minister chairs a national research and innovation council. Yet, policy instruments have generally gone with the market by leveraging market incentives, rather than substituting for business decisions.

Finland is not alone in boosting innovation through active public support. Financial incentives, matching grants, targeted procurement policies, and other measures have helped boost innovation and venture capital from Silicon Valley to Singapore, and Tel Aviv to Bangalore. But many more times public interventions have failed. Lerner (2009) summarizes the evidence as a "boulevard of broken dreams." Typical mistakes include public support programs that are of insufficient length and flexibility; that do not leverage an existing scientific and research base, disregarding agglomeration economies; that fail to let the market provide direction, setting national standards rather than following global best practices; that are either too large or too small and fail to pay sufficient attention to careful monitoring so that adjustments can be made; and that are not evaluated, so that policymakers and stakeholders do not learn from mistakes.

Successful public policies to support innovation often require governance structures unlike those usually found in the public sector. This conclusion echoes a more general point about industrial policy: where public interventions can catalyze or emulate competitive market selection, and where they can encourage experimentation despite imperfect information, they can lift an economy's overall performance (Aghion and others 2011). Too often industrial policy tries instead to prevent competition, and another broken dream takes its place along the boulevard.

## On the agenda: single market, competition, and public procurement

The demand for innovation investments is a function of market pressures and perceived opportunities. Because the commercial opportunities resulting from innovation are greater when markets are larger and denser, the degree of market integration (or “thickness”) matters. In this respect, Europe is disadvantaged for two reasons. First, companies in Europe operate within domestic borders, due largely to the incomplete realization of the single market—particularly in services—and to other EU policies. The incomplete realization reduces the incentive to innovate, as the market of potential consumers remains smaller and competition lower. Second, Europe’s labor is not as mobile as that in the United States (chapter 6). Mobile labor allows the U.S. economy to respond more rapidly to shifts in the technological frontier, realizing agglomeration benefits in newly emerging centers of excellence. By rapidly reallocating resources in line with new technologies, the U.S. economy has a higher capacity for shifting to new technologies and markets.

Pelkmans and Renda (2011) highlight a striking example of the lack of market integration in communication services, one of the IBG sectors identified earlier.<sup>30</sup> Despite three packages of market liberalization, the European Union has failed to develop an integrated market for e-communications. In the European Union, the highest price for a wide range of e-communication services exceeds the lowest price by several multitudes (up to 1,300 percent in the case of fixed-line calls to Japan!). The average monthly spending of European businesses differs by as much as 270 percent (not counting outliers), whereas the difference between New York and California is close to zero. The same is true in residential telecom bills. Of perhaps greater economic significance, given the impact on the cost of information flows and thus the scope for productivity-enhancing decentralization (Bloom, Sadun, and Van Reenen 2007), the quality of broadband services differs greatly within the European Union—and not only because of differences in incomes and available infrastructure. Regulatory obstacles—traceable to the existence of national telecom regulators in each EU state and to the lack of a Europe-wide approach to promoting investment in network industries—are partly to blame. Research suggests that a single digital market in the European Union would noticeably boost Europe’s economy.

Tilford (2008) notes that Europe has been gradually losing its R&D leadership in pharmaceuticals to the United States. Between 1990 and 2005, the annual growth rate of pharmaceutical R&D in the United States was 4.6 percent, compared with just 2.8 percent in the European Union. One reason may be that national price regulation leads to market segmentation and free-riding by EU member states that are not hosts to large pharmaceutical companies. Prices in Southern Europe tend to be significantly lower than in Germany, the Netherlands, Scandinavia, and the United Kingdom, where most R&D in pharmaceuticals happens. Europe’s high-price markets, smaller than those in the United States, may limit incentives for companies to develop, test, and introduce new drugs in Europe. And the average price for patented drugs in the European Union was only half that in the United States. This may keep health costs down (chapter 7), but it is bad for innovation. Moreover, the arbitrage opportunities resulting from price differences in the European Union may lead

pharmaceutical companies to attempt to restrict sales in low-price markets to the detriment of patients.

Crescenzi, Rodríguez-Pose, and Storper (2007) estimate a so-called knowledge production function, which compares the number of patents registered to R&D investments in Europe (and a number of other factors at the regional level) with that in the United States. An insight from their analysis is that in the United States, knowledge production is more concentrated at the regional level, and there are fewer spillovers to other regions. In the European Union, R&D produced in one region helps generate patents in regions as far as several hundred kilometers away. This pattern may weaken incentives to create regional centers of excellence large enough to attract global leaders, risking the duplication of R&D across regions in Europe. In a nutshell, Europe's most successful innovating economies are not big enough to allow innovators to grow to global leadership. A particularly prominent example for European fragmentation in innovation policy is the absence of a single Europe-wide patent. Leading European countries cannot agree on which languages to register the patent in. This is a case where overcoming national pride and prerogatives will be critical to create functioning Europe-wide innovation clusters.

It is not just barriers to the single market resulting from national regulations that may reduce incentives for innovation-based growth sectors to develop. EU policy may have a role too, important in competition policy and procurement. Mowery (2011) discusses the role of competition policy and IPR protection in the evolution of R&D in the United States. During the postwar years, antitrust legislation prevented established U.S. companies from acquiring new technologies through mergers and acquisitions, thus promoting the birth of small innovative companies in new technologies such as semiconductors and electronics. After 1980, U.S. policy became considerably more patent-friendly. With the Bayh-Dole Act, the United States tightened protection of IPR, leading to an explosion in patents and collaboration among firms to benefit from technology diffusion. The role of the Bayh-Dole Act in promoting business-relevant research by universities—and the greater role of patent revenues for universities—has led Denmark and Japan to emulate its provisions. There are, however, critics of tight IPR regimes—regimes that could lead to strategic use of patents to prevent new entry, with little value created in the process.

Tilford (2008) discusses the European Commission's interpretation of its competition policy mandate with respect to network industries such as ICT, noting that an overly stringent interpretation of consumer risk from dominant market power may fall short. In industries where benefits to consumers may increase with the number of consumers, market dominance may not harm consumer interests. At the same time, companies anticipating antitrust action may hold back from innovation. The design of competition and IPR policies is an important element of a Europe-wide National Innovation System, though Mowery (2009) emphasizes that successful U.S. policies may not bring the same result in places with a different tradition of university-business collaboration.

Finally, the United States' success in innovation-based growth sectors owes a good amount to an integrated national procurement policy, particularly in the military and defense sector. Access to early users willing to take up and co-develop innovations is critical for new firms entering new sectors. One early customer

is the government. In many health and ICT sectors, history has shown U.S. public institutions to be an important early user, pivotal in leveraging further private markets through public procurement (Mowery 2009; Lerner 2009). In Europe, the use of public procurement as a policy tool to foster innovation and structural change is much less developed and far from integrated on a European scale (Monti 2010).

## America's innovation machine versus Europe's "Vorsprung durch Technik"

As corporate emblems of their continents, it is not unfair to contrast Apple and Audi. Since its inception in 1976, Apple has revolutionized the computer industry, changed the way music is bought and heard, and made the telephone a smart device, capable at once of voice, visual, and data communications. In 35 years, the company has transformed three industries. It has rewarded its shareholders and grown big while still young. Indeed, in summer 2011, Apple briefly became the world's largest company by market capitalization. Audi was founded more than a century ago, and its main innovation was to produce the first left-hand drive cars, making driving in traffic easier and safer. A luxury arm of the massive Volkswagen Group since 1965, it has been making cars safer and more reliable ever since.

Both Apple and Audi are global companies, sourcing parts from around the world and manufacturing products in countries where assembly is cheapest. But one is an emblem of unimaginable innovation, the other perhaps of persistence. One is a Yollie, having grown big while still young, and the other is an Ollie, becoming big only after it became old.

European leaders have long recognized Europe's innovation deficit relative to the United States, Japan, and other countries in East Asia. The European Union even carved into its 2002 Lisbon Strategy the ambition to become the most competitive knowledge-based economy in the world. In the subsequent EU-2020 strategy and Innovation Union Flagship, it set a roadmap for sustainable and inclusive growth to be "smart" (for example, European Commission 2011a). European efforts focus on investment in R&D. An ambitious target of devoting 3 percent of GDP to R&D by 2010 was set in 2002. The same 3 percent was again targeted in the EU-2020 strategy. But reality has disappointed. R&D as a share of GDP has remained less than 2 percent in the EU-15, and the gap between its R&D investments by the business sector and those of the United States—and even East Asia's high-income countries such as Japan, the Republic of Korea, and Singapore—has been growing. It is increasingly apparent that such R&D targets are unrealistic; it may also be that they are not optimal.

Yet, as the analysis has shown, Europe is capable of creating successful National Innovation Systems, which stand toe-to-toe with the world's leading innovation machine: the United States. This raises the question: What are the characteristics of successful innovation systems in Europe? In particular, are there any uniquely European features of effective systems?

One clue is that Europe's leaders perform especially well where Europe lags as a whole. For example, Switzerland has revenues from international licenses and patents of 2.5 percent of GDP, 10 times the EU27 average and more than 3 times that of the United States. Sweden's licensing and patent revenues were more than 1 percent of GDP in 2008, Finland and Denmark's around 0.7 percent, about the same as that of the United States (European Commission 2011b). Finland's population of 30–34-year-olds with tertiary education exceeds the level in the United States and is close to Japan's; Finland's business R&D was almost 3 percent—on par with the United States. Public-private co-publications were between three and six times larger in Europe's innovation leaders than in the EU27 average, and much higher than in the United States.

So, how are these aggregate differences reflected at the enterprise level? Europe's innovation deficit relative to the United States can be attributed in part to the lack of Yollies in innovation-based growth sectors. European companies in traditional sectors do not innovate less than their competitors in the United States. But Europe has far fewer Yollies and is much less specialized in sectors characterized by innovation and rapid productivity growth—such as ICT, biotech, and medical technologies and services. This finding comes with a caveat: to measure innovation at the firm level, the analysis relies on R&D investments. This is obviously not the only way to measure innovative behavior. But the list of major R&D spenders overlaps other rankings of the world's most innovative companies. In short, while the United States has Apple, Google, Amazon, Microsoft, eBay, and Facebook, Europe has BMW, Mercedes Benz, Siemens, Vodafone, and Nokia.<sup>31</sup>

And what measures should European countries take to fix their innovation fundamentals? Three policy priorities emerge. First, speed up the integration of markets for business services and skilled labor to increase the thickness of markets for innovators, and shift resources rapidly to new, untested business opportunities. Doing so leads to more competition in IBG sectors, dominated by services. Second, improve incentives in scientific research and university education systems to generate ideas that can be business successes. Third, assess the role of venture capital in catalyzing the growth of Yollies, both in providing access to patient capital and ensuring attention to good management. Venture capital markets are integrated globally, and public policy to attract such financing is difficult to design, so the early focus should be on setting the table before launching into specific programs of public support.

These things are difficult to do, so this analysis has daunting implications for Europe's policy agenda. The evidence suggests that policies aimed at raising R&D expenditure across all types of industries and firms do not address the roots of Europe's innovation deficit. Policies need to address the barriers to developing new high R&D-intensity sectors and firms, as the evidence has shown how pivotal these sectors and firms are for tackling the deficit in Europe's capacity to shift. These barriers have roots in poor access to early risk-financing, frontier research, specialized knowledge and skills, and risk-taking lead customers, including the government. Lacking this access, aspiring young innovators are hampered in their search for partners to develop, finance, produce, market, distribute, and sell their breakthrough innovations.

A general innovation policy for improving the risk-taking environment is needed. Yollies need to interact with other innovators, and innovators should not be impeded

while they mature, so a policy to address the lack of young firms in new, R&D-intensive activities needs to fit in an overall innovation framework. This overall innovation policy should further integrate the European capital, labor, and goods and services markets, making it easier for players in the innovation system to interact and thus creating competition. Updating Europe's overall innovation policy framework should also look closer at competition and IPR policies, where finding the balance between promoting new entry and creating incentives for innovators by protecting their innovation is a delicate task. Agreeing on a single European patent would be a simple but important step forward.

Europe's leading innovators in Scandinavia, Switzerland, and around the Baltic Sea have narrowed the gap with the United States in access to venture capital and in the quality of science and universities. But even they still depend on decisions in Brussels to address the weaknesses in the single market for modern services. Constraints are exacerbated by Europe's sluggish labor markets, which slow the adoption of new technologies and the shift in effort from old and stagnant to new and growing sectors. How can these constraints be eased? Chapter 6 tries to answer this.

#### Answers to questions on page 245

- Europe's innovation deficit matters most for the EU15, and so it also matters for the economies of emerging Europe because they are closely integrated.
- European enterprises do less R&D than American firms because they tend to be in sectors that are not as innovation-oriented.
- The most innovative European economies such as Switzerland spend a lot on R&D, but also share key attributes with the United States—tight business–university links, good management skills, and top universities.
- Measures to fully integrate the Single Market for Services will provide the scale, more privately funded universities will supply the skills, and regulations that foster competition will create the incentives for European enterprises to innovate.



## Chapter 5: Annexes

### Annex 5.1: Indicators used in the innovation union scoreboard

The Innovation Union Scoreboard (IUS) is a composite indicator composed of indicators capturing eight dimensions of innovation:

- Human resources.
- Research systems.
- Finance.
- Firm investment.
- Linkages and entrepreneurship.
- Intellectual property rights.
- Innovators.
- Economic effects.

Within Europe, the IUS covers 34 European countries over time: 27 EU Members (15 old member states and 12 new member states) and Switzerland, Norway, Turkey, Croatia, Iceland, Former Yugoslav Republic of Macedonia, and Serbia.

For the intra-European comparison, 25 indicators are used.<sup>32</sup>

- Human resources: new doctorate graduates, population ages 30–34 with completed tertiary education, youth ages 20–24 with upper secondary level education.
- Research systems: international scientific co-publications, top 10 percent most-cited scientific publications worldwide, non-EU doctorate students.
- Finance and support: public R&D expenditures, venture capital.
- Firm investments: business R&D expenditures, non-R&D innovation expenditures.
- Linkages and entrepreneurship: small and medium enterprises innovating in-house, innovative small and medium enterprises collaborating with others, public-private scientific co-publications.
- Intellectual assets: Patent Corporation Treaty patent applications, Patent Corporation Treaty patent applications in societal challenges, community trademarks, community designs.
- Innovators: small and medium enterprises introducing product or process innovations, small and medium enterprises introducing marketing or organizational innovations.
- Economic effects: employment in knowledge-intensive activities, medium and high-tech manufacturing exports, knowledge-intensive services exports, sales of new-to-market and new-to-firm innovations, license and patent revenues from abroad.



Outside Europe, the comparison countries included the United States, Japan, and the BRIC countries (Brazil, the Russian Federation, India, and China).

Because of limited data availability, only 12 indicators from the 25 were used for comparing countries outside Europe. These indicators are for human resources: new doctorate graduates (ISCED 6) per 1,000 people ages 25–34, percentage of people ages 25–64 with completed tertiary education; for research systems: international scientific co-publications per million people, scientific publications among the top 10 percent most-cited publications worldwide as a percentage of total scientific publications of the country; for finance: public R&D expenditures as a percentage of GDP; for firm investment: business R&D expenditures as a percentage of GDP; for linkages and entrepreneurship: public-private co-publications per million people; for IPR: Patent Corporation Treaty patents applications per billion GDP in euro adjusted by the purchasing power standard (PPS€), Patent Corporation Treaty patent applications in societal challenges per billion GDP (in PPS€) (climate change mitigation, health); for innovations: none; for economic effects: medium- and high-tech product exports as a percentage of total product exports, knowledge-intensive services exports as a percentage of total service exports, license and patent revenues from abroad (as a percentage of GDP).

## Annex 5.2: The dataset on leading innovators

We start with the firms belonging to the EU-1000 and non-EU-1000 largest R&D spenders in the 2008 edition of the EU Industrial R&D Investment Scoreboard.<sup>33</sup> This dataset was augmented with information on the age of the firm's creation.<sup>34</sup> The information on the firm's age allows the United States to distinguish between young and old leading innovators.

As the scoreboard database only records the largest R&D spenders, "young firms" are not small start-ups. Indeed, the average size for the young firms in our sample is 10,000 employees worldwide. Some top young firms in our sample (by R&D size) are Microsoft, Cisco, Amgen, Oracle, Google, and Sun. As it includes (almost) no firms with fewer than 250 employees, the scoreboard dataset is not suited for analyzing small and medium enterprises.

The young firms in our analysis managed on their own (without being taken over), in a short time since their birth (after 1975), to grow to a leading global position deploying substantial R&D resources. We will label them young leading innovators (Yollies) and old leading innovators (Ollies).

Besides the age of the firm's foundation, the dataset contains information on the following variables: main industrial sector (according to the Industry Classification Benchmark), country of origin, net sales, number of employees, and R&D investment for each year over 2004–07. The geographic classification of firms is based on ownership, not on location of the activities.<sup>35</sup> Due to missing data for some firms, the final sample includes 1,111 firms. Of our sample firms, 32 percent are from Europe, 38 percent from the United States, 19 percent from Japan, and 10 percent from the rest of the world.<sup>36</sup>

## Notes

- 1** The Estonian programmers were Jaan Tallin, Ahti Heinla, Priit Kasesalu, and Toivo Annus. The company founders were Niklas Zennstroem (Sweden) and Janus Friis (Denmark).
- 2** This analysis presents productivity as GDP per hours worked, as is common in the literature (figure 5.1). If we were to use GDP per person employed, as in chapter 4, Europe's leading economies would reach only around 83 percent of the United States peak in 1990. Moreover, the north would overtake the continental economies in labor productivity around 2003. The basic pattern that interests the United States in this chapter—the reversal of convergence in productivity between Europe and the United States after 1995—would remain.
- 3** Among technology followers, demand for a particular vintage of products is given. Market share declines with the number of competitors, reducing returns on moving into a new product vintage through adaptation. At the frontier, however, innovation creates new demand by offering new product types.
- 4** A general caveat: the measurement of productivity in services is fraught with problems. For instance, final prices for many services reflect both quality improvements and cost reductions, but quality improvements are often insufficiently captured. It is not clear whether such measurement issues affect cross-country comparisons of productivity growth in services. To the extent that they do, the conclusions drawn in the literature referenced in this chapter would also be affected.
- 5** See also Dewatripont and others (2010).
- 6** The Selected Indicators table A5 reports selected data series that draw on the original source data quoted in the IUS. In some cases, data used in the IUS are not available for non-European countries, and alternative data series are reported. We have checked the robustness of the results in the IUS against alternative data series and indicate where results diverge. The main conclusions are not affected.
- 7** There are significant differences in the productivity of R&D. The transition economies of Europe and Central Asia, for instance, are characterized by much higher costs of R&D investment per patent registered than the EU15 or the United States (Goldberg and others 2011). By and large, countries that generate a lot of R&D, particularly in the business sector, have a larger output of innovations, as measured by patents and corresponding business applications.
- 8** The patent data in the bottom panel come from the IUS and refer only to patents registered under the Patent Cooperation Treaty. In the Selected Indicators, we also report the data on patent counts based on all patents registered under the Treaty, whether with national patent offices or under the European Patent Office. Countries such as Brazil, China, Japan, and the Russian Federation considerably improve their ranking against smaller European countries using this alternative measure. We prefer the IUS data given the market significance of an international registration with the European Patent Office.
- 9** The data do not tell us what this spending is on. They are calculated as a residual from overall innovation spending minus R&D. The denominator is enterprise turnover. The data are obtained from enterprise surveys.
- 10** Goldberg and others (2011) examine collaboration of business across borders in patent registrations. Generally, data on collaboration show an upward trend, but in the past decade, the region has been falling behind such countries as China and India. For technology followers, collaboration across borders may be particularly important to absorb and adapt cutting edge technologies for domestic applications.
- 11** These are aggregate data based on a simple growth accounting framework, subtracting investment in physical capital and labor inputs, but do not account separately for ICT investments or structural shifts in the economy, as in van Ark, O'Mahony, and Timmer (2008). Data are also reported for the United States but not for a larger sample of countries. We therefore do not know whether the EU12 are outliers among emerging markets.
- 12** It would be preferable to link TFP growth to a measure of innovation at the start of the period. The Commonwealth of Independent States data are, however, only collected since 2006, and there is not much change in the cross-country distribution in the other two measures over time. The results should be seen as indicative, not conclusive.
- 13** Based on an analysis of the top 1,000 global firms in market capitalization, which were listed in *Business Week* in 1999, Cohen and Lorenzi (2000) found that information technology was by far the most important sector in determining the difference in the total number of new giants between the two regions.
- 14** Using firm-level information from the scoreboard of largest R&D spenders, it is possible to trace the age and sectoral profile of the largest firms investing in R&D. As the number of observations quickly becomes low, however, particularly when age groups in sectors in regions have to be analyzed, the level of individual European countries cannot be used for analysis. Annexes 2 and 3 describe the scoreboard data and its caveats. Veugelers and Cincera (2010b) performed and reported a similar exercise for the EU27 countries.
- 15** Finland (four Yollies), Sweden (three), Spain (two), Italy (two), and Iceland, Denmark, Luxemburg, and Austria (each with one) complete the picture.
- 16** Veugelers and Cincera (2010a) perform a decomposition analysis to calculate the exact size of these effects. This analysis shows that the contribution of Ollies to the total deficit in R&D is small. The most important factors to explain Europe's overall poor business R&D performance are that Europe has fewer Yollies and that the Yollies it has are less R&D-intensive. Having less R&D-intensive Yollies accounts for more than half the business R&D deficit with the United States.
- 17** This precludes any analysis at the country level, so only aggregate differences between Europe and the United States are reported.
- 18** For an interesting comparison of European and U.S. spending patterns on health care and the implications for innovation in the sector, see Cowen (2006).
- 19** Although the relationship between competition and innovation is not linear, firms well below the technological frontier may actually be discouraged from innovating if competition is too intense.
- 20** For examples, see the British Broadcasting Corporation's *Planet Earth* series.
- 21** Because of significant year-on-year volatility, the ranking among countries changes quite a bit across years. But the United States is always the largest market for venture capital—both in absolute terms and as a share of GDP.
- 22** The data used in figure 5.15 come from IIASA/VID. Data in the IUS indicate that the United States has a large advantage over Europe in the share of graduates in its population, but the IUS for the United States only reports graduate shares among people ages 25–64, thus reflecting cumulative investments in tertiary education, not recent investments.

- 23** The Shanghai Ranking ranks universities on a set of indicators measuring their research performance. The indicators include the number of alumni winning Nobel Prizes, the number of university faculty winning Nobel Prizes, the number of articles published in *Nature* and in *Science*, the number of articles published in ISI Web of Science journals, the number of highly cited researchers, and the size of universities.
- 24** The World Economic Forum reports qualitative measures of the business-research links, based on interviews with executives. Managers are asked to rank the quality of research institutions and the extent to which they collaborate with business. The United States, Switzerland, the United Kingdom, Germany, and Sweden come out on top. The transition economies are mostly at the bottom of the European ranking, but Italy and Greece rank worse than Turkey and Ukraine. The Czech Republic and Hungary score roughly the same as Austria and Luxembourg (Schwab 2011).
- 25** An ANCOVA confirms that country differences, as well as technology fields of the cited and citing patents, explain a considerable share of the observed variance in the share of cited university patents. In terms of impact, country effects prevail (Veugelers and others 2011).
- 26** Within the EU15, Belgium's university patents hold a top position in corporate citations received. Not only do Belgian university patents have a higher probability of receiving citations by corporate patents, they also have the highest impact in Europe. The success of Belgian university patenting is due largely to the country's Interuniversity Microelectronics Centre.
- 27** The aggregate score is based on 8 dimensions comprising 25 indicators. Each indicator is normalized, and the aggregate score is the unweighted average. For comparisons with non-European countries, only 12 indicators are available. See annex 1 for details.
- 28** Radosevic (2004) found similar results. In addition to a high-tech "north" cluster composed of four countries with the highest national innovation capacities in the European Union (Finland, Sweden, Denmark, and the United Kingdom), he obtained two other clusters comprising most of the catching-up member states, as well as some other member states. One cluster comprises the three cohesion states (Greece, Portugal, and Spain) and six less-advanced new member states (Bulgaria, Latvia, Lithuania, Poland, Romania, and the Slovak Republic). These nine states are characterized by weak national innovation capacities. The four more-advanced new member states (Czech Republic, Estonia, Hungary, and Slovenia), together with six old member states (Austria, Belgium, France, Germany, Ireland, and Italy), form a middle-level group of the European Union.
- 29** This short summary draws on Goldberg and others (2011). See also Roos, Fernström, and Gupta (2005).
- 30** For an example of how single market reforms in medical devices have promoted innovation in the industry, see Steg and Thumm (2001), who note the limitations imposed by national health systems and the incomplete harmonization in applying single market rules.
- 31** According to the *Business Week* ranking of the 50 most innovative companies in the world, only one European company—Nokia—made it into the top 10. Microsoft, Intel, and Google (all Yollies)—in the top 10 of the world's largest R&D spending—are ranked 5th, 33rd, and 2nd among the most innovative companies. In Europe, Vodafone, BMW, Daimler, Siemens, and Audi rank among the most innovative companies and are among the largest R&D spenders. Only Vodafone is a Yollie.
- 32** While 25 indicators compose the Innovation Union Scoreboard, only 24 are currently computed, as the indicator on "high-growth innovative enterprises as a percentage of all enterprises" is not yet available.
- 33** The European Commission JRC-Institute for Prospective Technological Studies collects annual data since 2004 on companies investing the most in R&D worldwide (the EU Industrial R&D Investment Scoreboard). See <http://iri.jrc.ec.europa.eu/research/scoreboard.htm>.
- 34** The sources used for retrieving the age information are mainly company websites. This has been cross-checked with other databases (for example, the Amadeus database provided by Bureau van Dijk, and Véron 2008). To construct the firms' ages, we used the first year of its creation (ex nihilo). In case of a merger and acquisition (14.9 percent of cases), we used the oldest age of the merged entities.
- 35** All activities of the firm are consolidated in the scoreboard. We have no information on the geographic or sectoral distribution of firms' activities.
- 36** Europe includes the EU27 and countries in the European Free Trade Association. The rest of the world includes Canada (14 firms), China and Hong Kong SAR, China (10), India (12), Israel (8), the Republic of Korea (18), and Taiwan, China (33).

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# Chapter 6

## Labor

In February 2000, the world watched as France instituted the 35-hour workweek, down from the 39 hours expected of French workers and the more than 40 in most developed countries. The reasoning was that because there are only so many hours of work needed, it would be better to share them among more workers. Unemployment in late 1999 was about 10 percent, so cutting the number of hours by about 10 percent might take care of the problem. Economists call this the “lump of labor fallacy.” Another reason was the belief that French workers should be rewarded for their high productivity by allowing them to work less. Researchers had found that the output per hour worked was higher in France than in almost every other country. Getting employers to pay overtime wages for work beyond 35 hours would help labor capture more of the benefits of high productivity.

What happened over the next few years? Unemployment did not fall by much, though the new requirements might have encouraged workers to move to smaller firms that were not covered by the law (Estevão and Sá 2006). The 35-hour workweek has since been watered down, but no government has tried to repeal it. Instead, businesses have been given ways around the problem, and the regulations have become more complicated. In the meantime, productivity growth has slowed in Western Europe and sped up in the United States. Between 1990 and 2000, output per hour worked in manufacturing—the sector with the most reliable data—grew at roughly 4 percent a year in both France and the United States. Between 2000 and 2007, it accelerated to 6 percent in the United States, while French productivity growth slowed to 3.3 percent (U.S. Department of Labor 2011).



- Is there a European work model?
- Given demographic changes, how can Europe achieve a stable and more productive workforce?
- Are employment and social protection practices inhibiting labor participation and efficiency?
- Is Europe taking full advantage of the benefits associated with internal labor mobility?
- How can Europe become a global magnet for talent?



The “lump of labor fallacy” might also be responsible for attitudes toward mobility and immigration in Europe. If there is only so much work to divvy up, people from other EU states—not to mention, other parts of the world—should not be allowed in. Prime Minister Gordon Brown, reacting to reports that Italian and Portuguese workers were being hired for construction contracts during the financial crisis, called for “British jobs for British workers.” In contrast, Australia, Canada, New Zealand, and the United States, partly freed from this fallacy by their tradition as centers of immigration, have attracted the best and brightest from around the world. They have succumbed occasionally to the same instincts, even though many studies have found that workers mainly move to places where there are jobs that locals are not willing or able to do (Vedder and Gallaway 1997). But the flow of immigrants serves to inject economic adrenaline in a manner that is less evident in Europe.

Although institutions and social norms vary across Europe, the stereotype is that Americans “live to work” and Europeans “work to live.” Few would argue that the two weeks of leave that many workers in the United States get is good for their productivity and for national economic growth. Americans who have traveled or lived in Europe often lament the imbalance between work and life in the United States, and attribute the rise in stress and tensions in family life to the importance Americans give to work. The stubbornly high rates of unemployment since the financial crisis have encouraged skeptics of the “U.S. work model” to question the benefit of its flexibility. These skeptics point out that the U.S. work model seems to deliver a much higher level of inequality and “working poor” than the European work model. One could be forgiven for wondering whether in the years since Europe’s “Golden Age” of growth between 1950 and 1973, Europeans have been drifting to the opposite but equally questionable extreme. In the 1970s, the French worked the longest hours among advanced countries. By 2000, they worked about 300 fewer hours each year—a month and a half less—than Americans. In France, just 1 in 10 people aged 60–65 works; in the United States, the ratio is 1 in 2.

Europeans have a choice: work more productively to maintain the European social model or give up a substantial part of it, with major cuts in the generosity of benefits. It will probably end up being a mixture of both. With few exceptions, the labor force will be shrinking everywhere in Europe. Nowhere on the continent is this more apparent than in Europe’s emerging economies. For them, the problem has an added dimension: they have become old before they could become rich. The wealthy part of Europe could tap into its assets to finance part of their benefits. But the way labor markets are regulated in emerging Europe and the comprehensive social entitlements available to households are quickly starting to resemble those in their far wealthier neighbors. For a middle-income country, the combination of a shrinking labor force and EU-type labor market and social institutions could create an insurmountable high debt/low growth trap. As chapter 7 on government will document, spending on pensions is already as much as 15 percent of GDP in some countries such as Serbia and Ukraine. Europe as a whole now spends 10 percent of GDP on pensions, about twice the spending on education. This cannot be good for growth.

As people cut their work lives in most of Europe, populations in all European countries are aging, shaping their economic potential for years to come. The European Union's labor force (including the EFTA's) is expected to decline by about 39 million by 2060. If the Balkans, Turkey, the Russian Federation, Ukraine, and Belarus are included, the decline is about 50 million; the projected increase of 6 million in Turkey's labor force is more than offset by the decline elsewhere. Only if actual retirement age were to increase substantially (by around 10 years) and participation rates—especially in Turkey and among women—were to increase to levels seen in Northern Europe could Europe offset the decline in the labor force. None of these outcomes, though, would prevent its aging. Europe needs to make its labor force more productive and to attract more productive workers from abroad.

Europe is not alone in feeling the force of aging populations. Japan and other developed parts of Northeast Asia already find themselves under the strains of low fertility and increasing longevity. In the Southern Cone of Latin America, Argentina, Chile, and Uruguay also feel the effects of aging. Even China faces this challenge, sooner than it would have if it did not have its one-child policy. But the most "European" features of the work model—unprecedented job security, generous benefits for the unemployed, and easy pension eligibility—make the imperatives created by an aging population most acute in Europe.

The first imperative is to counter the shrinking of the labor force. The second is to increase labor force productivity. Europe's adverse demography also means that its human capital has to be better leveraged. Labor market regulations, interventions, and institutions have to become more "pro-work." To ease the brakes on growth caused by aging, it is necessary to have labor market regulations that encourage more people to work, to work longer, and to work more productively. Changes that make jobs more contestable will increase productivity. And increasing the productivity of the labor force will require that Europeans become more mobile. But even if Europe can put its human resources to best use, the pace of aging and the decline of the labor force will leave a demographic deficit that can be closed only by tapping into talent from abroad. Europe will have to rid itself of the obstinate "lump of labor" fallacy that impedes smart immigration policy. This chapter aims to answer the most pertinent questions about work and economic growth in Europe.

Is Europe's approach to work making it uncompetitive? Yes. Most countries in Europe are not making the best use of their scarcest asset: workers. European countries must offset the impending labor force decline by increasing the labor force participation of people of all ages, regardless of gender, ethnicity, or socioeconomic background. They must also increase labor productivity, especially by equipping workers with more generic skills that allow them to redeploy their human capital more flexibly across jobs. European countries must improve regulations and interventions so that labor is allocated more efficiently, within and across countries. Europe must change immigration policies to make them respond more to economic imperatives and less to politics.



This chapter arrives at these conclusions in five steps. Each step involves answering a question:

- **Is there a European work model?** A common approach sets Europe apart. Europe's approach for balancing economic freedom for employers and social protection for workers is unique. By and large, non-European OECD countries feature less generous protection benefits and more flexible labor markets. In much of Europe, these arrangements do not work well. But the features and performance across countries vary considerably. Over the next decade, two developments—unprecedented in size—will strain the European work model even more. The first is a demographic shift at home, with a quick aging of the population. The second is competition from workers outside Europe, most notably a billion increasingly educated Chinese and Indian workers. Europe must contend with both.
- **Given the demographic changes underway, how can Europe achieve a stable and productive labor force?** Labor markets will need to become more inclusive, with increasing participation among women, youth, the elderly, and excluded groups. None of these measures, however, would prevent the aging of the European labor force. Given the scale and nature of the challenges, Europe needs to make its labor force more productive through better regulation of labor markets and better design of social welfare. In emerging Europe and in parts of southern Europe, skill gaps will need to be closed. Immigration will have to be part of the solution: Europe will have to become a magnet for talented young people from other parts of the world.
- **Are employment and social protection practices inhibiting labor participation and efficiency?** In most parts of Europe, they are. Current policies allow “insiders” to make their jobs incontestable through strict employment protection, while creating considerable work disincentives for “outsiders” through ill-designed social benefits, especially those in low-wage segments. European workers cannot ignore the fact that more than a billion workers have entered the global market over the last decade. Strict employment protection and weak work incentives undermine labor participation and efficiency in Europe. Many governments in the region have been making the labor market more contestable, and others can learn from them.
- **Is Europe taking advantage of the greater potential for labor mobility arising from economic integration?** The short answer is no. Although migration between EU countries is higher than in other parts of the world, intra-EU migration falls short of the European Union's aspiration of a fully integrated labor market. In addition, internal labor mobility in most countries is low. The explanations (beside the obvious difference in language and culture between EU countries): housing markets are inefficient, wages do not signal labor shortages and surpluses, and the absence of a Europe-wide social safety net makes moving too risky.
- **How can Europe become a global magnet for talent?** With more self-interested immigration policies. Without changes in labor force participation, the European Union will need about a million immigrants a year for the next five decades to offset its population decline. Immigration policies in

most European countries focus too much on political factors, such as family reunification, asylum, and human rights, and too little on economics, such as the demands of employers and skill shortages. Though morally laudable, this tilt may make Europe a loser in the competition for globally mobile talent. Some countries have introduced demand-driven residency and work permits, but even their systems struggle to keep up with shifts in shortages and demand for new talent. Immigration policy needs to be complemented with policies that make risk-taking, entrepreneurship, and skills more profitable.

Europe is aging and its labor force shrinking. This is not news. But the speed and size of these developments may shock readers, and should motivate policy responses. Labor market regulations, interventions, and institutions are restraining growth, and they must be updated. Education and training systems will need reform to enable workers to move to more productive jobs, with greater ease and to greater profit. Europeans are still less likely to move than people in other parts of the world, and the success of the Single Market for Services depends on their becoming more mobile. Much more can be done to make Europe a global—not just a regional—magnet for talented people. To do all this, Europe’s policymakers will have to convince themselves and their constituents that the rewards of hard work can be shared sensibly without treating labor as a lump.

## The European work model

If a “European work model” exists, it likely features structures that grant greater power and protection to workers and greater importance to security, possibly at a cost to entrepreneurial risk-taking and individual enterprise. Because any “model” is likely to reflect social norms or values, microdata from the European Values Survey and World Values Survey can be used to examine attitudes toward work. Country-level indicators constructed by the OECD in Paris and the Institute for the Study of Labor in Bonn can also be used to capture structural differences in labor markets and to try to categorize European countries and their non-European peers into work-model types.

### Attitudes and values toward work

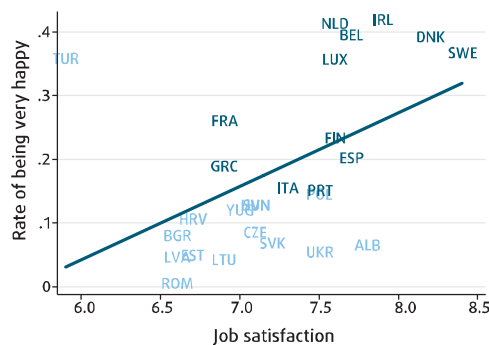
People who study social norms and preferences speak of “work centrality” in reference to the importance that work plays in a person’s life. In societies where work centrality is greater, work ethics rest on the belief that work is desirable and rewarding in its own right (Hirschfeld and Feild 2000). Economists focus analysis of work centrality on differences in working hours, and quite a bit has been written on the differences in hours worked between the United States and Europe. Some theorists relate the increased working hours in the United States to the long-standing cultural differences possibly rooted in America’s puritan Calvinist heritage: “New England’s Puritan settlers avidly struck long-standing religious holidays off the calendar (including Christmas) and thereby increased their total work days significantly” (Alesina, Glaeser, and Sacerdote 2006, p. 46). However, Europeans actually worked longer hours than Americans up until the late 1960s.<sup>1</sup> Blanchard (2004) asks whether the large decrease in hours worked in Europe should be interpreted as a growing preference for leisure as productivity increased, or as the result of increasing distortions, such as high taxes on work, early retirement programs, and so on.

A large body of empirical research finds that taxation (Rosen 1997; Prescott 2004; Davis and Henrekson 2005), unionization and regulation (Alesina, Glaeser, and Sacerdote 2006), and individual preferences (Blanchard 2004) all lead to Europeans' working fewer hours than people in other countries. When reasonable elasticity estimates are used, however, differences in tax rates and distortions explain only about half the discrepancy between hours worked in the United States and Europe.<sup>2</sup> Attributing the fall in hours worked since the mid-1970s to increases in tax rates and regulation alone depends on unrealistic assumptions about utility and the strength of income and substitution effects (Blanchard 2004).

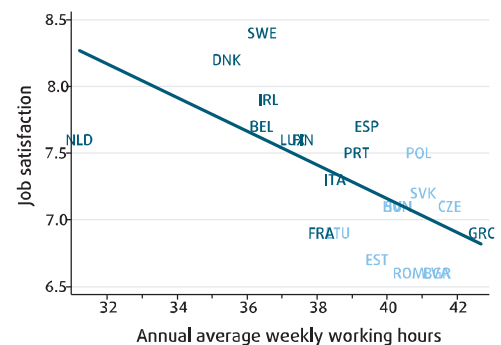
In Ireland, average hours worked per year fell from 2,140 in 1970, to 1,670 in 2000 (25 percent), and during this period the Irish economy boomed, with major in-migration, an increase in labor participation rates, and low unemployment, together with a small increase in the average tax rate. Using this example, Blanchard (2004, p.9) argues that "a large part of the decrease in hours per capita over the last 30 years in Europe reflects a choice that is likely to be made voluntarily by workers". From analysis of 10 years of microdata from Germany, and country-level data from 12 OECD countries, Alesina, Glaeser, and Sacerdote (2006) conclude that "Europeans seem to be happy to work less and less. Whether they internalize the macroeconomic effects of working less, like relative shrinking of the size of their economies relative to emerging countries, or a decline in the relative prominence of Europe as an economic superpower, is of course a different matter" (p. 55).

Several researchers have looked at the relationship between work satisfaction and overall reported happiness. Clark (1997) argues that an understanding of job satisfaction provides "an additional route towards the understanding of certain important labour market behaviours," and that job satisfaction is "as close as we are likely to come to a proxy measure of utility at work" (p. 344). There is a strong positive correlation between job satisfaction and subjective measures of happiness, and a negative correlation between annual working hours and job satisfaction ( $r = -0.65$ , figures 6.1 and 6.2). A large body of empirical research,

**Figure 6.1: Self-reported measures of happiness are positively associated with job satisfaction**

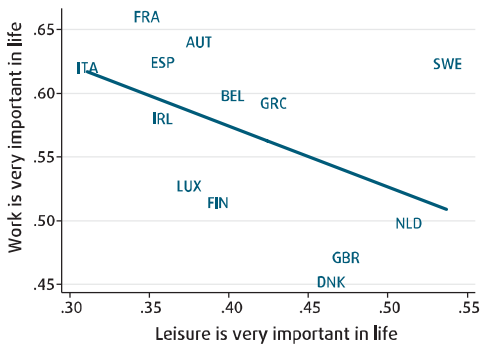


**Figure 6.2: People who work fewer hours report higher levels of job satisfaction**

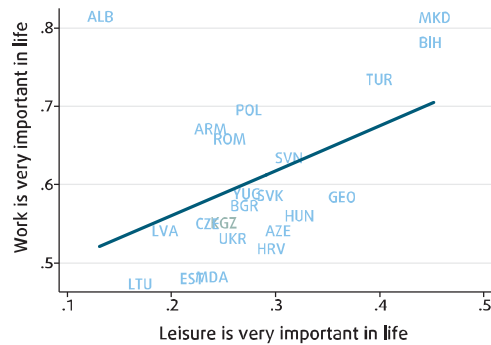


Source: Torgler 2011, based on European Values Survey and World Values Survey.

**Figure 6.3: In advanced Europe, a clearer tradeoff between preferences for work over leisure**



**Figure 6.4: In emerging Europe, a tradeoff between work and leisure is less apparent**



Source: Torgler 2011, based on European Values Survey and World Values Survey.

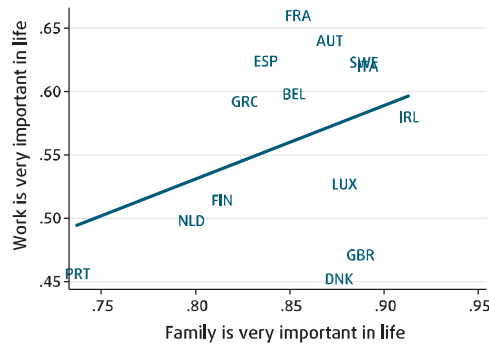
for example, shows a strong link between low job satisfaction and quitting behavior, absenteeism, and lower work performance.<sup>3</sup>

A negative correlation ( $r = -0.47$ ) between work and leisure preferences is reported by respondents to the European and World Values Surveys (figure 6.3). Sweden is an outlier. Excluding Sweden strengthens the negative correlation ( $r = -0.75$ ). The broader European neighborhood is different, with a positive correlation ( $r = 0.44$ ) between the reported importance of work and leisure (figure 6.4). Excluding Albania, the positive correlation increases significantly ( $r = 0.77$ ). Somewhat counterintuitively, given the rising concern for a tradeoff between work and family life, the data show a strong and positive correlation between the importance of work and that of family centrality ( $r = 0.76$ ), particularly in newer EU members and countries in the broader European neighborhood. There is a similarly positive—but a substantially smaller—correlation ( $r = 0.37$ ) for the wealthier countries of Western Europe.

Including a wider set of variables to control for individual, household, and other characteristics, regression analysis conducted for this report using the microdata from the European Values Survey and World Values Survey indicates that work centrality is significantly greater in the European Union's newest members and further in Central and Eastern Europe. The results of this analysis are reported in annex 6.2.

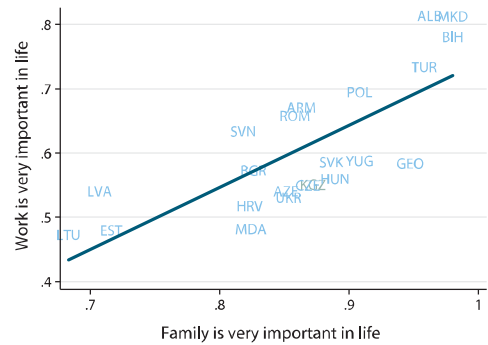
Living in emerging Europe rather than in wealthy Western Europe increases the probability that work is viewed as very important by 5–7 percentage points (figures 6.5 and 6.6). It also increases by around 10 percentage points the probability of strong agreement to the statement “Work should always come first.” Perhaps unsurprisingly, part-time workers (those who work less than 30 hours a week) are less likely to care more about work than full-time employees. Again not surprisingly, work is more central to the lives of the self-employed than it is to full-time employees. Less in line with earlier research, though, analysis of the microdata shows not only a positive correlation between religious activity and work centrality but an observable impact of being Protestant (controlling for religiosity and church attendance) on extreme work

**Figure 6.5: The importance of work is only weakly associated with the importance of family in the EU15**



Source: Torgler 2011, based on European Values Survey and World Values Survey.

**Figure 6.6: In emerging Europe, the importance of work and family are closely associated**



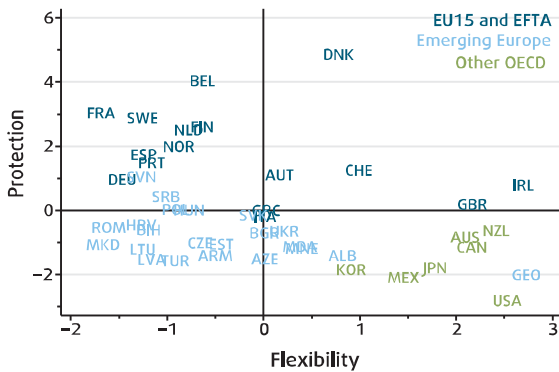
centrality (“work should always come first, even if it means less spare time”). Ideology is important: people who are “conservative” are more likely to rank work higher. By contrast, there is a negative correlation among income, level of education, and work centrality.<sup>4</sup>

### Europe’s policies regulating work are distinct

Interest among academics and policymakers in identifying a European work model became apparent in the mid-1990s, as part of broader discussion of a “European social model” to combine economic growth with social cohesion. The European social model distinguished economic policy in Europe from that in the United States. In the early 2000s, identifying and promoting a European work model and European social model became an official EU project, and the Lisbon Agenda was forged as a response to declining growth and increasing unemployment in Europe. The Lisbon objective was to make Europe “the most competitive and dynamic knowledge-based economy of the world, capable of sustainable economic growth with more and better jobs and greater social cohesion by 2010.”<sup>5</sup>

Since then, there have been several attempts to identify the components of the model—or models—that set work in Europe apart from that in other countries with similar economic and institutional development. The most prominent attempt examines indicators of labor market outcomes and poverty rates. Sapir (2005, p.1), for example, differentiates between the “Nordic” and “Anglo-Saxon” models (“both efficient, but only the former manages to combine equity and efficiency”) and the “Continental” and “Mediterranean” models (“which together account for two-thirds of the GDP of the entire EU25 and 90 per cent of the GDP of the 12-member eurozone” that are “inefficient and unsustainable”).

Is there indeed a European model, or rather several distinct ones, and do the differences across work models matter for the functioning of the labor market? To answer this question, the OECD, European Union, and other European



**Figure 6.7: Europe's approach is distinct—but there are differences within Europe**

(four work models, based on flexibility and protection, 2007)

Note: Classification is obtained through principal component analysis (see annex 1). Countries with highly flexible labor markets (higher values) are those with low employment protection legislation, low union density, low tax wedge, low minimum wages, and high maximum duration of temporary contracts; countries with high protection (higher values) are those with higher spending on "active" employment assistance programs, social assistance benefits, high replacement rates of unemployment benefits, long duration of unemployment benefits, and annual leave. The value 0 represents the average position in flexibility and protection across all countries in the sample.

Source: World Bank staff calculations, based on data on labor regulation, interventions, and institutions from the Institute for the Study of Labor, OECD, and the World Bank. See annex 1 for more information.

countries are mapped—using principal component analysis—into groups based on labor market policies (regulations, interventions, and institutions).<sup>6</sup> These policies try to mitigate a tradeoff in the labor market between flexibility and security. Flexibility refers to the costs to firms of hiring, maintaining, and firing workers, which is determined by regulation (employment protection legislation, minimum wage, and maximum length of temporary contracts), interventions (the level of the tax wedge indicating the cost of hiring workers), and institutions (the bargaining power of workers, measured by union density). "Security" refers to the state's ability to help workers manage labor market transitions and provide them with appropriate safety nets and work conditions (spending on employment assistance programs and social assistance, gross replacement rates of unemployment benefits, unemployment benefit duration, and days of paid annual leave).

The principal component analysis yields four different groups of countries along the dimensions of flexibility and protection (figure 6.7). Group 1 comprises countries with fairly high labor market flexibility and worker protection; group 2 countries display low labor market flexibility but high worker protection; group 3 countries have low labor market flexibility and offer little worker protection; and group 4 countries have high labor market flexibility but low worker protection.<sup>7</sup>

The groups that emerge indicate that there is a European work model, distinct from that of other OECD countries. Based on the extent of labor market regulation and the nature of interventions and institutions, all non-European OECD countries fall into group 4 (flexible labor markets but less generous safety nets and social assistance).

Within Europe there is significant variation. The four models do not always coincide with geographic groupings within Europe, especially when considering a set of countries larger than wealthier Western Europe. That said, some

countries have managed to achieve both high labor market flexibility and high worker protection (group 1). Denmark's flexicurity model is the most salient example, but Austria, Ireland, Switzerland, and the United Kingdom also fall into group 1. Most of the other EU15 countries, together with Norway, Slovenia, and Serbia, also provide significant worker protection, but their labor markets are fairly rigid (group 2). The majority of transition countries and Turkey are in group 3, with rigid labor markets and low worker protection. Some transition countries—most notably Georgia, but also Albania, Moldova, and Montenegro among others—can also be found in group 4, together with the non-European OECD countries.

In general, there seems to be a tradeoff between flexibility and protection in labor markets, with a negative correlation between flexibility and protection across countries. This correlation is even stronger when considering only high-income countries. As discussed above, there seems to be a split among high-income countries, with the EU15 countries concentrating in group 2 and the non-European OECD countries in group 4. This suggests that as incomes increase, countries gravitate toward one of two work models: one that forgoes flexibility or one that forgoes protection. In that sense, transition countries might embark on a path toward one of the two work models. Some already seem to have chosen—Georgia, for example, the high flexibility/low protection model, and Slovenia, the low flexibility/high protection model.

### Similar policies can yield different results

Similar labor policies can lead to different outcomes. Efficiency is higher in countries with higher than median labor force participation rates and lower than average unemployment rates, youth unemployment rates, and long-term unemployment rates (table 6.1). Countries with structurally high labor force participation rates and low unemployment rates are considered efficient; all others, inefficient.<sup>8</sup> Equity is measured by the Gini coefficient in consumption/income.<sup>9</sup> Labor market outcomes across countries can vary with different

**Table 6.1: Similar policies can lead to different outcomes**

(labor market efficiency versus equity, 2007)

	Low equity	High equity
High "efficiency" in labor markets	Canada, <b>Estonia</b> , <b>Latvia</b> , New Zealand, <b>Switzerland</b> , <b>United Kingdom</b> , United States	Australia, <b>Austria</b> , <b>Denmark</b> , <b>Ireland</b> , Japan, <b>Netherlands</b> , <b>Norway</b> , <b>Slovenia</b> , Sweden
Low "efficiency" in labor markets	Albania, Azerbaijan, <b>Bosnia and Herzegovina</b> , <b>Bulgaria</b> , Georgia, Greece, <b>Lithuania</b> , <b>Macedonia FYR</b> , Mexico, Moldova, Montenegro, <b>Portugal</b> , <b>Romania</b> , Turkey	Armenia, Belgium, Croatia, Czech Republic, Finland, France, Germany, Hungary, Italy, Republic of Korea, <b>Poland</b> , <b>Serbia</b> , <b>Slovak Republic</b> , Spain, Ukraine

Note: Color coding corresponds to the work models as defined in figure 6.7, based on labor market instruments and outcomes: purple (group 1); brown (group 2); yellow (group 3); and black (group 4). Equity classification is based on Gini coefficients for consumption and income and does not reflect equality in opportunities.

Source: World Bank staff calculations, based on data from the Institute for the Study of Labor, OECD, and the World Bank; and ILO 2010. See annex 6.1 for more information.

instruments and institutions, especially in efficiency and equity. Countries that have a similar work model, as defined above and indicated in the table by the color codes, can actually have very different labor market outcomes.

What can we learn from this exercise? For wealthy countries, the tradeoff between equity and efficiency might be overstated. Many countries—the Nordic countries and Australia, Austria, Ireland, Japan, the Netherlands, and Slovenia—have achieved equity and efficiency. At the other extreme, many others achieve neither (table 6.1). As reasoned by Sapir (2005), the discussion of the “European social model” and of equity and efficiency in labor markets suggests that in some countries the current model may not be sustainable, and this report concurs. Given the current fiscal and demographic pressures, models that underperform in efficiency have become unsustainable or will soon be. At the same time, many countries with efficient labor markets display low equity, among them many non-European OECD countries such as the United States.

The experience of some countries in Europe provides reason to believe that increasing labor market efficiency need not mean a big loss of equity. Countries with both equity and efficiency are among the richest in Europe. These countries arguably have strong institutions in place that cannot easily be replicated. In countries where institutions are not as mature, there might be a tradeoff between equity and efficiency. Europe is not left with many choices.

## More—and more productive—workers

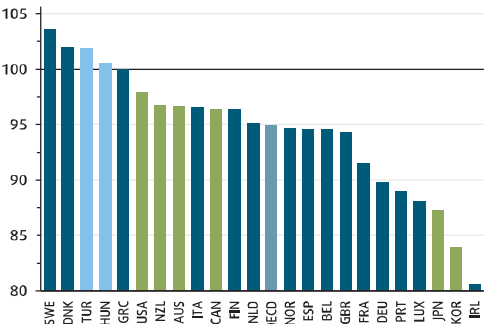
Looking ahead, Europe will have to counter the aging and shrinking of its working-age population by having workers work more, recruiting more workers from at home and abroad, and critically, making workers more productive by equipping them with the right skills for a competitive global economy. As outlined in the previous section, workers in Europe benefit from the most effective protection against abuse by employers and the most comprehensive job security and nonwage benefits, such as unemployment insurance, paid leave, and retirement pensions, which sustain shorter work hours than in most of the developed world. In many ways, these characteristics set Europe apart from other regions and are a triumph of economic development and liberal democracy. But given changes in Europe and the rest of the world since the end of the continent’s “Golden Age” between 1950 and the mid-1970s (see spotlight one), and the speed of global economic integration since, many features of the European work model are coming under critical scrutiny. These challenges are exacerbated by a shrinking and aging labor force. This in turn reinforces the need to develop human capital that is relevant in a constantly changing labor market, especially among excluded groups, by rethinking education, training, and lifelong learning policies.

### The decline of work

People in many countries are working less than they used to. As countries have grown richer, people have consumed more leisure, and the average number of hours worked in a year has declined in most middle- and high-income countries (figure 6.8). Where this reduction in hours worked is matched by gains in productivity—the output of the average worker—the decline should be expected and treated as healthy, as in Ireland, Poland, and the Slovak Republic. Yet, the

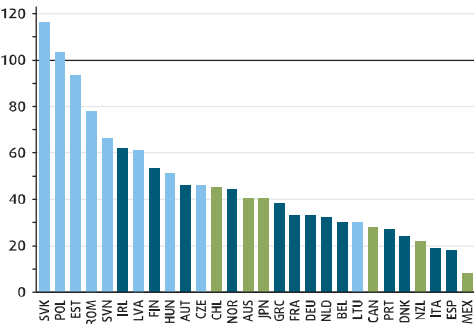


**Figure 6.8: The decline in hours worked was faster in Europe than elsewhere in the OECD**  
(reported average hours worked per year, 2008, 1990 = 100)



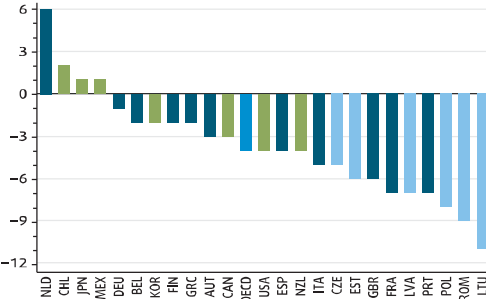
Source: World Bank staff calculations, based on the OECD Productivity Database.

**Figure 6.9: Europe has both productivity leaders and laggards**  
(GDP per hour of work, 2008, 1990 = 100)



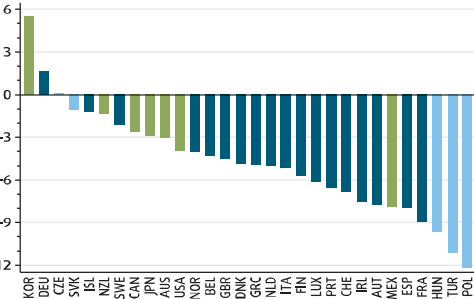
Source: World Bank staff calculations, based on ILO 2010.

**Figure 6.10: The decline in work participation has been faster in Europe**  
(change in the labor force participation of men ages 15–64, percentage point difference 1980–2008)



Source: World Bank staff calculations, based on WDI.

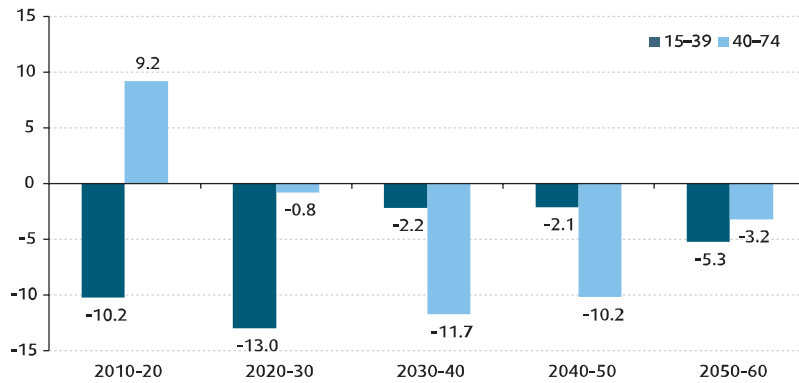
**Figure 6.11: Europeans are retiring at earlier ages than they used to**  
(change in the average effective retirement age of men, number of years difference 1965–2007)



Source: World Bank staff calculations, based on updated data from OECD 2006.

speed of the decline in hours worked in France, Italy, and Spain since 1995 raises concern when juxtaposed with their modest gains in labor productivity during the last two decades (figure 6.9).

Several countries in Europe hold the dubious distinction of having rates of labor participation among the lowest in the world. This is a feature that marks both high- and middle-income countries in the region. The percentage of working-age people who participate in the labor market has fallen at a faster pace in several large European economies than in other member countries of the OECD (figure 6.10). In Europe’s southern periphery, a rare coincidence threatens future prosperity: women have low participation rates and low fertility, adding less to both today’s economic output and tomorrow’s.



Source: World Bank staff calculations, based on the methodology described in Koettl 2009; and data from UN 2011.

**Figure 6.12: The big reduction in the number of young European workers will happen before 2030**

(projected changes in labor force, by age group and period, millions)

Europeans have also been withdrawing from the labor market to retire at a much earlier age than previously (figure 6.11). In France and Spain, for example, the effective age of retirement of men has fallen about twice as much as it has in Canada, Japan, and the United States. With the notable exception of the Czech Republic and Germany, where workers are staying active a bit longer than they used to, the trend in Europe is toward earlier retirement, despite efforts of governments in many countries to make qualifying for pensions more difficult. This contrasts with the gentler decline in the effective retirement age of workers in the United States, and sharply with the relative stability in the age of retirement in high-income East Asian countries. Men in the Republic of Korea, for example, are actually working almost six years longer than they were in 1965.

## The decline of populations

The countries covered in this report—EU countries, EFTA countries, EU candidate countries, and EU eastern partnership countries—will lose 50 million workers between now and 2060.<sup>10</sup> Today, the European labor force—employed and active job seekers—consists of 323 million people; in 50 years, it will be down to 273 million, a decrease of 15 percent. Over the next 20 years, the labor force will decrease by 15 million (5 percent). The younger labor force—below the age of 40—will shrink substantially during the 2020s. After 2030, the decline of the European labor force will happen among workers over 40 and gradually slow down. The largest crunch will happen during the 2030s: in that decade alone, the European labor force will fall an additional 14 million people, though mainly among those age 40 or older (figure 6.12).

The European Union has been facing an aging crisis since the “baby boom” generation that was born between 1945 and 1960 began retiring in 2005. The largest population cohort, “Generation X,” born between 1960 and 1970, will approach retirement age over the next 15 years. Generation X will start to retire in the 2020s, but thereafter, ever-smaller cohorts of young people will follow, pushing what experts call the “old-age dependency ratio” rapidly downward, so that by 2050 in some European countries there will only be two people working for every person receiving a retirement pension.

**Figure 6.13: Aging in Europe is matched by a “surplus” of working-age people in the Middle East and North Africa**

(population pyramid Europe, Middle East and North Africa, years)

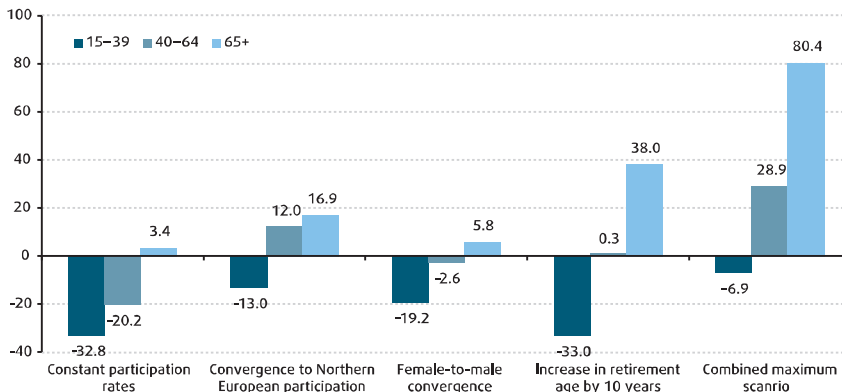


Source: World Bank staff calculations, based on the methodology described in Koettl 2009; and data from UN 2011.

The decrease in labor force participation varies considerably across European countries. The main reason is that fertility rates in Europe range from around 1.2 to 1.5 in the Eastern, Central, and Southern European countries, to 1.6 to 2.0 in the Benelux and Northern European countries. This is lower than the demographic replacement rate of 2.1 required to keep the size of the population stable.

The fall in the labor force will be particularly severe for EU and EFTA countries. Their labor force will decrease by 39 million people (18 percent) over the next 50 years. The other Eastern European countries do not fare much better, with an equally steep decline of 16 percent. The only exception is Turkey, where the labor force is projected to increase 12 percent until 2060.

The natural consequence of falling fertility and rising longevity is an increase in the old-age dependency ratio—the number of people older than 65 relative to those of working age (15–64). By 2050, this ratio will double to about 50 percent in Europe, with Spain (68), Italy (66), and Portugal (58) projected to have the highest ratios (Muenz 2007). The projected changes in Europe—especially Southern and Eastern Europe—contrast with trends south of the Mediterranean, where the population is still fairly young (figure 6.13). These trends are seen as complementary and fortunate by some but as a potential threat by others.



Source: World Bank staff calculations, based on the methodology described in Koettl 2009; and data from UN 2011.

**Figure 6.14: To keep the size of the labor force stable, Europeans have to work longer and more productively, but a demographic deficit of young people will probably persist**

(change in European labor force between 2010 and 2060 by scenario and age group in millions)

## Improving Europe's demographic mathematics

Can Europe overturn these trends without increased immigration? Only with radical policy and behavioral changes could Europe counter the shrinking labor force. Yet, even under optimistic conditions, Europe would not be able to prevent the aging of its labor force. First, if participation rates in all countries were to converge to those seen in Northern Europe or, second, if the retirement age were to increase by 10 years across the board, the European labor force would actually increase by 2060 (by 5 percent and 2 percent, respectively; figure 6.14). In a third scenario, if female labor force participation were to converge to that of men, the labor force would still decrease, but only by 5 percent, as opposed to 15 percent in the baseline scenario. None of these scenarios counteracts the loss of young workers due to continually decreasing younger-age cohorts. Under all four scenarios—including the combined maximum scenario—the labor force below age 40 will shrink. In other words, the only large pool of potential additional workers—apart from new immigrants—that Europe could draw from in the future is among the elderly (ages 65 and older).

The potential to reverse the shrinking of the European labor force therefore hinges on young, populous countries like Turkey. In fact, in the four scenarios, Turkey would contribute up to 40 percent of any gains in the size of the European labor force and almost all of the younger workers. Without Turkey, European countries would not be able to prevent the labor force from shrinking under any of the scenarios.

### Improving incentives for work

Given the low participation rates in many European countries, there is room to improve and to stem some of the decline of the European labor force. To encourage people to participate, incentives for work must be aligned to ensure that work pays for both the employee and the employer. This could require, among other policy reforms, significant changes on labor taxation and social benefit design.

Women constitute 50 percent of the working-age population, and given that they are increasingly more educated—more than men among younger

cohorts—they represent a large pool of untapped talent. Even if their entry into the market in larger numbers does not produce the payoff in additional workers that increasing the retirement age does, it could have a large productivity payoff. Increasing female labor force participation would require interventions that allow women to better juggle multiple roles by providing, for example, child care facilities and flexible work arrangements (World Bank 2011e). The latter might also play an important role for keeping elderly workers in the labor force by allowing them to phase in retirement on a part-time basis.

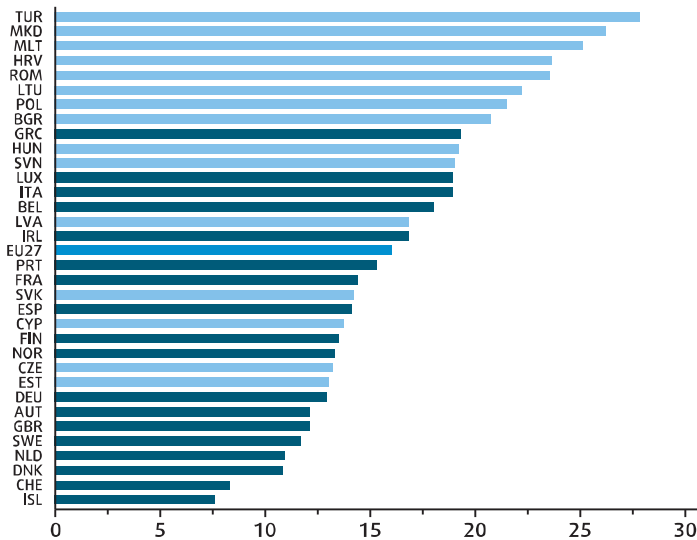
To increase labor force participation across the board, both employees and employers need the right incentives. Currently, it seems that disincentives for (formal) work are substantial in many European countries, especially for low-productivity workers. For example, Koettl and Weber (forthcoming) show that when comparing formal jobs with informal jobs, the benefits of formal jobs would have to be quite large to offset their costs in terms of taxes, social security contributions, and withdrawn social benefits. A similar result might hold for a comparison between formal jobs and inactivity. This leads to the conclusion that formal (part-time) jobs at low wage levels may not be an economically viable option for low-productivity job seekers in many European countries. For employers, high labor taxation has similar implications as it increases the total costs of labor and makes it less attractive to hire (see also chapter 7 on labor and corporate income taxation). A microeconomic analysis using EU-Statistics on Income and Living Conditions data suggests that there is a negative correlation between the incidence of formal employment and work disincentives at the individual level.

Two main levers can make (formal) work pay for low-productivity workers and their employers: decreasing the labor tax wedge at lower wage levels and “smoothing” incentives with changes to social assistance, housing, and family benefits. Regarding the tax wedge, current social protection financing in several countries discriminates against lower-wage earners. Options for reducing the labor tax wedge include incentives linked to wage subsidies, social insurance contribution credits, or so-called “in-work” or employment-conditional benefits—cash benefits or refundable income tax credits conditional on formal employment—for low-wage earners. With regard to the design of social assistance, housing, and family benefits, the key is to keep the marginal effective tax rate in mind when designing eligibility conditions and the ways that benefits are withdrawn. The goal is to reform these benefits toward so-called “smart safety nets,” making social protection benefits more compatible with work. In particular, any additional wage should also increase beneficiaries’ net incomes, including benefits. Otherwise, additional work does not pay, and beneficiaries will prefer not to work at all, to work informally, or to underreport their earnings.<sup>11</sup>

## Developing skills

Besides getting more people to work, Europe will have to enable workers to contribute at their highest potential. Doing so requires continual reform of education and training systems.

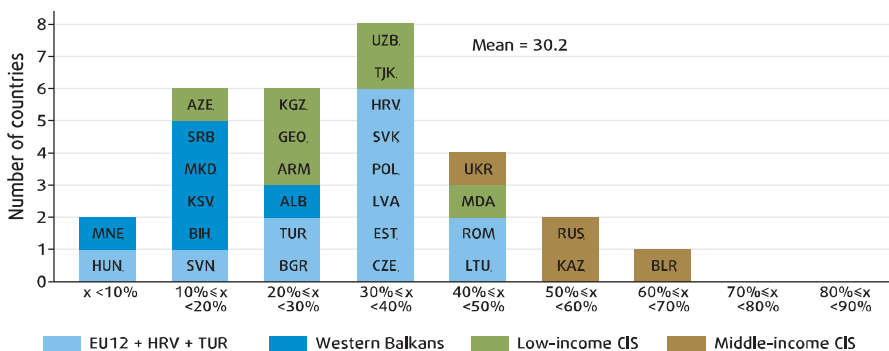
As discussed in chapters 4 and 5, skills are critical for innovation and firms’ growth. Recent studies from OECD and developing countries spotlight the



Source: World Bank staff calculations, based on Eurostat.

**Figure 6.15: Better-educated people are more likely to participate in the labor market**

(percentage point difference in labor force participation rates between those with tertiary education and those with less than upper secondary education, 2010)



Source: Sondergaard and Murthi 2011.

**Figure 6.16: Skills are an important constraint for many firms in emerging Europe**

(distribution of firms that consider skills to be a major or very severe constraint, 2008)

importance of skills—cognitive, socioemotional, technical—in determining productivity. For example, Hanushek and Woessmann (2011) have shown that cognitive skills (proxied by Programme for International Student Assessment scores) explain a sizable part of the variation in growth rates observed in OECD countries, including Western Europe.<sup>12</sup> In fact, the evidence suggests that generic skills also have substantial growth payoffs, even in advanced economies. Unsurprisingly, skills are at the center of the policy agenda of the European Union and Europe at large, as reflected in the European Union's growth strategies (Lisbon Agenda, Europe 2020) and numerous strategic and policy documents (European Commission 2010b; Sondergaard and Murthi 2011).

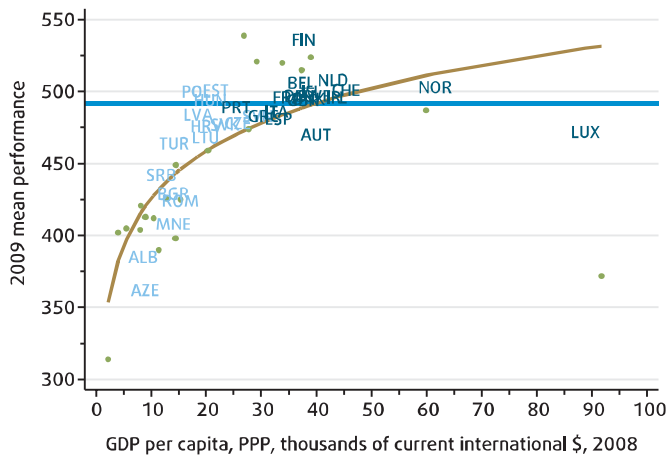
Skills include not only technical ability, but also generic cognitive skills (literacy, numeracy, problem solving) and generic noncognitive skills (socioemotional and behavioral attributes such as teamwork, self-discipline, and perseverance). A solid base of generic skills seems to be a prerequisite for further acquisition of technical skills, whether through post-secondary education or on the job.<sup>13</sup>

Further, the foundation for the development of generic skills is built early in life and during adolescence and hinges on having access to adequate nutrition, nurturing environments, and high-quality basic education (World Bank 2011b). Efforts by the OECD and the World Bank to measure the availability of and demand for cognitive and noncognitive skills are underway.<sup>14</sup>

Skills not only matter for economywide productivity but also individual labor market outcomes. Heckman, Stixrud, and Urzua (2006) document the evidence for the United States, while Brunello and Schlotter (2011) review the emerging literature for Western Europe. Differences in labor force participation rates between those with tertiary education and those with less than upper secondary education range from about 8 percentage points in Iceland to 28 percentage points in Turkey (figure 6.15). In other words, in Turkey the higher-educated are 28 percent more likely to participate than those with lower education. This could be of particular importance for excluded groups. In Bulgaria, Romania, and Serbia, the share of the Roma working-age population with at least some secondary education is 60 percentage points lower than that of the non-Roma. Not surprisingly, there are also significant gaps in the labor force participation of the two groups, especially among women. In some countries, the Roma could be a quarter of labor market entrants in the near future. Helping them become more productive is not only a matter of social inclusion, it could also increase economic growth (World Bank 2010).

Firm surveys show that skills have in recent years become increasingly binding for productivity and job creation in emerging Europe. Skilled-labor shortages have become the second-most commonly reported constraint to growth in the enterprise surveys across all countries in Eastern Europe, behind only tax rates (Sondergaard and Murthi 2011). On average, 30 percent of firms considered education and skills to be a major or severe constraint in 2008 (figure 6.16). Upwards of 40 percent of firms were dissatisfied with the availability of skilled workers in the former Yugoslav Republic of Macedonia and Ukraine. These surveys have found that in addition to technical skills, the lack of noncognitive generic skills appears especially binding (World Bank 2009 and Rutkowski 2010). Also in OECD countries and some middle-income countries, noncognitive skills are as important as cognitive and technical skills in firms' hiring decisions.<sup>15</sup>

Despite overall success in increasing student enrollment, the quality of education needs to be improved. The picture of education quality in Europe is diverse. Outcomes—as measured by the Programme for International Student Assessment—appear particularly poor in Azerbaijan, Bulgaria, Montenegro, and Romania, which have students in early grades that underperform relative to the country's level of development (figure 6.17). For another group of countries (Bulgaria, Croatia, the Czech Republic, and FYR Macedonia), the performance in cognitive tests worsened between 2006 and 2009. Worrisome for labor market outcomes, upper secondary and tertiary education students may be graduating with the wrong skill sets (Sondergaard and Murthi 2011). There is evidence that after the transition, the obsolescence of technical skills was not addressed and that vocational education systems have not performed well. As a result, employers today often assert that it is difficult to find graduates with adequate technical skills.



**Figure 6.17: Cognitive skills are adequate in most European countries**

(reading competency of 15-year-olds on the Programme for International Student Assessment 2009 versus income)

Note: The figure shows a log-linear regression line representing countries' predicted reading score in the Programme for International Student Assessment on their GDP per capita. The blue line is the OECD mean reading score.

Source: Sondergaard and Murthi 2011.

Effective policy interventions can address many of these problems. As discussed in a recent World Bank report, interventions should focus on overcoming failures in information and quality assurance. Countries in emerging Europe have to reorganize their school networks to deal with shrinking student populations. Countries should also rethink their training and education systems to avoid specialization in narrow (technical) fields too early in a student's career. Countries should also ensure that preschool and basic education curricula and pedagogic practice pay adequate attention to the development of cognitive and noncognitive skills. The experience with related reforms and interventions in Europe and the rest of the world can offer useful lessons. Lifelong learning will become increasingly important given the demographic trends (Chawla, Betcherman, and Banerji 2007; European Commission 2006). In short, it is the formation of the right skills rather than diplomas that should be the focus of reforms (Sondergaard and Murthi 2011). To that end, more information is needed on the learning and employment outcomes of students and graduates.

## Making jobs more contestable

Economists view competition much like most people view exercise. At some abstract level, we all know it is good for us, but go to surprising lengths to avoid it. Economic agents—individuals or enterprises—are constantly hunting for an opportunity to monopolize a market. Just as we accept that exercise is a good thing, paying ever-higher fees to go to the gym and be put through a punishing workout by a personal trainer, as taxpayers we finance government agencies to eliminate uncompetitive practices. The rationale for the government's role in the labor market is much the same: to protect workers from a lack of competition among employers for their labor and human capital.



Yet, these policies are from a time in Europe's history when large-scale manufacturing dominated economies, and a few (and in some places even single) employers could set the price of labor and manage their human resources with impunity. Images come to mind of the abuses in Victorian-era Britain, where workers toiled for 14-hour shifts and could be dismissed at the employer's whim. The balance of information and power between those who seek jobs and those who offer them has shifted considerably in the decades since. And along with this shift, the changing economic structure of most European countries—away from large-scale industry toward varied services—has made the labor market more "atomistic." As more and more services become tradable (see chapter 2), it is harder for employers and workers to avoid competition.

But labor market policy has not kept up with these changes. The policies prevalent in Europe—and parts of the world that Europeans trade and compete with—make its labor markets more difficult to contest, especially for new, younger entrants. This lack of contestability may discourage some from entering the labor market at all, impede the efforts of others to match up with employers who could most benefit from their skills and attitudes, and increase the incidence and duration of unemployment. Recent evidence shows that in countries where the labor market is less contestable—especially due to restrictions on dismissal—individuals and firms are more likely to take their activities into the shadows of unregulated and untaxed markets, depriving the state and society of public goods and holding back economies from fulfilling their growth potential.

#### Box 6.1: Is a flexible labor market necessary for successful monetary union?

For some countries, the last few years has been difficult, being part of a currency union during, particularly one as large and economically diverse as the eurozone. Depreciation could have come in handy, as it did in the Czech Republic and Poland. But for euro area members and those with currencies pegged to the euro, this was not an option. For the few such as Latvia that made it easier to adjust wages downward, being linked to a strong currency was less of a problem.

The 2008 crisis and contraction put these strains into sharp relief. But tensions had been growing long before. Differences in real unit labor costs (RULCs) between euro area members have persisted since the start of the Economic and Monetary Union, widening during the crisis. RULCs reflect prices and nominal labor costs, and on both indicators euro area members have diverged. This is most noticeable in shifts in nominal unit labor costs since 2003: while in Germany the growth rate in nominal unit labor costs has been well below the euro area average, reflecting a stronger wage discipline, in Greece, Ireland,

and Spain nominal unit labor costs have increased noticeably compared with the average.

Widening or persisting differentials in RULCs are at odds with the expectation that adopting a common currency—and hence a common anchor for inflation—should have facilitated convergence in prices and wages across euro area countries, narrowing growth differentials in RULCs. Three reasons seem to explain the divergence:

- Technological factors, with capital accumulation and increases in the price of intermediates both leading to higher growth in RULCs. This would be consistent with capital and labor not being easy substitutes.
- External factors, captured for example by the degree of openness, leading to downward pressure on RULCs due to both the disciplining effect on wage increases and the positive impact on labor productivity as a result of more access to new technologies and markets.

- Institutional factors, reflecting the degree of competition in product and labor markets. Higher replacement rates in unemployment benefits and wage bargaining centralization are associated with higher RULCs as they strengthen the bargaining power of workers; stringent labor regulations for hiring and firing workers could be associated with lower RULCs because they come with lower employment.

Since the divergence in labor costs across euro area members is partly the result of structural differences in the labor and product markets, better policy and institutional alignment could reduce the gaps. With a single currency and low inflation, closing the gaps in RULC growth can be painful, requiring wage cuts and possible unemployment increases. A smaller gap is needed for lagging countries to be competitive within the eurozone; given Europe's increasing integration with the global economy, to remain competitive the convergence in RULCs will have to be downward.

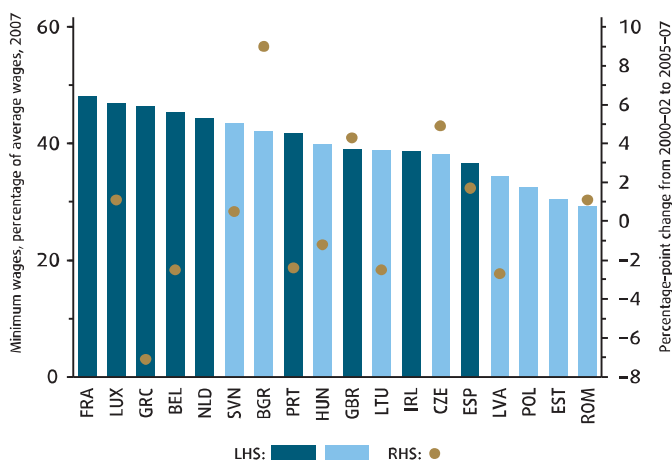
Source: Based on Lebrun and Pérez 2011.

Does it matter if Europe's labor markets are inflexible and uncontestable? The broad divergence in the speed with which employment rates are recovering in the wake of the global financial crisis and recession suggests that it does. In countries that forgo the macroeconomic shock absorber offered by a flexible exchange rate (that is, all current euro area members and those preparing to join by tying their currencies to the euro), the impact of a sudden fall in demand on the product and labor markets can be mitigated if wages are allowed to fall, hours are flexible, and workers at the margin can be dismissed (World Bank 2011c; box 6.1).

When examining the relationship between labor market structures and outcomes, it is helpful to distinguish between regulations, interventions, and institutions. Regulations set work's legal parameters, in the form of a minimum wage and/or restrictions on dismissal. The state deploys interventions to correct market failures, such as the inability of private financial markets to viably insure the risk of unemployment (unemployment insurance) and differences in how much information employers and job seekers have (job-seeking assistance). Institutions are the structures and agreed procedures for exerting influence and carrying out decisions. For the labor market, the best example is the space afforded in the legal code of most countries for collective bargaining through labor unions.

### Hiring and firing workers is costly

A legislated minimum wage increases labor costs for firms and can dissuade them from offering employment to workers whose marginal productivity does not exceed the minimum. This effect will be stronger for workers with lower productivity, especially younger, unskilled, less experienced workers (Montenegro and Pagés 2005). Priced out of jobs on the formal (regulated and taxed) market for labor, they can join those genuinely unemployed, take an informal (unregulated and untaxed) job, or pretend to look for a job while

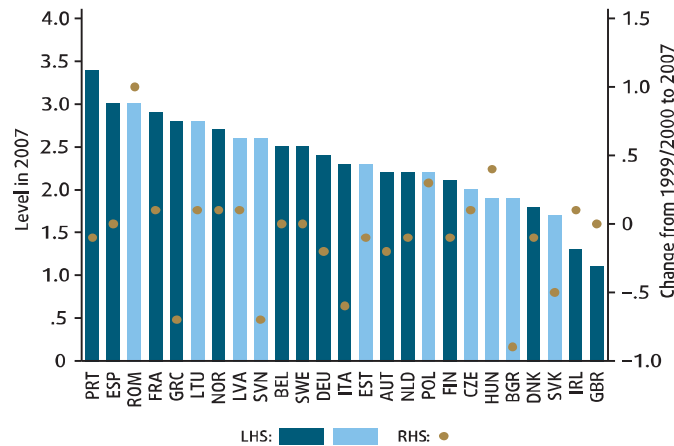


**Figure 6.18: Minimum wages in the newest EU member countries are increasing faster**  
(level and growth, 2000-07)

Note: Dark blue bars represent Western Europe, and light blue emerging European economies.  
Source: Fialová and Schneider 2011.

**Figure 6.19: Employment protection is converging through liberalization in more rigid labor markets**

(level and change, 1999-2007)



Note: Dark blue bars represent Western Europe, and light blue emerging European economies.  
Source: Fialová and Schneider 2011.

working informally. But a minimum wage might also motivate workers to increase productivity or persuade job seekers and some outside the labor market to hold out for a job on the formal market, even if plenty of informal employment is on offer (Rebitzer and Taylor 1995; Manning 1995).

All new members of the European Union introduced legislated minimum wages. Although several older members do not have legally binding minimum wages, an effective minimum wage is secured through the collective bargaining process in Austria, Denmark, France, Germany, Italy, and Sweden. Generally, legislated minimum wages in the European Union's new members are considerably lower than the legislated or effective minimum wages in the older member states. Over the past decade, however, these have been on a clear upward trend. Since 2000, the minimum wage as a percentage of average wages has risen fastest in Bulgaria and the Czech Republic (figure 6.18).

A second common set of labor laws, employment protection legislation (EPL), restricts employers' ability to dismiss workers—reducing flows into unemployment but also out of it. Strict EPL can slow new employment if restrictions on dismissing workers make employers wary of hiring someone new. For this reason, restrictions on dismissal can increase unemployment, the duration of unemployment, and the attraction of fixed-term contracts. Past a certain threshold, it can even cause employers to turn to the untaxed, unregulated labor market. Beyond affecting flows into and out of employment, EPL creates an "insider-outsider" divide. Those who have a protected job ("insiders") are relatively guarded from losing it, while the inactive and unemployed ("outsiders") find it more difficult to gain employment. EPL changes the distribution of jobs, with important implications for first-time job seekers, youth (especially), women, the disabled, and other disadvantaged groups.

Using the OECD's measure of the strictness of employment protection (OECD 1999, OECD 2004, and Venn 2009)—and its application by Lehmann and Muravyev (2010) to non-OECD European countries—the least restrictive conditions for employers are in Denmark, Hungary, Ireland, and the Slovak

Republic. France, Greece, Portugal, and Spain have the most restrictive regulations. In Austria, Greece, Italy, Portugal, and the Slovak Republic, employment protection has been noticeably relaxed. Partly, this relaxation has come in the form of more temporary contracts, especially in Italy and Spain (box 6.2). But over the same period, Hungary, Ireland, and Poland have tightened their EPL. EPL in the European Union's newest member states is lower than in the older members, but there has been convergence driven both by liberalization in parts of the west and growing restrictions among members in the east (figure 6.19). Lithuania and Slovenia had the most restrictive legislation, though Slovenia has liberalized recently. Romania, by contrast, recently tightened its EPL and, after Portugal and Spain, now has the most restrictive regulation.

### Box 6.2: Do temporary contracts make labor markets flexible?

During the past decades, employment protection legislation (EPL) reform in Europe was mostly “partial” or “two-tier.” In the mid-1980s, several European countries, with high levels of EPL, introduced temporary contracts to increase labor market flexibility. Many countries deregulated the use of temporary contracts substantially but maintained strict protection for permanent ones. There is substantial evidence on these reforms, based largely on the Spanish experience (Dolado, García-Serrano, and Jimeno 2002; Bentolila, Dolado, and Jimeno 2008). Because temporary contracts involve much lower firing costs, both in severance payments and legal costs, their incidence increased significantly.

Spain is a good example of labor market dualism, with the highest incidence of temporary contracts. In 1984, a two-tier EPL reform liberalized the use of temporary contracts. Spain registered the most rapid growth in temporary jobs, from 11 percent of total employment in 1983 to about 35 percent in 1995 (Güell and Petrongolo 2007). But Spain is far from unique. According to the European Commission (2010a), EU member states that introduced two-tier EPL reforms have seen an increase in temporary employment since the mid-1980s. Countries with relatively less stringent regulations for permanent contracts—like Denmark, Ireland, and the United Kingdom—do not show any trend increase in the incidence of temporary employment.

Temporary contracts affect young workers more. In most EU member states, 40 percent of young people (ages 15–39) are on temporary contracts, especially among those under

25 years of age. The share of temporary employment among workers in the 15-to-24 age group ranges from more than 50 percent in countries like France, Germany, Poland, Slovenia, and Spain to less than 20 percent in Bulgaria, the Czech Republic, Latvia, Lithuania, Romania, the Slovak Republic, and the United Kingdom.

Temporary contracts have both positive and adverse effects. They can help firms to evaluate workers’ suitability for jobs. In that sense, temporary jobs could act as a stepping stone to more stable jobs. Temporary contracts could also act as a shock absorber, protecting firms from temporary demand fluctuations by avoiding costly adjustments to their core labor force. Boeri and Garibaldi (2007) and Boeri (2011) show that the “flexibility at the margin” provided by temporary contracts increases both hiring and firing rates for newly created jobs, as firms try to restrict firing costs through reduced conversion. Of course, temporary contracts can be an easy way for firms to reduce labor costs, substituting temporary for permanent workers (Layard 2005).

Temporary contracts can help make labor markets more dynamic. Two-tier EPL reforms have dramatically raised the proportion of new recruitments of temporary contracts (Cahuc and Postel-Vinay 2002). Bover and Gómez (2004) found that in Spain, exit rates from unemployment into temporary contracts were 10 times larger than exit rates into permanent ones between 1987 and 1994.

Using a sample of large Spanish firms in 1993–94, García-Serrano (1998) found that

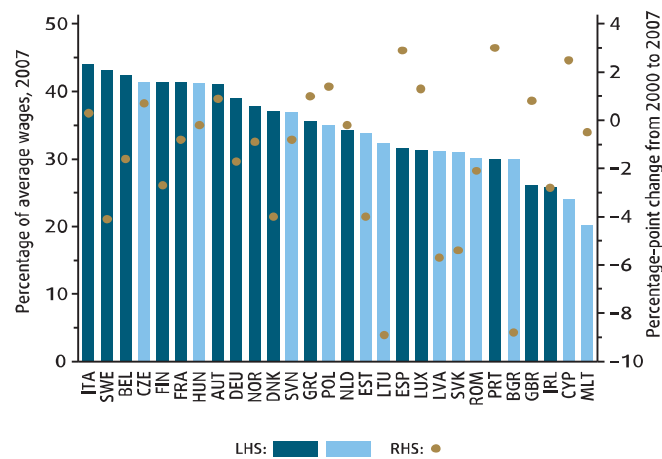
turnover rates varied by type of employment contract. In particular, a rise of one percentage point in the share of temporary employment increased flows from employment to unemployment, unemployment to employment, and employment to employment by 0.26 percentage points. Bentolila, Dolado, and Jimeno (2008) found that, insofar as the use of temporary contracts implies a rise in the hiring rate, they have helped decrease long-term unemployment, especially in periods of high growth.

Despite helping to create labor market dynamism and employment, temporary contracts can adversely affect productivity and investment in skills. Greater turnover and low conversion rates can reduce incentives to invest in firm-specific human capital (Dolado, García-Serrano, and Jimeno 2002; Bentolila, Dolado, and Jimeno 2008). Güell and Petrongolo (2007) argue that the negative impact of temporary work on vocational training depends on whether temporary contracts are used mainly to lower wage costs or to screen for entry-level jobs. Boeri and Garibaldi (2007) found that the share of temporary workers in Italy has a large negative impact on firm-level productivity growth. The authors argue that rising employment, in the aftermath of two-tier EPL reforms, led to falling labor productivity through decreasing marginal returns for labor.

In conclusion, the Spanish experience is mixed. It suggests that the two-tier EPL reform led to an increase in worker turnover, and a reduction in long-term unemployment. But it also is associated with a fall in investment in firm-specific human capital and productivity.

Figure 6.20: The wedge created by income taxes and social insurance contributions is highest in Italy

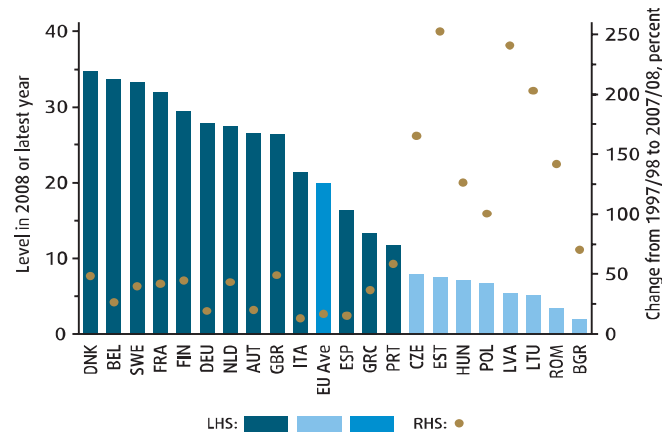
(average personal income tax and social security contributions)



Note: Social security includes both employee and employer contributions. Dark blue bars represent Western Europe, and light blue emerging European economies.  
Source: World Bank staff calculations, based on the OECD Tax Database.

Figure 6.21: Labor costs have been rising quickly in the EU's newer members

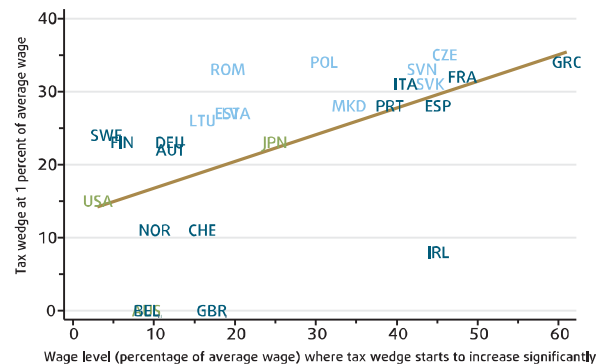
(average hourly labor costs, calculated as cost of labor divided by hours worked)



Source: World Bank staff calculations, based on Eurostat.

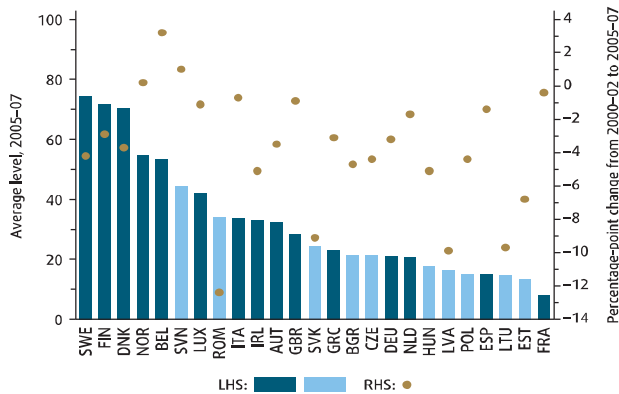
Figure 6.22: In Emerging Europe, the tax wedge for lowest-wage earners tends to be high

(wage level at which tax wedge is binding, percent of average wage)



Note: The scatter plot depicts the wage level where the tax wedge starts to increase (x-axis) versus the tax wedge at 1 percent of average wages (y-axis). Hungary, the Netherlands, and Serbia feature falling tax wedges at low-wage levels and are not depicted, just like Bulgaria, which has a flat tax wedge. Austria, Belgium, and Canada have partly negative tax wedges at low wage levels, especially for families, and Canada is excluded. The new member state countries of Eastern Europe are in light blue.

Source: Koettl and Weber forthcoming.



Note: Dark blue bars represent Western Europe, and light blue emerging European economies.  
Source: Fialová and Schneider 2011.

**Figure 6.23: In much of the European Union, membership in labor unions has been declining**

(percentage of workers who belong to a labor union, 2000-07)

Labor market interventions—“active” labor market programs such as training and job search assistance, and “passive” unemployment benefits such as unemployment insurance and other forms of social insurance—are common in the European Union, including the new member states. These interventions are typically financed directly through a tax on earnings. In much of Europe, the cost of these interventions raises the cost of labor, creating a “tax wedge” between what employers pay for work and what workers take home (figure 6.20). The largest component of the tax wedge comes as personal income tax and contributions to pensions and health insurance, but financing these interventions also adds to labor costs. A higher tax wedge contributes to higher labor costs in the formal sector and can dissuade employers from taking on workers or increase demand for informal ways of contracting workers (Davis and Henrekson 2005; figure 6.21). Not only is the level of labor taxation important, but also how it progresses over income levels. In the new member states of Eastern Europe, labor taxation tends to be high on low-wage earners, potentially making it more difficult for them to work in the formal sector (figure 6.22). Moreover, the wage level at which labor taxes start to increase is also fairly high, making labor taxation less progressive in these countries.

When well designed and administered, such programs may improve labor market performance. Active programs that enhance skills or eliminate information asymmetries that delay or frustrate matching in the labor market should shorten the job search period. Active programs might lower the search and training costs of firms and indirectly subsidize the creation of better jobs. Passive programs, such as unemployment benefits, can remove the urgency of finding a new job and improve the quality of matches. But the record of active programs is mixed at best, and if unemployment benefits are overly generous or poorly designed, they can lower peoples’ motivation to look for and accept a job.

Finally, it is difficult to isolate institutions that impact only the labor market from those that also shape other social and economic interactions. One is especially relevant: collective bargaining as proxied by the strength of labor unions. The impact of labor unions is felt largely through the importance of minimum wages, EPL, and active and passive interventions already discussed

(figure 6.23). But strong labor unions can shape the labor market beyond the direct impact of regulation and interventions. For example, even where the share of the total labor force that is unionized is small, it may be high in the public administration and the provision of essential services including education, health, and transportation. The labor code in some countries even augments collective bargaining and the power of unions: the salaries and benefits that unions succeed in negotiating for their members become binding for others in regulated employment, whether they are members or not.<sup>16</sup>

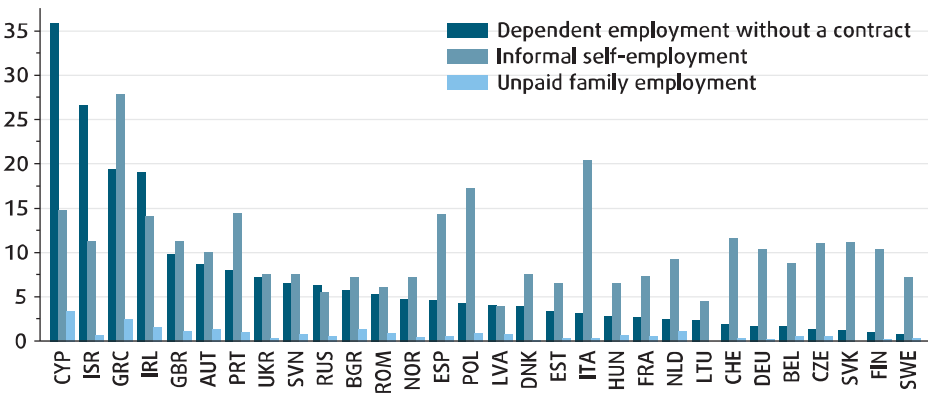
Work is being pushed out of (regulated) markets

Taxes and regulations can create incentives for people to consume more “own-provided” services at home and for workers and employers to transact “in the shadow” on the unregulated and untaxed market (Rosen 1997; Davis and Henrekson 2005). The likelihood that they will transact informally increases where a government’s capacity to enforce regulation is low. Conventional textbook models show how restrictions on firing, a relatively high minimum wage, and the taxes on labor that finance active and passive assistance programs can segment insiders who benefit from the labor code from outsiders who cannot. Less conventionally, in countries where governments fail to provide or sustain high-quality services, employers and workers can become disenchanted with complex labor regulation and consider taxes and compliance efforts not worthwhile. There is evidence that high taxes increase nonmarket or home production of services in Northern Europe, and they push legal market activities into the informal market in the south (figure 6.24).

What helps, what hurts

Because there is no simple mapping between labor market outcomes and social protection policies, a more rigorous analysis of the links between the two is needed, controlling for country characteristics. Country-level data from the OECD, the Institute for the Study of Labor, the International Labour Organization, and the European Bank for Reconstruction and Development can be used to assess how the institutions, regulations, and interventions discussed above are associated with the performance of Europe’s labor markets relative to those

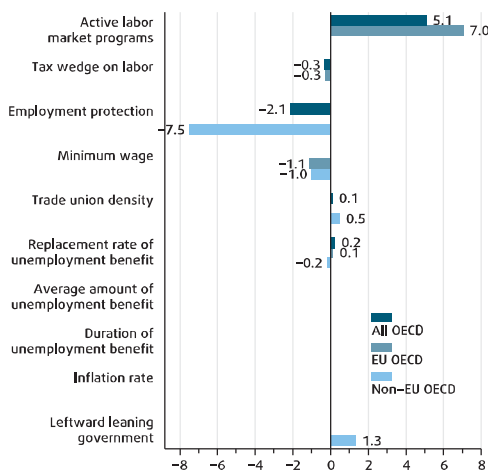
Figure 6.24: Informal self-employment is most prevalent in Greece, Italy, Portugal, and Spain  
(unregulated, untaxed work, percentage of labor force)



Source: World Bank 2011a, based on Hazans 2011a.

**Figure 6.25: In Europe, active labor programs are associated with higher labor force participation**

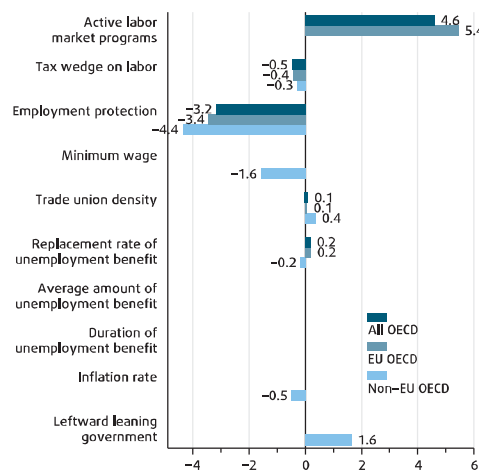
(percentage point change in the working-age population working or searching for a job: estimated impact of a unit change in statistically significant explanatory variables)



Note: Only coefficients significant at the 1 percent and 5 percent levels are shown in the figure. Full results and more information are available in annex 2.  
Source: Fialová 2011.

**Figure 6.26: Rigid employment protection legislation is associated with lower employment rates**

(percentage point change in employment rate: estimated impact of a unit change in statistically significant explanatory variables)

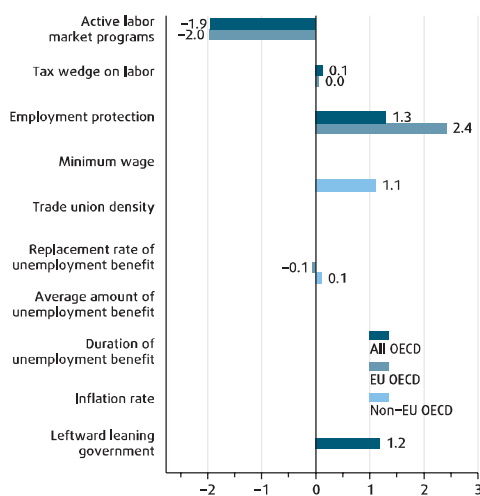


Note: Only coefficients significant at the 1 percent and 5 percent levels are shown in the figure. Full results and more information are available in annex 2.  
Source: Fialová 2011.

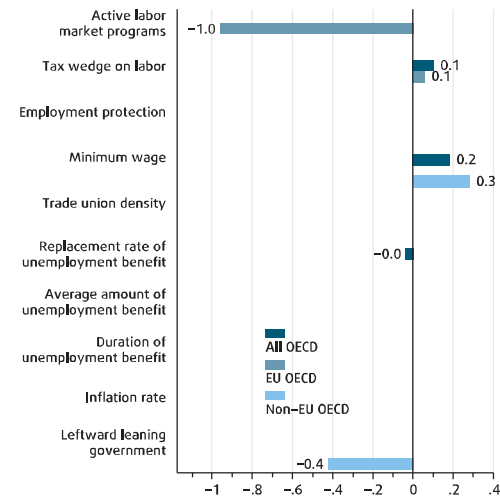
**Figure 6.27: Rigid laws and high taxes are associated with higher unemployment, active labor programs with lower unemployment**

(percentage point change in unemployment and long-term unemployment rates: estimated impact of a unit change in statistically significant explanatory variables)

#### Change in unemployment



#### Change in long-term unemployment



Note: Only coefficients significant at the 1 percent and 5 percent levels are shown in the figure. Full results and more information are available in annex 6.2.  
Source: Fialová 2011.



of other countries.<sup>17</sup> This approach also complements the firm-level analysis provided in chapter 4, focusing on country-level legal and institutional variables, which are not captured in that analysis. The cross-country analysis also complements microeconomic evidence at the individual level when analyzing disincentives for formal work originating in the tax and benefit system, as discussed in the subsection on work disincentives.

Fialová (2011) examines the impact of policies on four indicators of labor market performance: the activity rate (AR); employment rate (ER); unemployment rate (UR); and long-term unemployment rate (LTUR). This is done for three sets of countries: the European Union and other OECD members,<sup>18</sup> the European Union,<sup>19</sup> and EU new member states, accession countries, and others in the European neighborhood (figures 6.25–6.27).<sup>20</sup>

With regard to employment protection, stricter EPL is mostly associated with lower participation rates—except in Western Europe—and higher unemployment rates. Similarly, higher labor taxation is negatively correlated with labor force participation—with the exception of the new member states—and positively correlated with unemployment rates, though the latter result is less robust. High labor taxation, associated with long-term unemployment, appears to be a major problem in Europe. Overall, the strictness of EPL and high labor taxes lower the employment rate.

### Box 6.3: Denmark’s “flexicurity”: increasing contestability, the gentler way

Every year, about 20 percent of Danes lose their jobs. But they do not lose their incomes. Unemployment benefits replace close to two-thirds of their earnings, and the government helps them find work. Flexicurity, the combination of flexibility for employers and income security for workers, has been in place since at least the 1970s, but it has evolved over time as the active component has been strengthened. And it seems to work well. Between 1995 and 2008, Danish unemployment rates averaged 4.9 percent, while the rest of the EU15 suffered rates close to 8.5 percent. Denmark has been getting a lot of attention among policymakers.

Danish employment laws have evolved from the “Gent system,” when labor and trade unions, not the government, paid unemployment benefits. In the 1970s and 1980s, unemployment rates remained high, while those without jobs got good incomes. The arrangements became too expensive and were reformed in the 1990s. The new approach is sometimes called the “Golden Triangle,” because it added both generous unemployment benefits and active labor market programs to flexible hiring and firing laws.

- The first component, flexibility of firing and hiring, remained practically unchanged. The OECD employment protection legislation

index for Denmark fell from 2.4 in 1983 to 1.5 in 2009; the OECD average is 1.9. Relatively flexible laws work in Denmark because the country has a history of self-regulation by employers and unions, going back to the “September Compromise” of 1899, which set rules for resolving labor disputes.

- The second part of the Danish model is unemployment insurance financed from contributions and taxes. Membership is voluntary, but it covers around 80 percent of the labor force. Benefits last up to four years, and replacement rates cannot exceed 90 percent of wages, capped currently at €2,173 a month. After four years of benefits, recipients have to switch to social assistance, which means a reduction of between 20 and 40 percent of their benefit income (Andersen and Svarer 2007).
- The new system uses active labor market programs like job search assistance and training to nudge the unemployed back to work. The spending on these programs is sizable: out of €13 billion spent on labor market programs in 2010, about 75 percent was on active instruments.

How well does flexicurity work? The unemployment rate dropped from 10 percent in 1993 to 3.3 percent in 2008. The incidence of long-term unemployment (being out of work

for more than a year) decreased from a third of total unemployment in 1994 to a tenth in 2009. Despite liberal firing and hiring practices, employment has not fluctuated too much in response to output variability. All this is good.

There are some qualifications. First, though official unemployment has fallen, there is a gap between actual unemployment (adding up the unemployed, those in “activation,” and early retirees) and official statistics. Second, it is difficult to assess how much of the fall in unemployment is due to flexicurity on its own. Economic performance matters too: active labor policies are useless if the economy is not producing jobs. Finally, the already high fiscal burden can become enormous in a protracted slowdown. The Danish model costs 4.5 percent of GDP in terms of active and passive labor market measures. And Denmark spent 2.6 percent of GDP for labor market programs in 2008 (a good year), compared with 1.4 percent for the OECD as a whole, 1.5 for Sweden, 2.2 for Finland, and 2.3 in the Netherlands. The Danes have flexicurity because of their history and can afford it in part due to high participation rates of 81 percent; the OECD average in 2009 was 71 percent. Those wishing to learn from the Danes should note this.

Source: Andersen and Svarer 2007; Bredgaard and Larsen 2007; Hansen 2010; OECD 2010.

Minimum wages are also negatively correlated with participation rates. This appears counterintuitive: the prospect of a higher wage should entice people into the market, not keep them out. But workers priced out of jobs as a result of minimum wages might be discouraged from further participating in the labor market—especially younger people and women. The minimum wage is also associated with higher unemployment rates—especially long-term unemployment rates—and lower employment rates.

Unionization is positively associated with participation in the labor market and employment rates, and seems to reduce long-term unemployment (in the European Union). Spending on active labor market programs is associated with higher rates of participation, lower unemployment rates, and higher employment rates. The relationship between the generosity of passive labor market programs and labor market outcomes appears more complex: while generosity tends to increase participation in Europe, it appears to have the opposite effect in non-European OECD countries. The generosity of unemployment benefits is also associated with lower unemployment and higher employment in Europe.<sup>21</sup>

#### Box 6.4: Germany's Hartz reforms: modernizing social welfare and unemployment benefits

Germany experienced high unemployment rates of almost 10 percent between 1993 and 2004. By contrast, U.S. unemployment was about 5 percent. By 2004, almost 4.5 million Germans were unemployed according to the Federal Labor Agency. Less-skilled and older workers had higher unemployment rates; vocational school graduates and high school dropouts had unemployment rates of about 18 percent.

In February 2002, a commission suggested ways to modernize the labor market. Volkswagen's personnel director Peter Hartz headed the commission, which comprised business executives, trade unionists, politicians, and scientists. No economists were invited to join.

The commission proposed a three-part reform strategy: improve employment services and active labor market programs, reform unemployment and social assistance benefit programs, and foster employment by deregulating the labor market.

The reforms were implemented between 2003 and 2005. They modernized public employment services and social welfare centers, modified existing active labor programs, and introduced new active labor programs. The reforms changed the institutional and legal framework for the rights and responsibilities of the unemployed and the beneficiaries of social assistance. Employment protection was reduced for parts of the labor market.

- Public employment services and social welfare centers adopted results-based accountability and outsourced services through competition between public and private providers. Employment offices were (partly) merged with social welfare units and converted into centers that provided job search assistance, social services, and benefit payments.
- Unemployment and social benefit levels and duration were reduced. Eligibility for subsistence allowances was changed according to a person's ability to work rather than previous history of contributions. Benefits were cut if recipients did not meet their responsibilities.
- Wage subsidies and start-up grants were provided to entrepreneurs. Jobs with reduced social security contributions were introduced ("midi-jobs"), and the regulations for jobs exempt from such contributions were reformed ("mini-jobs"). The objective was to lower the cost of hiring low-skilled workers.

Between January and October 2006, the number of claimants in jobs requiring social insurance contributions rose 47 percent. The number of claimants working part-time grew 30 percent, and the number in marginal employment ("mini-jobs") rose 14 percent. Workers who had survived on low wages without income support could now supplement their incomes with Hartz IV benefits. The reform of temporary work regulations increased employment in fixed-term jobs after

the reform. But evaluations have found limited impact on mini-jobs.

The Hartz reforms helped reduce unemployment. Despite the crisis, Germany's unemployment rate today is about 7.5 percent, lower than the U.S. rate of more than 8.5 percent. Many of the newly introduced part-time and temporary jobs have served as a bridge to regular jobs. But the reforms might also have reduced the income of low-wage earners, which has declined 16–22 percent over the last decade. Net real monthly income of workers in mini-jobs declined from €270 in 2000 to €211 in 2010, while income of workers in midi-jobs declined from €835 to €705. This is mainly due to an increase in the number of people in temporary work and part-time jobs.

The reforms raise several questions. First, given the difficulty of comprehensive labor reforms, does a partial liberalization targeted at some groups or sectors work? Second, do allowances in the labor code for more flexible forms of employment lead to a "two-tier" market and a legally sanctioned underclass of workers? Third, do flexible and temporary forms of employment serve as a step toward advancement, or are people who enter through a midi- or mini-job experience scarred in ways that limit their future options? Germany's experience appears to be promising, but these doubts will be raised in countries that try to adopt strategies similar to the one proposed by the Hartz Commission.

Source: Zimmermann 2007; Goethe Institut (2007); Goebel and Grabka (2011).

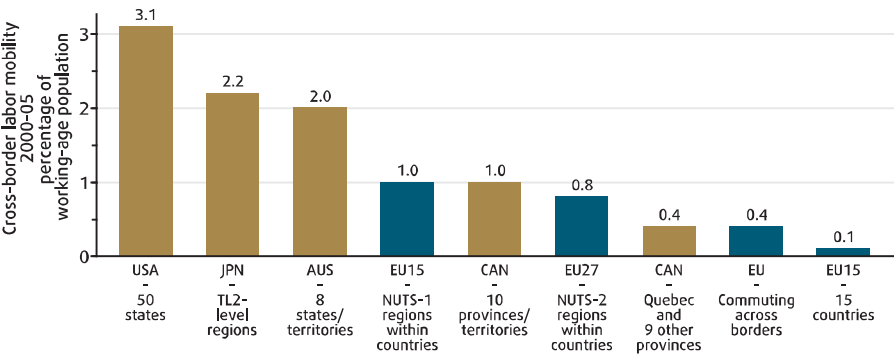
When it comes to untaxed and unregulated work in the “shadow economy,” World Bank (2011a) found that when taking a country’s development into account, EPL is associated with larger shares of shadow economy in GDP and greater labor informality. In the southern members of the European Union, where EPL is the most restrictive, all but the highest educated new entrants to the labor market are restricted to part-time and informal work.

The need to keep EPL sensible is at the core of Denmark’s “flexicurity” model, which shifts protection away from jobs to the incomes of people who lose employment, with efforts to get them back to work through training, job-search assistance, and help with starting businesses (box 6.3). These “active” intervention measures seem to improve performance and lower informal employment in OECD member countries and Northern and Western EU member countries. Active programs also lower informal self-employment (Hazans 2011b; World Bank 2011a). Germany has been getting attention for its attempts to liberalize a section of its labor market and to motivate people with strong incentives to remain idle (people supported by unemployment and social assistance benefits; box 6.4). Although Germany’s approach may be all that can realistically be achieved given the controversial nature of labor market reform, it has raised questions about the sustainability and welfare of what could be a working “underclass” in jobs with less protection and even lower wages, which are still subsidizing a relatively privileged class of tenured workers.

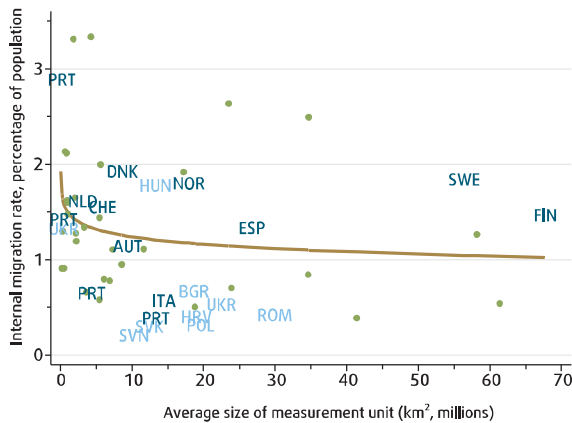
### Labor mobility—the freedom forgone

There are many reasons why labor mobility matters for productivity and growth. A country with a more mobile labor force uses available resources more effectively and is more likely to better match its human capital to other factors—both those that are more fluid such as capital, and those that do not move at all such as land. Recent work indicates that labor mobility is critical for social cohesion and the improvement of welfare in lagging regions.<sup>22</sup> When people move, they create links between places where economic activity is densely concentrated and those where it is not. These links become channels for resources that flow back to peoples’ places of origin in the form of know-how and remittances, sustain the welfare of family members left behind, and

**Figure 6.28: Europeans are less mobile**  
(labor mobility, share of working age population that has moved, 2000-05)



Source: Bonin and others 2008; and OECD 2005 and 2007.



Note: Countries display differing internal migration rates, depending on the size of the unit of measurement. For example, internal migration measured at the village level (movements from one village to another) is much higher than migration measured across larger geographic areas, like districts or regions. The line represents the log trend.

Source: World Bank staff calculations, based on Bell and Muhidin 2009; Eurostat; U.S. Census Bureau; and State Statistics Committee of Ukraine.

**Figure 6.29: Europeans—especially in the east—are less internally mobile**

(internal migration, percentage of population, by size of area)

lead to investments in locally appropriate enterprises. A mobile labor force can better adjust to shocks, and recover more quickly. Given the demographic outlook and the decline in the working-age population, increased labor mobility will be needed in Europe. And there is a lot of room for it.

## Europeans are less mobile

The European Union is the most integrated region in the world, and accordingly, migration between EU countries is higher than in other world regions. Europe's aspiration, however, is more ambitious: a fully integrated labor market. Against this yardstick, Europe still falls short. By most measures, these differences are particularly great between the European Union and the United States (Ester and Krieger 2007, Eurofound 2006 and 2007, using Eurobarometer data 2005; figure 6.28). In the former EU15, prior to enlargement in 2004 and 2007, only about 1 percent of the working-age population changed its country of residence in a given year. By contrast, until recently about 3 percent of the working-age population in the United States moved to a different state in a given year. In Australia, this figure is 2 percent; in Canada, slightly less than 2 percent. Even in Russia, with its history of restrictions on peoples' movement, mobility is 1.7 percent.

With a common language and fewer institutional differences, people in Australia, Canada, and the United States can move with greater ease than Europeans. Measures of movement between territories (at the Nomenclature of Territorial Units for Statistics 2 level) within EU countries change the picture considerably: about 21 percent of the EU population has lived in a territory or country other than where they were born. But even by this measure, labor mobility is still below that of the United States, where 32 percent of the population lives outside the state they were born in.<sup>23</sup> About 2 percent of the

EU labor force was born in a member state different from their current state of residence; approximately 4 percent of the EU population have lived in another EU country at some point in their life; and 3 percent have lived in a country outside the European Union (Eurofound 2006).

Internal mobility is difficult to compare across countries because its measurement depends on the size of the measurement unit. If the measurement unit is small—for example, the municipality—the corresponding internal migration rate will be high, because many more people move across municipalities than between provinces. Plotting the average size of the unit of measurement (like region or district) against the corresponding internal migration rate controls for the size of administrative units (figure 6.29). Applying a log trend, the exercise reveals that many European countries, especially the transition economies, have low labor mobility.

**Table 6.2: Internationally, the Irish are the most mobile Europeans**

(percentage of population, by type of mobility)

	Local move	Move in country	Move inside the European Union
Ireland	44.5	18.8	14.5
Luxembourg	53.8	19.4	13.2
Cyprus	47.8	17.2	8.1
Denmark	62.6	36.2	7.5
Sweden	65.9	41.8	7.1
United Kingdom <sup>a</sup>	52.3	23.7	6.6
Finland	64.5	34.7	5.1
Germany	59.4	18.1	4.9
Belgium	59.6	13.0	4.5
Spain	46.6	9.9	4.5
Greece	34.7	16.4	4.4
Netherlands	55.0	21.6	4.4
Portugal	41.7	8.6	4.2
Austria	54.1	9.4	3.4
Malta	27.6	6.2	2.7
France	58.2	28.8	2.6
Latvia	44.2	22.5	2.0
Czech Republic	41.9	8.2	1.6
Italy	43.8	7.9	1.6
Slovenia	38.2	9.6	1.6
Slovak Republic	34.2	5.8	1.4
Estonia	50.5	23.4	1.1
Poland	40.6	7.1	1.0
Hungary	47.5	9.9	0.7
Latvia	57.4	7.4	0.7

a. Includes Northern Ireland.

Note: The table shows weighted averages. Multiple answers allowed.

Source: Bonin and others 2008.

But lower labor mobility within a single market could reflect the smaller size of countries and shorter distances between centers of economic activity. Why move when you can commute? In a 2008 report on labor mobility in Europe, the Institute for the Study of Labor adopted a broad definition of geographic mobility that included not only changes of residency within countries and across borders but also cross-border and regional commuting (Bonin and others 2008, using the European Labor Force Survey). The report showed that even by the broader definition, between 2000 and 2005, workers' mobility within the European Union was barely 1 percent each year and that the movement of people in Europe was still lower than mobility across Australian (2 percent) and U.S. (3 percent) states.

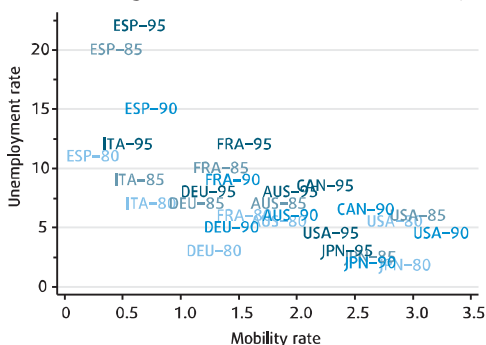
The Institute for the Study of Labor report also showed that in the EU15, the share of the active working-age, foreign-born population from an EU27 country increased during the previous decade. Spain had the largest increase, followed by Greece, Denmark, Portugal, Sweden, Ireland, the United Kingdom, and Austria. Among the newer member states, those with the highest initial share of foreign-born people (Latvia and Estonia) showed a decline over time. In most EU15 countries, foreign nationals from another EU15 country comprise only a small share of foreign nationals. An exception can be found in the United Kingdom: the largest nonnative resident minority group in London is from France.

These statistics present a paradox. The movement of people within the European Union is one of the Four Freedoms, and probably the one that comes most immediately to the average European's mind when asked why the European Union is important. The Eurobarometer survey in 2005 showed that European citizens view geographical mobility positively (table 6.2). Yet, a large majority (almost 70 percent) had no intention of moving in the near future.

This may be changing. The same survey showed that mobile Europeans are younger and have higher levels of education than those who have no intention of moving. In these respects, they are similar to mobile people in many countries, both wealthy and poor (Mansoor and Quillin 2006). Students in Europe are among the most mobile, enthusiastically taking advantage of such cross-border education programs as Erasmus. For many, these programs lead to longer-term resettlement

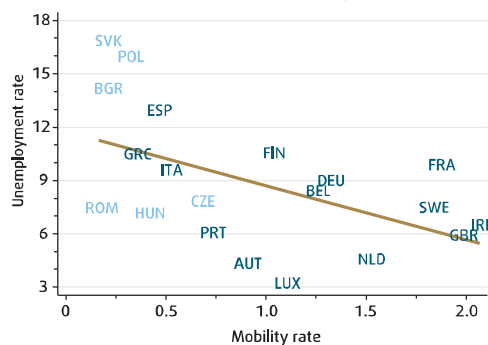
**Figure 6.30: Low labor mobility can keep unemployment high**

(labor mobility and unemployment rates in the nine largest OECD countries, 1980–95)



Source: Hassler and others 2005.

(labor mobility and unemployment rates in EU member states, 1995–2006)



Source: World Bank staff calculations, based on Bonin and others 2008; and Eurostat.

for employment. Recent statistics show an increase in mobility. In 2008, about 2.3 percent of EU citizens (11.3 million people) resided in a member state other than their citizen state, according to the European Commission.<sup>24</sup> That number has grown more than 40 percent since 2001.

A lack of movement is often blamed for high unemployment rates in areas that lag and for labor shortages that drive up wages in places that lead. This negative correlation between mobility and unemployment is apparent in data from selected OECD countries for 1980 to 1995 (Hassler and others 2005; figure 6.30). Labor markets can respond differently to shocks, often resulting in differences in the impact on jobs across areas. Adjustment to regional shocks in Europe has been achieved more through unemployment rates and changes in labor force participation (people stop looking for work if a region goes into economic decay) and less through mobility of labor.<sup>25</sup> By contrast, in the United States, labor mobility leads to greater agility in responding to differences in wages and job opportunities across states, reducing disparities in unemployment rates and real wages.

**Table 6.3: Not a single market for new members**

(EU15 restrictions on workers from newer member states)

	Entry of EU8 workers		Entry of workers from Bulgaria and Romania <sup>a</sup>
	May 2004 to April 2006	May 2006 to April 2009	2007–08
Austria	Restricted	Restricted	Restricted
Belgium	Restricted	Restricted	Restricted
Denmark	Restricted	Restricted	Restricted
Finland	Restricted	Open	Open
France	Restricted	Restricted <sup>b</sup>	Restricted <sup>b</sup>
Germany	Restricted	Restricted	Restricted
Greece	Restricted	Open	Restricted
Ireland	Open	Open	Restricted
Italy	Restricted	Open <sup>c</sup>	Restricted <sup>d</sup>
Luxembourg	Restricted	Restricted	Restricted
Netherlands	Restricted	Open <sup>e</sup>	Restricted
Portugal	Restricted	Open	Restricted
Spain	Restricted	Open	Restricted
Sweden	Open	Open	Open
United Kingdom	Open	Open	Restricted

a. Bulgarian and Romanian workers also face restrictions in Hungary and Malta.

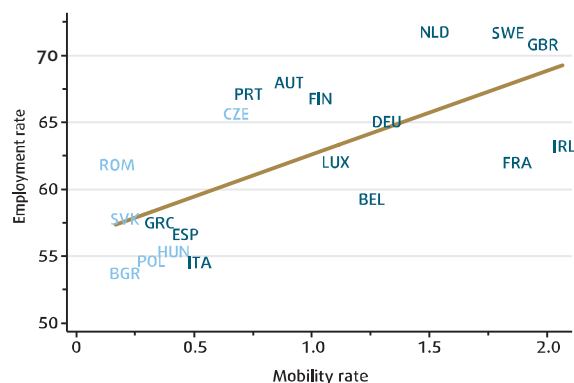
b. Except for health care, transport, construction, hotels, and catering.

c. Since July 2006.

d. Procedures for obtaining work permits are simplified in certain sectors.

e. Since May 2007. Between May 2006 and April 2007, the Dutch labor market was open to EU8 workers in a large number of sectors.

Source: OECD 2007.



**Figure 6.31: Greater labor mobility is associated with higher rates of employment in Europe**

(correlation between labor mobility rate  $\bar{x}$  average 1996–2006, horizontal axis and employment rate  $\bar{y}$  average 1996–2006, vertical axis; selected European countries: coefficient 0.677)

Note: Labor mobility is the share of the population that moved from one region (Nomenclature of Units for Territorial Statistics level 2) to another within a given year.

Source: World Bank staff calculations, based on Bonin and others 2008; and Eurostat.

But does a mobile labor force really make much of a difference for a country's economic prospects? Policymakers are aware of statistics showing the relative immobility of Europeans and eager to know what they can do about it. The phased withdrawal of restrictions on the movement of people from the newest member states of the European Union will bring a gradual disappearance of an obvious obstacle. Yet people from the newer member states still face explicit barriers to mobility within the European Union (table 6.3).<sup>26</sup> Lessons from how different EU15 members have managed this aspect of enlargement are still being absorbed, but evidence from movements since 2004 and in reaction to the crisis indicate that the member states that embraced newcomers from the newest member countries have benefited.

Looking beyond adjustment to shocks and recovery from the recession, a growing literature provides evidence that internal labor mobility tends to have positive effects on countries' productivity and growth. For example, without mobile labor, the growth rate of the United States would likely have been only half of what it actually has been (Rutkowski 2010). In Canada, the movement of people across provinces contributed to economic growth (Sharpe, Arsenault, and Ershov 2007). Due to the high volume of movement from low-productivity eastern provinces to high-productivity western provinces, Canada benefited from a huge boost to economic growth in 2006. Net output gains arising from interprovincial movement are estimated to be 0.074 percent of GDP in constant 1997 prices and 0.137 percent of GDP in current prices. Interprovincial movement accounted for 1.56 percent of trend labor productivity growth in Canada over 1987–2006 and 6.23 percent of actual labor productivity growth in 2006 (Sharpe, Arsenault, and Ershov 2007).

Further, countries with higher labor mobility have better-performing labor markets and higher rates of employment. For instance, the three European countries that have reached the Lisbon employment targets—the Netherlands, Sweden, and the United Kingdom—all have labor mobility rates in the top quartile (figure 6.31). Conversely, countries with the highest dispersion in employment rates across their territories (Italy, Spain, Hungary, and the Slovak Republic) have mobility rates below the European average.<sup>27</sup>

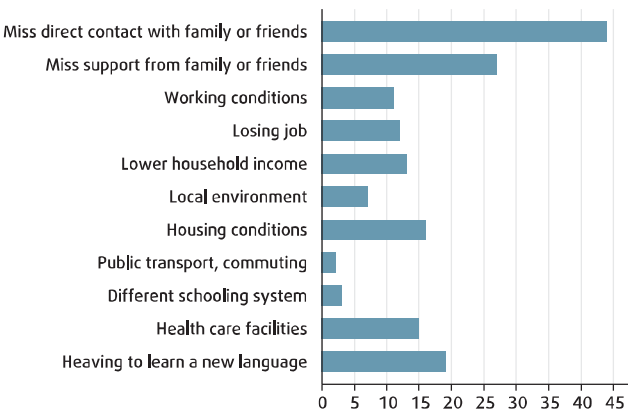


Researchers have been trying to identify the impediments to mobility in economic areas where labor is legally free to move. Language and cultural barriers obviously play a role (OECD 2007). But putting language aside, even with a legal right to work in every member state, EU citizens face implicit but powerful deterrents created by differences in rules that determine social insurance coverage, the accrual of occupational pension rights, entitlements to social housing and other forms of assistance, and the recognition of their professional qualifications and previous work experience. Perhaps reflecting the current tough times, as in Europe, local chambers of commerce and professional guilds of U.S. trade associations are starting to erect barriers—even to people offering their services online—in order to restrict movement and thus competition. This strict “rule of license” is an obstacle to movement and faster labor market adjustment. These impediments may be more serious for prime-aged workers than for the young or the retired. As the median age of Europeans increases from 40 years today to nearly 50 by 2050, the mobility imperative will become more pressing.

What keeps Europeans at home

Among the strongest deterrents to greater mobility in Europe are those created by failures in housing markets (figure 6.32). In many European countries, housing is a good that is still exchanged informally on unregulated or poorly regulated markets (Janiak and Wasmer 2008). Rental markets are shallow, rent is expensive, and supply is limited by zoning restrictions. These problems constrain people’s mobility at both their origin and destination: moving can be a costly prospect, made more so by difficulties selling or renting one’s house. Bottlenecks in the housing market are a serious impediment to mobility. Homeowners in Europe are more sluggish to move in response to changing labor market conditions than people who rent their homes (Hughes and McCormick 1985 and 1987; Henley 1998; Gardner, Pierre, and Oswald 2001). The relatively high unemployment rates in some European countries can be explained in part by a large portion of people who are owner-occupiers (Haavio

Figure 6.32: Language, housing, and health care are the main impediments to mobility  
(factors that deter people from moving to another EU country, percent)



Note: Figures are for respondents from the EU25 (EU27 excluding Bulgaria and Romania) who do not intend to move.  
Source: Karppinen, Fernandez, and Krieger 2006.

and Kauppi 2003). The constraints to labor mobility created by failures in the housing market have been documented elsewhere (Mansoor and Quillin 2006) and create powerful deterrents to movement even in countries on the European Union's doorstep (box 6.5).

Another likely culprit preventing Europeans from moving is the relative rigidity of wages and generous pay-out period of unemployment insurance plans. Wage regulation leads to an earnings compression that can mute the signals that the labor market sends from one part of a country to another. If wages are not sufficiently flexible, they can fail to provide incentives for capital to flow into economically lagging regions or for workers to move to economically booming regions. Generous unemployment insurance plans that provide support over long periods can act as a disincentive for workers with industry-specific or place-specific skills to retrain and move. A negative relationship can be shown between the mobility rate and unemployment insurance: on average, high-mobility countries are characterized by low unemployment insurance benefits, while low-

### Box 6.5: Labor mobility is low even in countries in the European neighborhood: the case of Ukraine

Internal mobility in Ukraine is lower than in other countries. Between 2002 and 2009, an average of 1.5 percent of the Ukrainian population moved across rayons (districts), from rural to urban settlements, or between urban settlements. This corresponds to just over 600,000 of Ukraine's 46 million people officially changing their place of residence during the year. During the economic crisis in 2009, internal migration rates actually fell compared with the average in previous years (from 1.5 percent to 1.3 percent when measured across settlements and from 0.6 percent to 0.5 percent when measured across

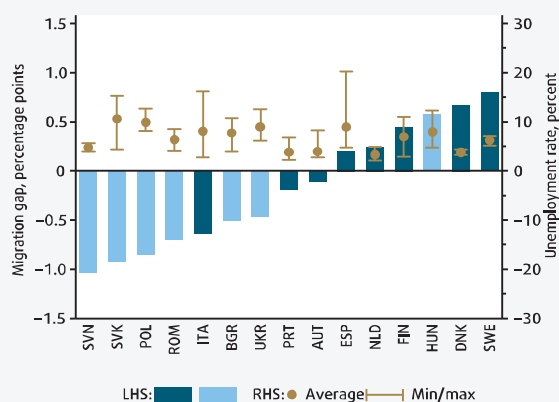
regions). As expected, mobility across regions is lower: the internal migration rate was 0.5 percent in 2009. When compared with that in other countries, Ukrainian internal mobility seems to be about 0.5 percentage points below its expected value.

At the same time, labor market disparities in unemployment rates and average wages are high and persistent (box figure 1). This suggests that the Ukrainian population is not responding to economic opportunities outside their current place of residence. Instead, Ukrainians are moving to where there are

better services (such as schools and clinics) and infrastructure (such as housing)—the “push factors.” This could indicate that there are barriers to internal mobility that limit people's ability to respond to economic incentives and to move to where higher returns to labor and human capital exist: for example, lack of affordable housing where jobs are, even after accounting for higher average earnings in these prosperous places. Cross-country evidence suggests that countries with higher labor mobility—notably the Nordic countries—also have lower spatial disparities in unemployment rates.

### Box figure 1: Migration gap and dispersion of unemployment rates

(average, minimum, and maximum across regions for various countries in various years)



Note: The migration gap measures the distance between the expected internal migration rates based on the actual migration rate. Most countries refer to 2007, except Italy (2005), Portugal (2001), and Ukraine (2009).

Source: World Bank 2011d, based on Eurostat; and State Statistics Committee of Ukraine.

mobility countries have the most generous unemployment insurance plans (Hassler and others 2005).

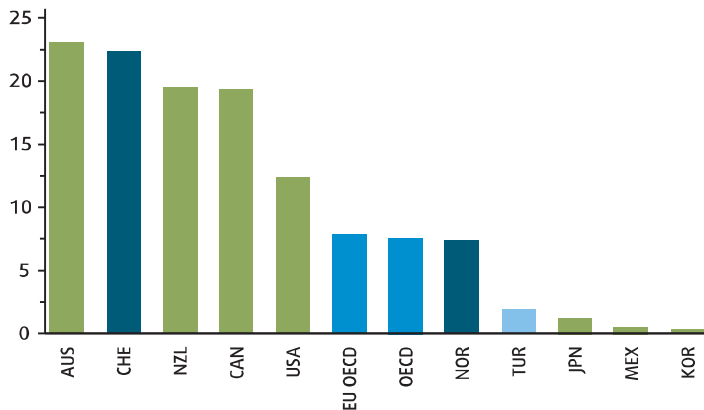
Higher structural unemployment in many European countries also deters the movement of labor. Although differences in unemployment rates between the lagging and leading parts of a country should encourage movement, a high overall national unemployment rate will discourage people from taking the risk. Unemployed workers will probably not want to pay the cost of moving to more dynamic parts of their country if they would still face the high likelihood of not finding a job.<sup>28</sup>

The lack of portable social benefits—such as pensions, health care, and social assistance—might also constrain the mobility of labor between EU countries. EU legislation grants portability of such benefits at a level not found in any other region of the world. In principle, the most important benefits (for example, public pension and health benefits) are fully portable within the European Union and, to some extent, with countries outside the European Union. Nevertheless, important challenges remain.<sup>29</sup> First, the administration of portability can be burdensome for intra-EU migrants. For example, old-age pensions are not paid as a single benefit, but by each pension insurance fund separately. The determination of separate pensions, taking into account contribution periods from different member states, is complex and opaque. Second, legislation on portability does not apply to occupational benefits, so moving might lead to considerable losses. Third, social assistance benefits are excluded from portability; the lack of a Europe-wide social safety net could also act as a barrier to intra-EU mobility.

Finally, some EU policies may inadvertently be keeping Europeans immobile. The free flow of trade in goods and foreign direct investment across the single market might reduce the need for labor to move. Trade flows react more elastically than people, and capital is far more mobile. Trade in goods—particularly intermediate goods—along with capital transfers could make the movement of labor to other economic areas less important. This is a “good reason” for lower labor mobility in Europe, especially in the European Union. But other policies may not be so benign. European agriculture and cohesion policies and investments from regional and structural funds could be creating disincentives for mobility. Regional development policy instruments pour investment into economically lagging areas, sometimes with the stated objective of fostering job creation to retain young and qualified workers. Although the track record of these policies is mixed at best, to the extent that they deter movement of people at the margin, they obviate the need for European workers to move to where job opportunities are better and more durable.

## Losing the global race for talent

There is a looming labor force deficit in Europe’s immediate future, and it is unlikely to disappear even if more people work, work longer, and become more productive. The aging of the European labor force cannot be prevented, not even under the most favorable scenario. In its annual report to the European Parliament, the European Commission pointed out that the population of the European Union will rise to 521 million in 2035 but then fall to 506 million



**Figure 6.33: European countries host fewer immigrants than other OECD countries**

(percentage of the population that is foreign-born, various OECD member countries)

Source: OECD 2008.

by 2060. In 2010, there were 3.5 people of working age (20–64 years) for every person age 65 or older. In 2060, there will be half as many (European Commission 2011).

## Europe will need immigrants

The European Commission's report shows that immigration from outside the single market and even from far beyond the European neighborhood countries will be the main driver of population change in the European Union. In 2009, net immigration to the European Union was 857,000 people, contributing to 63 percent of total population growth. At the start of 2003, the number of third-country nationals in the EU25 was 16.2 million, or 3.6 percent of the population. But by 2010, 20.2 million non-EU27 citizens were living in the European Union (4 percent of the total population). The European Commission noted that foreign citizens living in the EU27 were significantly younger (median age of 34.4 years) than the population of EU27 nationals (median age of 41.5 years). For this reason, immigrants are likely to help close the demographic deficit and meet the quickly rising costs of population aging.

People have been crossing seas, mountains, rivers, and political borders into, out of, and throughout Europe for centuries. During the first great period of globalization in the late nineteenth century, right up to the interwar period, Europe sent large waves of people to the Americas, Africa, and the Antipodes. Postwar immigration to Europe on a mass scale is a recent phenomenon, with roots in the guest-worker programs that became common in the late 1950s and early 1960s to help sustain the fast pace of Europe's Golden Age (Maselnik 2010).

Between 1950 and 1990, the resident foreign-born population in the EU15 grew more than fourfold, from 3.8 million (1.7 percent of the population) to 16 million (4.5 percent). Between 2005 and 2009, the resident foreign-born population increased on average by 1.6 to 2 million immigrants each year, and accounted for approximately 80 percent of the overall population growth. During this period, only 20 percent of the population increase in the EU27 could be attributed to natural growth (live births minus deaths). Ironically, the countries that lead the statistics of recorded live births are all also the largest immigrant destinations in the EU27: France, the Netherlands, Spain, and the United Kingdom.

**Table 6.4: The wealthier countries in Europe attract fewer high-skilled immigrants than countries in North America**

(immigrants with a tertiary diploma in selected OECD countries by country of origin, total and recent immigrants in thousands, circa 2000)

The conclusion that one could draw is that before 2030 the European Union will experience a decrease of young (and semiskilled) workers with secondary education (Koettl 2009). The question addressed in this section is whether current European immigration policies can accommodate these needs or whether the policies need to be changed.

Current immigration policies in Europe and other OECD countries provide some answers. Of particular interest are the lessons drawn from the four "Traditional Immigration Countries": Australia, Canada, New Zealand, and the United States (figure 6.33). To attract the right types of immigrants in the future, European policies will need to be more proactive in selecting immigrants and preferably will rest on strong, demand-driven mechanisms that respond quickly to shifting economic and labor market needs. If Europe does not adjust its policies, it risks labor shortages in the future.

Origin	Total Residence						
	United States	EU15	Other EU OECD	Australia	Canada	New Zealand	Other OECD
United States		-972	-178	-9	-219	-6	-665
EU15	972		-301	241	443	44	71
Other EU OECD	178	301		21	95	1	18
Australia	9	-241	-21		-1	-50	-11
Canada	219	-443	-95	1		-2	-30
New Zealand	6	-44	-1	50	2		-1
Other OECD	665	-71	-18	11	30	1	
Other countries	5,763	3,275	139	458	1,261	72	444
Net OECD	2,048	-1,469	-614	314	350	-12	-618
Net total	7,811	1,807	-475	772	1,611	60	-174

Origin	Less than five years of residence Destination						
	United States	EU15	Other EU OECD	Australia	Canada	New Zealand	Other OECD
United States		-154	-23	-5	-63	-1	-188
EU15	154		-14	25	15	7	29
Other EU OECD	23	14		1	5	0	4
Australia	5	-25	-1		-2	-12	-5
Canada	63	-15	-5	2		0	-7
New Zealand	1	-7	0	12	0		-1
Other OECD	188	-29	-4	5	7	1	
Other countries	1,211	412	7	114	334	29	38
Net OECD	435	-215	-47	40	-37	-6	-169
Net total	1,646	351	-18	158	360	25	58

Source: OECD 2008.

## Europe's immigrants are mostly unskilled

Relative to other popular OECD destination countries, EU countries mainly attract low-skilled immigrants—those with at most primary education—in stark contrast to the Traditional Immigration Countries, which attract much lower shares of primary-educated migrants and far higher shares of tertiary-educated migrants. Migration outcomes occur on many dimensions, just as migration policies take effect through a wide range of institutions. It can thus be helpful to distinguish immigrants by their motivation to migrate, their legal status, their duration of stay, and their education and skills. With regard to government policies, the framework of an analysis will distinguish between policies with a direct effect on the size and composition of migrant flows and stocks, like immigration rules, and policies with indirect effects, like social policies, labor market policies, and integration policies.

The limited data currently available on the educational attainment of immigrant populations suggest that the 49 percent of the EU25+ immigrant population originating from outside the EU25+ are primary-educated, while only 25 percent have secondary education, and 21 percent have tertiary education (table 6.4).

### Box 6.6: Beyond the white cliffs: immigration to the United Kingdom

The United Kingdom is a major destination for immigrants in Europe, especially the highly educated. Among European countries, the United Kingdom enjoyed the third-highest inflow of permanent immigrants, amounting to 347,000 people in 2008—the foreign-born accounted for 10.8 percent of the British population—and attracted the second-highest number of permanent highly skilled immigrants seeking employment (box figure 1). The United Kingdom was one of the few countries that did not impose any restrictions on labor from the newest member states of the European Union and is one of the hotspots for international students, hosting on average 132,700 international students between 2003 and 2008.

The strength of the United Kingdom's policy

orientation toward immigration is that it favors people who want to come to work. The employment rate among immigrants was 80 percent, 5 percentage points above the OECD average. According to estimates by the British Treasury, immigrants grew the working-age population by 0.5 percent a year between 2001 and 2006 and GDP by around £6 billion in 2006.

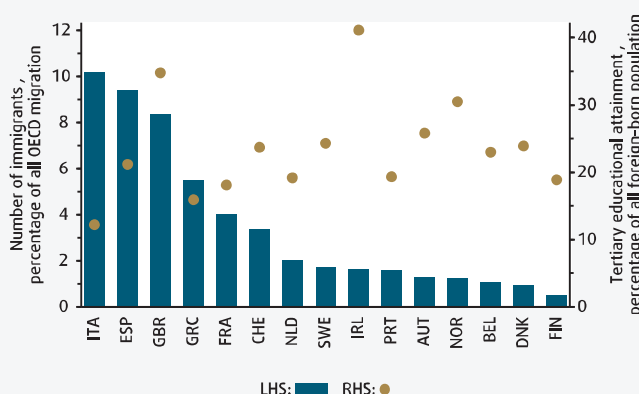
Due to a large volume of immigrants since 2004, and to mitigate a possible threat to social cohesion, the United Kingdom introduced a points-based system, focusing more on the quality of immigrants than the quantity. The new system consists of five tiers, tier 1 for highly skilled migrants, tier 2 for skilled workers required in certain sectors, tier 3 for low-skilled workers, tier 4 for

students, and tier 5 for tourists, athletes, and musicians. A special cap of 21,700 for 2011–12 non-EU work visas was introduced, limiting the number of economic immigrants per year. However, immigrants who are earning more than £150,000 were excluded from the cap.

There have also been problems related to integration of immigrants. According to Huddleston and Niessen (2011), British immigration policies are less favorable toward integration, to some extent due to the fact that immigrants are excluded from some social benefits. But the strong points of the British immigration policy are: education, with a well-tailored living-in-diversity training, and anti-discrimination regulation. The weakest element is the difficulty in obtaining permanent residence and nationality.

**Box figure 1: Immigrants in OECD countries and share of foreign-born with tertiary education, 2008**

Source: OECD 2008; and OECD International Migration Database.



By contrast, the Traditional Immigration Countries have much higher shares of tertiary-educated migrants. About 40 percent of immigrants to Australia, New Zealand, and the United States have a tertiary education. Accordingly, their shares of primary-educated migrants are fairly low (16–30 percent). The range for secondary-educated migrants is wider, from 12 percent in Canada to 35 percent in the United States.

Looking only at immigrants originating from the Middle East and North Africa, the outcomes for Europe appear worse. Almost two-thirds of the 2.5 million migrants from the Middle East and North Africa residing in the European Union have only a primary education, while those with secondary or tertiary education each comprise 17 percent. Again, the Traditional Immigration Countries attract much higher shares of tertiary- and secondary-educated migrants from the same Middle East and North Africa countries.

These statistics show the obvious importance of geographical distance in determining the composition of immigration flows. Europe attracts a high share of low-skilled migrants from the southern Mediterranean, just as the United States attracts a relatively higher share of low-skilled migrants from Central America. Of migrants from Central America in the United States, 46 percent

Box 6.7: The smarter North Americans? Immigration to Canada

Canada has one of the highest percentages of immigrants among developed countries, with highly favorable policies toward immigrants’ integration. In 2008, Canada’s foreign-born labor force accounted for 21.2 percent of total employment. Moreover, one in five people living in Canada was foreign-born. Between 15 and 20 percent of foreign students remain in Canada and start working.

According to MIPEX III, Canadian policies toward immigrants’ integration are very favorable, ranking third. This high ranking pays dividends in the form of immigrants with top-notch skills. Canada has the second-highest share of immigrants with tertiary education among all OECD countries (box figure 1). In

drawing foreign talent, Canada relies on a well-managed selection process. With its scoring system of visa applications, Canada prioritizes certain features of the labor force that are crucial for the country’s development. Canada chooses whom to grant visas based on a system that ranks candidates according to their profile—having a job offer or tertiary education, for example, grants additional points. Highly skilled, talented immigrants without a job offer can be admitted to the country.

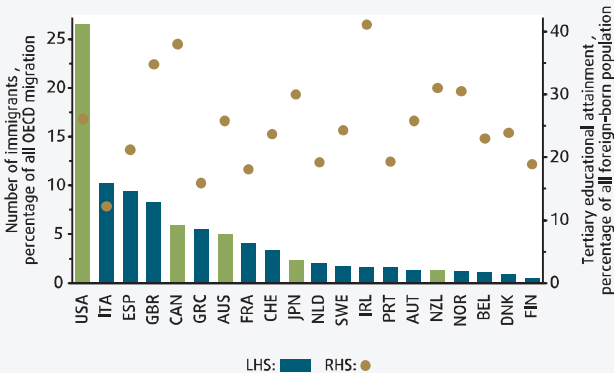
The Canadian system is designed to treat all immigrants equally, regardless of ethnicity, race, religion, or nationality. Permanent immigrants have the same access-to-work

opportunities as Canadian citizens, including setting up a business. Immigration policy provides stable solutions for fostering family reunion.

Another aspect of integration policy is universal access to education for all children, regardless of immigration status. Political participation is one of the few aspects of life from which permanent immigrants are excluded. To become a citizen, one must pass a citizenship test, which measures language abilities and basic knowledge about the country. According to MIPEX, Canada has one of the most professional citizenship tests from all countries included in the ranking

Box figure 1: Immigrants in OECD countries and share of foreign-born with tertiary education, 2008

Source: OECD 2008; and OECD International Migration Database.



have just a primary education, compared with 23 percent of the overall immigrant population of the United States. If, in addition, the host country relies mainly on family reunification as its immigration policy—as the European Union does—and does not apply proactive economic immigration programs—as in the United States—the share of primary-educated migrants originating from these countries is likely to remain high.

Europe is losing the competition for highly skilled migrants to the Traditional Immigration Countries. The exception is perhaps the United Kingdom (box 6.6). Indeed, the European Union is losing some of its most skilled people to the United States. Currently, the United States hosts 1.7 million tertiary-educated migrants from the European Union, while the European Union hosts roughly 200,000 tertiary-educated U.S. emigrants—a net drain of 1.5 million people educated mostly at the expense of European taxpayers.

Does this imply that the European Union should copy the Traditional Immigration Countries' policies of large-scale permanent immigration programs and, in particular, systems like Canada's, which seems to attract by far the highest share of tertiary-educated migrants (box 6.7)? Should the European Union imitate demand-driven temporary worker programs for specialized migrants like those in the United States, which seems to attract the highest share of secondary-educated migrants? Or is there a genuinely European guest-worker program that will help master future challenges of migration? It appears that countries in Europe will have to adopt some of the attributes of more successful immigration policies, both in and outside Europe.

### **Needed: a more self-interested immigration policy**

When assessing the effects of institutional arrangements on immigration, it is useful to distinguish between types of migration. First, one can distinguish migration according to the intended duration of stay: temporary, transitional, or permanent. Temporary and permanent immigration are straightforward concepts. Temporary migrants arrive in the host country with no intention to stay long-term, leaving after a short period of time once their work contract or assignment expires, their education or training has finished, or their business objective is accomplished. Permanent migrants, by contrast, arrive in the host country to settle indefinitely, with no intention to return to their home country.

In reality, a large part of migrants fall somewhere in between, in the category of transitional migrants. These are migrants who arrive on temporary visas and work permits with no intention to stay permanently but eventually become long-term or permanent settlers. Many migrants who arrived in Europe through the guest-worker programs of the 1960s in Austria, France, and Germany probably never imagined they would stay on. Yet, as they performed inherently permanent jobs they integrated into the labor market and developed nation-specific expertise. They evolved into permanent migrants, generally with the support of their employers and host governments.

One might distinguish between immigrants by their main motivation for moving: humanitarian, family reunification, or economic migration. Family reunification should not be seen separately from good economic management of immigration, as it is essential for the integration of immigrants. If these rules are too generous,



though, family reunification programs can become the driving factor of a country's immigration policy, as has been the case for years in some countries in Europe and even the United States. When family reunification becomes the main driver of immigration policy, it can bias the selection of immigrants. The same holds for humanitarian migration, based on the right to asylum and refugee status. Initiatives to legalize undocumented migrants are a part of many immigration policies, sometimes nearly replacing a proactive immigration policy with purely reactive regularization, as in Spain.

European immigration policies will have to be geared toward Europe's economic and labor market needs, and immigration policies that focus on demand-driven elements may be the best way to do so. Well-designed immigration programs for temporary and transitional migrants are the best models for the "New Immigration Countries" of Europe to select the right types of migrants for their economies.

Demand-driven programs have the advantage of being flexible and reacting quickly to changes in the labor market. They require less research and government planning, putting the administrative burden on employers. The disadvantage is that they need more monitoring of compliance and enforcement efforts by the government. Static models—in particular, points systems for permanent immigration—are less flexible, requiring more capacity to determine labor market needs and ensure a consistent selection process. Successful demand-driven immigration programs for temporary migrants offer jobs of a truly temporary nature, like seasonal jobs in agriculture and tourism. In addition, certain jobs in sectors with a highly competitive goods market can be subcontracted to foreign companies through trade in services, opening the gates for a new type of temporary migration, through Mode 4 of the World Trade Organization's General Agreement on Trade in Services.

Well-designed immigration programs for transitional migrants help identify successful newcomers by granting migrants temporary access to the host country—with full or limited access to the labor market—and offering a clear option for permanent residency and work permission. Three main avenues of transitional migration exist: education-to-residency, business-to-residency, and work-to-residency.

Governments' capacities to assess labor market needs and plan responsive immigration and labor market policies are not limitless. Immigration policies are more likely to be effective if designed to require less government planning (Hopkins 2002). For example, Koettl (2009) finds that Europe will need both highly skilled and semiskilled migrants with secondary education. Yet, all projections—especially long-term forecasts—are uncertain. European economies might develop faster than anticipated toward a more knowledge-based economy, or the flow of highly skilled migrants to other countries might increase. Both scenarios would shift the demand toward tertiary-educated migrants. At the same time, the need for low-skilled service providers might shift demand toward primary-educated migrants, as suggested by the increasing numbers of undocumented migrants.

Planned immigration programs—like well-designed points systems—require the government to assess labor shortages and adjust the selection process of immigrants accordingly, which require resources and time, without a guaranteed good outcome. For example, although Canada's points system attracts the largest

share of tertiary-educated migrants, many end up overqualified for their jobs (Reitz 2011). This suggests that somewhere in the Canadian immigration system, there is a mismatch of supply and demand. The program seems designed to select highly skilled migrants, but the Canadian labor market either does not recognize immigrants' skills or it simply demands less-skilled immigrants. Too many overqualified immigrants can be as distorting as too many underqualified immigrants. Allowing employers more say in the process could help reduce these mismatches.

Points systems can include demand-driven components by granting additional credit to migrants with a job offer, as the Australian system does. This is complemented by a special visa type granted to visitors interested in obtaining a job, making the Australian immigration system more responsive to shifting labor market needs. Nevertheless, the system puts the government in the driver's seat, with all the associated responsibilities and administrative costs this role implies.

The biggest risk of government-controlled selection criteria is that they might fall prey to lobbying efforts. Such efforts could come either from the employers or from native workers. Demand-driven programs, by contrast, are less likely to be influenced by lobbying efforts because they decentralize the decision process, putting the employer in control. If well-designed, they also put the administrative and cost burden on the employer. The U.K. Work Permits program, for example, can issue a visa and work permit within 24 hours of the employer's request—assuming the employer provides adequate documentation. Similarly, the U.S. H1-B visa procedure is initiated and sponsored by the employer for a specific migrant, though the bureaucratic procedures and costs are far more burdensome for the employer. The drawback of employer-driven programs, however, is that they require regulations to prevent employers from abusing the system and to ensure that employers hire migrants only in sectors and skills segments with labor shortages. For this, a so-called "labor market test" is usually administered, requiring the employer to first post the job vacancy for native workers; only after sufficient time has passed with the post unfilled can the employer turn to migrant labor.

Europe can learn from the strengths and weaknesses of the Traditional Immigration Countries' immigration policies. There is no one good program that addresses all the challenges of a well-crafted immigration policy. Points programs, employer-based programs, and General Agreement on Trade in Services Mode 4 programs all have their merits, but they serve different objectives. The underlying principle of a good immigration policy is its ability to respond to changing labor market needs. In this sense, European immigration policy has to become more selfish. But what immigration policies alone can achieve is limited. If Europe wants to win the global race for talent, it will need to make working and living in Europe more attractive for the world's brightest. This can mean paying higher premiums on skills, increasing rewards for risk-taking, and encouraging entrepreneurship.

## The European work model—reworked

The countries covered by this report—members of the European Union, the EFTA countries, the candidate countries, and the Eastern European partnership countries—will lose 50 million workers between now and 2060. Today, the

European labor force—the employed and active job seekers—consists of 323 million people; in 50 years, it will be down to 273 million, a decrease of 15.3 percent. Over the next 20 years, the labor force will lose 15 million workers (5 percent). The largest reduction will happen during the 2030s, when the European labor force is expected to fall an additional 14 million people. The fall will be especially severe for the European Union and EFTA countries. Their labor force will decrease by almost 40 million people (18 percent) over the next 50 years. The other Eastern European countries will not fare much better, with an equally steep decline of 16 percent. The only exception is Turkey, where the labor force is projected to increase by 12 percent until 2060.

The current trends should not be allowed to persist. Many Europeans—especially women, youth, elderly, and some minorities—do not work at all, and they should be encouraged to work. Many Europeans retire too early, and they should work longer. Some unemployed Europeans do not look hard enough for work, and they should be encouraged to look harder. Only with radical policy and behavioral changes could Europe counter the shrinking labor force. Yet, even under such optimistic scenario, Europe would not be able to prevent its labor force from aging. If participation rates in all countries were to converge to those in northern Europe, or the retirement age were to increase by 10 years across the board, the European labor force would actually increase by 2060 (by 5 percent and 2 percent, respectively). If the participation in the labor force of women were to converge to that of men, the labor force would still decrease, but only by 5 percent, as opposed to 15 percent in the baseline scenario. None of these scenarios counteracts, however, the loss of young workers due to continually decreasing younger-age cohorts. Increased migration will also have to be part of the solution. With revamped immigration policies that combine the altruism of a humanitarian stance with the self-interest of an economic approach, Europe can attract bright Africans, Americans, and Asians.

This chapter is perhaps best concluded with simple (but uncomfortable) answers to the questions posed at the start. Is there a European work model? Yes. And it makes Europe less competitive. A central aspect is that European model gives disproportionate power to those with protected jobs—the “insiders”—through employment protection legislation. This approach would have become difficult to sustain even without the onset of rapid aging. With this aging, it is already unsustainable. Countries such as Austria, Denmark, and the Netherlands, which have kept unemployment low and labor force participation high during the last decade, have done so in some measure by reducing this protection. They have made jobs more contestable.

In the context of demographic change, how can Europe achieve a stable, more productive labor force? Countering the decline of the European labor force through increasing participation rates is important but not sufficient. Such measures cannot prevent a substantial aging of the labor force. In addition to immigration, boosting productivity of the labor force through increased investments in human capital is necessary. This requires harnessing the full potential of existing workers by prioritizing investments in the skills that are most relevant for the labor market today, and those that will allow them to adjust to changing labor demands tomorrow. Interventions should focus on overcoming failures in information and quality assurance that lead many people

to make suboptimal skills investments (too few engineers, technicians, and competent managers).

Are employment and social protection practices inhibiting labor participation and efficiency? Yes, by creating powerful insiders with well-protected jobs at the cost of marginalizing others. In the broadest terms, reforms will have to reduce job security while modernizing how income security is provided. In wealthier countries, reduced employment protection can be combined with relatively generous unemployment benefits and social assistance, as long as there are strong incentives and effective assistance programs to return the unemployed to work and to encourage the inactive to participate. Governments capable of administering programs that supplement employment protection legislation with well-designed income support and job search assistance should institute them. But to work well, this “flexicurity” requires high labor force participation rates that are many years away for many in Europe, as well as institutional maturity and fiscal and administrative resources that are out of reach for most. Especially in the east and south, there may be no alternative but to reconsider the extent of employment protection and the generosity of social protection. But all countries should synchronize social insurance for the unemployed with social assistance for the unlucky in order to align incentives for work, as Germany did between 2003 and 2005.

Is Europe taking advantage of the greater potential for labor mobility due to economic integration? Undoubtedly, the European Union is the most integrated region in the world, and migration between EU countries is higher than in other world regions. Europe’s aspiration is, however, more ambitious: the aim is a fully integrated labor market with no borders. Against this yardstick, Europe still falls short. Significant challenges to improving labor mobility, even within European countries, remain. Mobility does come with social costs—missing the support of family and friends—that governments cannot easily reduce. But the costs related to education, housing, and health care can and should be reduced. These are some of the features that make the United States the most mobile economy in the world, and Europe can learn without losing its uniqueness.

How can Europe attract the best and brightest? A million people emigrate to Europe every year, but less than one in five has more than a high school diploma—and three of five do not even have that. Attracting global talent would require looking closer at successful, demand-driven schemes from the Traditional Immigration Countries—Australia, Canada, New Zealand, and the United States. Immigration policies should focus less on political factors such as family reunification, asylum, and human rights and respond more to the demands of employers and longer-term assessments of skill shortages. Changes in immigration policies need to be combined with reforms aimed at making Europe a good place to innovate, start businesses, and reward risks. Similarly, increased immigration without more contestable jobs and reformed social safety nets could undermine the success of immigration reform.

Over the last decade and a half, emerging Europe may have done better than advanced Europe in taking advantage of expanding opportunities for trade, finance, and enterprise. The prospects ahead are bleaker. Demographic shifts threaten Central and Eastern Europe just as much as most countries in Western Europe, which have been reforming labor market policies and can more easily



become attractive destinations for immigrants. The exception is Southern Europe, which has not done well in recent years and is projected to shrink and age over the next decade. Greece, Italy, Portugal, and Spain illustrate most starkly how work is simultaneously the weakest part of the European economic model and one of its most attractive attributes. Changing how the labor market is regulated and replenished will be difficult for politicians, but it is none the less urgent. Nor is it hopeless: countries such as Denmark, Germany, Ireland, and Sweden have shown that the European work model's characteristics can be changed while keeping its character distinctly European.

#### Answers to questions on page 291

- European economies generally have more stringent employment protection and more generous social benefits than their peers in North America and East Asia.
- Increased participation can help stem the decline of the workforce, but more competition for jobs, greater mobility within Europe, and measures to attract global talent will still be necessary.
- Employment protection gives too much power to those with jobs while banishing others to the fringes of the labor market, and generous social benefits weaken the incentives to work.
- Migration among and within countries in Europe is still low, and even intra-EU migration falls short of the European Union's aspiration of a fully integrated labor market.
- Europe needs an approach to global talent with policies that link immigration to labor markets, and a business climate that rewards skills and entrepreneurship.

## Chapter 6: Annexes

### Annex 6.1: Principal component analysis

Principal component analysis is a way to identify patterns in data with high dimension, which is otherwise hard to simplify. It is a mathematical procedure that uses an orthogonal transformation to convert a set of observations of possibly correlated variables into a set of values of uncorrelated variables—called principal components. The main advantage of principal component analysis is that it can compress the data by reducing the number of dimensions, without much loss of information. For it to work properly, the main criterion is to subtract the mean from each data dimension. The weighting of indicators maximizes the variance of the components across countries.

The following instruments are used for the protection component: active labor market program spending as percentage of GDP, social assistance spending as percentage of GDP, gross replacement rate of unemployment benefits, minimum paid annual leave days, and duration of unemployment benefits.

For the labor market flexibility component, the following indicators were used: the employment protection legislation (EPL) index as developed by the OECD and applied by the Institute for the Study of Labor to other countries, the tax wedge ratio, union density, minimum wage as a percentage of value added per worker, and maximum time limit in months of fixed-term contracts.

The instruments in the first group (protection) are unidirectional, where higher values indicate more protection. The instruments in the flexibility group are, however, not unidirectional. To make them unidirectional, and to make the higher value representative of higher flexibility, the negative of EPL and the tax wage ratio was used. This transformation does not lead to loss of information, because principal component analysis is sensitive to relative scaling but not to the linear transformation of vectors. So, countries with highly flexible labor markets (higher values) are those with low EPL, low union density, low tax wedge, low minimum wages, and high maximum duration of temporary contracts; countries with high protection (higher values) are those with higher spending on “active” employment assistance programs, social assistance benefits, high replacement rates of unemployment benefits, and long duration of unemployment benefits and annual leave. The value 0 represents the average position in terms of flexibility and protection across all countries in the sample.

### Annex 6.2: Modeling procedure and results

The regression exercise uses two-stage least squares estimation with instrumental variables. Standard panel estimation procedures (random or fixed-effects estimation) were not employed because of insufficient explanatory power of these models and/or not enough data (tables A6.1–A6.4). Data were mainly from the Organisation for Economic Co-operation and Development (OECD), with supplements from the Institute for the Study of Labor, the World Bank, and Eurostat for the explanatory variables, and the International Labour Organization and European Bank for Reconstruction and Development for dependent variables.

Three data samples are examined:

- *Sample 1: EU and OECD members in other regions (particularly North America and East Asia)* Data come from the OECD and cover only OECD members. Time period is 2001–07.<sup>30</sup>
- *Sample 2: The EU15 and new member states*<sup>31</sup> Data come from the OECD. Use of the larger sample from the Institute for the Study of Labor was not possible due to a lack of relevant data. Thus, the sample covers three new member states with data available only (the Czech Republic, Hungary, and Poland). Time period is 2001–07.<sup>32</sup>
- *Sample 3: EU new member states and aspirants in the European neighborhood* Data come from the Institute for the Study of Labor database and time period covers years 1999, 2003, and 2007.<sup>33</sup> Nine new member states (data for Cyprus, Lithuania, and Malta were not available) are covered.<sup>34</sup>

The model examines the impact of institutional factors on four indicators of labor market performance (Eurostat methodology): unemployment rate (UR), long-term unemployment rate (LTUR), employment rate (ER), and activity rate (AR). In line with the previous research, the dependent variables are represented in logs. The regression equation has the following form:

$$\ln X_{ti} = \alpha + \beta_1 EPL_{ti} + \beta_2 MW_{ti} + \beta_3 TU_{ti} + \beta_4 TAX_{ti} + \beta_5 ALMP_{ti} + \beta_6 UBRR_{ti} + \beta_7 INFL_{ti} + \beta_8 LEFT_{ti} + \varepsilon_{ti} (1),$$

where  $X$  takes the form of UR, LTUR, ER, and AR in consequent regressions.

Explanatory variables are the following: employment protection legislation (EPL) is the second version of the OECD employment protection legislation index, covering a wide spectrum of employment protection policies. Minimum wage (MW) is a cluster variable constructed according to minimum wage level and its relative share on median wage in the economy. This variable was omitted in the analysis on Sample 3 due to unavailability of the data. The trade unions' power is represented by the trade union density (TU).<sup>35</sup> Tax system consequences are reflected by total tax wedge on labor (TAX).<sup>36</sup> To reflect the influence of labor market policies (LMP), expenditure on active LMP as percentage of GDP per percentage point of unemployment (ALMP) and initial unemployment benefits replacement rate (UBRR) is included. Active labor market policies expenditure is instrumented.<sup>37</sup> In the analysis on Sample 3, two other indices available from the Institute for the Study of Labor replaced the initial unemployment benefits replacement rate—the average unemployment benefit (UNBEN) and maximum duration of unemployment benefits (UNBENDUR)—to reflect the effects of passive labor market policy spending.<sup>38</sup>

The actual unemployment rate is used in the regressions, but labor market institutions affect the equilibrium unemployment. To reflect this, an additional variable was used in the model—the change in the annual rate of inflation (INFL; Nickell 1997). This variable captures the influence of economic cycles and may also be considered an indicator of macroeconomic policy stance. Finally, unemployment level might also be influenced by political preferences of governments and conflict of interest over the power resources (Korpi 1991). To account for these political factors, one more variable was added in the regression model—the government orientation with respect to the economic

policy. Variable LEFT is a dummy acquiring 1 for parties defined as communist, socialist, social-democratic, or left-wing, where greater orientation on social issues resulting in lower unemployment is expected.<sup>39</sup> As economic policy takes time to influence labor market performance, the LEFT dummy is used with a one-year lag.

The model analyzes the correlations between labor market performance and labor market institutions. Its deeper explanatory power is rather limited, due to the lack of data on more countries and other relevant variables that might affect the dependent variables.<sup>40</sup> Moreover, only three new member states are covered in Sample 2. It is thus impossible to run a separate analysis for this group. Generally, only the differences in the role of institutions between the whole region and one particular subsample—and their implications for the other subsample—are examined, using a modified Chow test (see also Cazes and Nesporova 2003).<sup>41</sup>



Table A6.1: Regression estimation results: activity rate

	OECD			European Union			NMS EU+European Neighborhood		
	Total OECD	EU OECD	non-EU OECD	Total EU	Old EU	NMS EU	Total	NMS EU	Neighborhood
ALMP	0.072 ***	0.101 ***	-0.017	0.091 ***	0.117 ***	-0.081	-0.077	-0.036	-1.257
TAX	-0.004 ***	-0.004 ***	0.000	-0.004 ***	-0.005 ***	0.005 **	0.003	-0.015 **	0.011
EPL	-0.029 ***	0.016	-0.106 ***	0.018	0.033 **	0.092	0.017	-0.019	0.060
MW	-0.006	-0.016 ***	-0.014 ***	-0.017 ***	-0.019 ***	-0.042 ***			
TU	0.001 ***	0.001 *	0.006 ***	0.001 ***	0.001 **	0.017 ***	-0.001 **	0.004 ***	-0.001
UBRR	0.003 ***	0.002 **	-0.003 ***	0.002 ***	0.001 *	0.002 *			
UNBEN							0.001	0.001	0.000
UNBENDUR							0.000	-0.004	0.011
INFL	-0.001	0.000	-0.003	-0.001	-0.001	-0.005	0.001	0.005 **	0.002
LEFT	0.008	0.011	0.017 **	0.007	0.000	-0.079 ***	-0.065 ***	-0.054	-0.120
constant	4.257 ***	4.215 ***	4.490 ***	4.225 ***	4.243 ***	3.547 ***	4.081 ***	4.835 ***	3.725 ***
R sq.	0.486	0.643	0.973	0.660	0.638	0.903	0.443	0.743	0.933
N	168	119	49	126	105	21	30	19	11
Prob > F	0.000	0.000	0.000	0.000	0.000	0.000	0.018	0.000	0.081
Chow test F p-value		0.5648			0.9999			0.8413	

\*\*\*, \*\*, and \* denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively.  
 Note: Regression method is a pooled two-stage least squares procedure with instrumental variables on panel data; robust standard errors are used. ALMP = active labor market policies, TAX = total tax wedge on labor, EPL = employment protection legislation, MW = minimum wage, TU = trade union density, UBRR = unemployment benefits replacement rate, UNBEN = average unemployment benefit, UNBENDUR = maximum duration of unemployment benefits, INFL = change in annual rate of inflation, LEFT = leftward-leaning government.  
 Source: Fialová 2011.

Table A6.2: Regression estimation results: employment rate

	OECD			European Union			NMS EU+European Neighborhood		
	Total OECD	EU OECD	non-EU OECD	Total EU	Old EU	NMS EU	Total	NMS EU	Neighborhood
ALMP	0.085 ***	0.100 ***	-0.061	0.078 ***	0.070 ***	-0.119	0.087	0.044	2.531
TAX	-0.009 ***	-0.008 ***	-0.004 ***	-0.009 ***	-0.010 ***	0.016 ***	-0.003	-0.009	0.005
EPL	-0.057 ***	-0.063 ***	-0.071 ***	-0.058 ***	-0.066 ***	0.122	-0.069	-0.026	-0.373
MW	-0.004	-0.005	-0.025 ***	-0.009 *	-0.008 *	-0.086 ***			
TU	0.001 ***	0.001 ***	0.006 ***	0.001 ***	0.001 ***	0.027 ***	0.000	0.009 ***	0.002
UBRR	0.003 ***	0.003 ***	-0.003 ***	0.004 ***	0.004 ***	0.001			
UNBEN							0.005	0.001	-0.009
UNBENDUR							-0.005	-0.009 **	-0.034
INFL	0.005	0.009	-0.008 **	0.006	0.002	-0.008	0.001	0.010 ***	0.002
LEFT	0.009	0.017	0.026 **	0.009	0.015	-0.215 ***	-0.100 **	-0.070	0.117
constant	4.201 ***	4.171 ***	4.408 ***	4.192 ***	4.227 ***	2.796 ***	4.179 ***	4.254 ***	4.819 **
R sq.	0.664	0.622	0.707	0.621	0.671	0.822	0.249	0.695	0.668
N	168	119	49	126	105	21	30	19	11
Prob > F	0.000	0.000	0.000	0.000	0.000	0.000	0.198	0.003	0.736
Chow test F p-value	0.5037			0.9999			0.8499		

\*\*\*, \*\*, and \* denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

Note: See note for Table A6.1.

Source: Fialová 2011.

Table A6.3: Regression estimation results: unemployment rate

	OECD			European Union			NMS EU+European Neighborhood		
	Total OECD	EU OECD	non-EU OECD	Total EU	Old EU	NMS EU	Total	NMS EU	Neighborhood
ALMP	-0.327 ***	-0.314 ***	0.624	-0.198 *	-0.118	0.397	-1.249 **	-0.444	-31.016
TAX	0.021 ***	0.013 ***	0.016	0.018 ***	0.026 ***	-0.099 ***	0.020	-0.021	-0.047
EPL	0.146 ***	0.378 ***	-0.166	0.350 ***	0.383 ***	-0.027	0.538 **	0.123	2.793
MW	0.010	-0.037 *	0.204 ***	-0.018	-0.008	0.325 **			
TU	-0.001	0.000	-0.008	-0.002	-0.002	-0.058 ***	-0.007	-0.029 **	-0.033
UBRR	-0.002	-0.009 **	0.019 ***	-0.012 ***	-0.015 ***	0.009			
UNBEN							-0.024 *	-0.010	0.103
UNBENDUR							0.029	0.039	0.128
INFL	-0.033	-0.058	0.044 *	-0.040	-0.005	0.016	-0.004	-0.051 **	-0.011
LEFT	0.125 **	0.107 *	-0.161 *	0.133 **	0.081	0.876 ***	0.298	0.087	-1.463
constant	0.982 ***	1.274 ***	0.046	1.174 ***	0.808 ***	5.724 ***	0.785	3.218	-1.603
R sq.	0.378	0.401	0.787	0.345	0.495	0.889	0.369	0.583	0.856
N	168	119	49	126	105	21	30	19	11
Prob > F	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.068	0.146
Chow test F p-value	0.9838			0.916			0.6765		

\*\*\*, \*\*, and \* denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

Note: See note for Table A6.1.

Source: Fialová 2011.

Table A6.4: Regression estimation results: long-term unemployment rate

	OECD			European Union			NMS EU+European Neighborhood		
	Total OECD	EU OECD	non-EU OECD	Total EU	Old EU	NMS EU	Total	NMS EU	Neighborhood
ALMP	-0.639	-0.975 **	1.802	-0.683	-0.636	0.779 *	-9.916 **	-10.011 ***	Insufficient number of observations
TAX	0.097 ***	0.036 ***	0.070	0.051 ***	0.068 ***	-0.091 ***	0.068	0.018	
EPL	0.185	0.234	-1.354 *	0.179	0.139	0.068	-1.513	-1.611	
MW	0.135 **	-0.054	0.418 ***	-0.004	0.033	0.235 **			
TU	-0.012	-0.016 *	0.023	-0.022 **	-0.021 **	-0.034 **	0.015	-0.103 **	
UBRR	-0.015 ***	-0.004	0.004	-0.012	-0.015	0.012			
UNBEN							-0.073	-0.007	
UNBENDUR							0.119	0.181 **	
INFL	-0.133	-0.210 *	0.149	-0.167	-0.352	0.015	0.086	-0.110	
LEFT	-0.177	-0.458	-0.957 **	-0.350	-0.413	0.864 ***	0.684	0.420	
constant	-2.466 ***	0.392	-2.574	0.114	-0.513	3.827 **	4.223	6.899	
R sq.	0.363	0.281	0.681	0.279	0.285	0.915	0.763	0.853	
N	168	119	49	126	105	21	18	17	
Prob > F	0.000	0.000	0.000	0.000	0.000	0.000	0.180	0.067	
Chow test F p-value	0.9965			0.7392			X		

\*\*\*, \*\*, and \* denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

Note: See note for Table A6.1.

Source: Fialová 2011.

## Notes

- 1** Alesina, Glaeser, and Sacerdote (2006) find no real correlation between the proportion of Protestants in a population and the average hours of work.
- 2** Alesina, Glaeser, and Sacerdote (2006) indicate that the impact of taxes on labor supply disappears when controlling for unionization or labor market regulation. In an analysis of 16 OECD countries, they find a fairly strong negative correlation between hours worked and the percentage of the labor force covered by collective bargaining agreements. Working hours in Europe might also be influenced by the strong political power of unions over welfare states.
- 3** See, for example, Clark, Georgellis, and Sanfey (1998); Drago and Wooden (1992); Freeman (1978); Gordon and Denisi (1995); and Judge and others (2001).
- 4** However, “trust in the education system” is positively associated with work centrality, which may indicate strongly held beliefs that effort is fairly rewarded.
- 5** See Lisbon Council Presidency Conclusions at <http://www.europarl.europa.eu/aboutparliament/en/0044c3dd41/EU-fact-sheets.html;jsessionid=BD54698E30F3A038BA1D36B3E4FCBB8E.node1>
- 6** As a robustness check, this analysis was also carried out using clustering techniques, with similar results.
- 7** Only 2007 data are used because of restricted data availability, but also to avoid capturing increases in social spending that took place in most European countries in response to the 2008–10 crisis.
- 8** Countries that are “mixed”—low labor force participation and low unemployment rates or high labor force participation and high unemployment rates—are considered “inefficient.”
- 9** The Gini coefficient data are from the WDI and do not distinguish between equity in income and consumption. Inequality in outcomes goes far beyond labor markets, as social transfers are likely to play an important role here. One option would have been to look at inequality in wages or labor income more generally, but no such data are available for many countries, especially in emerging Europe.
- 10** This projection assumes that overall immigration and participation rates by sex and age group remain at current levels.
- 11** For a more detailed discussion on incentivizing formal work, see World Bank (2011a).
- 12** See Hanushek and Woessmann (2008) for a literature review of the empirical relationship between economic growth and school attainment.
- 13** See Carneiro and Heckman (2002) for U.S. evidence, Brunello and Schlottter (2011) for Europe, and World Bank (2011b) for summary evidence in middle-income countries.
- 14** The OECD has initiated its Program for the International Assessment of Adult Competencies to measure cognitive skills in the working-age population (a complement to the Programme for International Student Assessment). The World Bank’s Skills toward Employment and Productivity initiative complements the Program for the International Assessment of Adult Competencies initiative by also measuring noncognitive skills. First results are expected by 2013.
- 15** See, for example, Bowles and Gintis (2000) for evidence of employer surveys from the United Kingdom and the United States, Blom and Saeki (2011) for a study for India, and World Bank (2011b) for evidence from Latin America.

- 16** For an extensive treatment of the impact of labor unions on labor market outcomes in Europe, see Alesina, Glaeser, and Sacerdote (2006).
- 17** Following Fialová and Schneider (2009 and 2011), Fialová (2011) uses two-stage least squares regression estimation with instrumental variables on pooled data. Standard panel estimation procedures (random or fixed effects estimation) were not employed for insufficient explanatory power of these models and/or too few data. Data were mainly from OECD with some supplements from the Institute for the Study of Labor, International Labour Organization, and European Bank for Reconstruction and Development.
- 18** The data are from the OECD, for 2001–07. The sample covers Australia, Austria, Belgium, Canada, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Japan, the Republic of Korea, the Netherlands, Norway, New Zealand, Poland, Portugal, Spain, Sweden, the United Kingdom, and the United States. Of them, 17 are classified as EU OECD and 7 as non-EU OECD.
- 19** The sample covers Austria, Belgium, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, the Netherlands, Norway, Poland, Portugal, Spain, Sweden, and the United Kingdom. Of them, 15 are classified as old European Union and 3 as new member states of the European Union.
- 20** Data are from the Institute for the Study of Labor database, for 1999, 2003, and 2007. The sample covers Albania, Bulgaria, Croatia, the Czech Republic, Estonia, Hungary, the Kyrgyz Republic, Latvia, Macedonia FYR, Moldova, Poland, Romania, the Slovak Republic, Slovenia, and Ukraine. Of them, 9 are classified as new member states of the European Union and 6 as European neighborhood.
- 21** The generosity of unemployment benefits seems to have the reverse effect in non-European OECD countries.
- 22** Bertola and Ichino (1995) argue that the persistence of unemployment in Europe in the 1980s and 1990s was caused by a lack of labor mobility and by people remaining in lagging areas.
- 23** However, Ester and Krieger (2007) and Eurofound (2006 and 2007) present data that indicate a decrease in interstate mobility in the United States over 2000–05.
- 24** See European Commission (2010c). In 2008, 37 percent (11.3 million people) of nonnationals in EU27 countries were citizens of another member state. The number of nonnationals in EU27 has increased 42 percent since 2001 (for further details, see Eurostat Statistics in focus 94/2009).
- 25** Tatsiramos (2009) makes reference to important work by Decressin and Fatás (1995) and Jimeno and Bentolila (1998) about European trends. For the United States, Tatsiramos quotes Blanchard and Katz (1992).
- 26** Restrictions on the freedom to work can be maintained for up to seven years after the entry of new member states into the European Union. The last restrictions were lifted on workers from the EU8 countries in May 2011. Restrictions will be lifted on workers from Bulgaria and Romania in December 2013.
- 27** Using Nomenclature of Units for Territorial Statistics 2 data from the European Commission's data source Eurostat [http://ec.europa.eu/eurostat/ramon/nomenclatures/index.cfm?TargetUrl=LST\\_CLS\\_DLD&StrNom=NUTS\\_33&StrLanguageCode=EN](http://ec.europa.eu/eurostat/ramon/nomenclatures/index.cfm?TargetUrl=LST_CLS_DLD&StrNom=NUTS_33&StrLanguageCode=EN)
- 28** See, for instance, Bentolila (1997) for Spain; Pissarides and Wadsworth (1989) for the United Kingdom; and Fidrmuc (2004) for transition economies.
- 29** For a detailed discussion on conceptual issues regarding portability of social benefits, see Holzmann and Koettl (2011).
- 30** The sample covers Australia, Austria, Belgium, Canada, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Japan, the Republic of Korea, the Netherlands, Norway, New Zealand, Poland, Portugal, Spain, Sweden, the United Kingdom, and the United States. Of them, 17 are classified as EU OECD and 7 as non-EU OECD.
- 31** For this analysis, the new member states group generally consists of countries acceding to the European Union in 2004 and 2007.
- 32** The sample covers Austria, Belgium, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, the Netherlands, Norway, Poland, Portugal, Spain, Sweden, and the United Kingdom. Of them, 15 are classified as old European Union and 3 as new member states of the European Union.
- 33** For some countries, only some of these years with data available were covered.
- 34** The sample covers Albania, Bulgaria, the Czech Republic, Estonia, Croatia, Hungary, the Kyrgyz Republic, Latvia, Macedonia FYR, Moldova, Poland, Romania, the Slovak Republic, Slovenia, and Ukraine. Of them, nine are classified as new member states of the European Union and six as European neighborhood.
- 35** Trade union density refers to the share of workers who were trade union members. However, even if the density is low in some countries, it is a common practice to extend trade union agreements to nonunionized workers, thus covering a large share of employees in the economy (France and Spain, for example). Thus, the real degree of collective bargaining coverage—the share of all salary earners whose wage is determined by a collective agreement in a legal extension of bargained wage rates to nonunionized workers—would be a preferred indicator; unfortunately, such data are not available for the examined period and country sample.

- 36** Total tax wedge on labor represents the combined central and subcentral government income tax plus employee and employer social security contribution taxes, as a percentage of labor costs, defined as gross wage earnings plus employer social security contributions; the tax wedge includes cash transfers. The indicator is calculated for a single individual without children, earning the average wage.
- 37** This variable is endogenous because it relates the expenditure to the actual rate of unemployment. For this reason, this variable was instrumented by a new variable relating the expenditure to the average unemployment rate in a five-year period before the actual year.
- 38** Average unemployment benefit is the average benefit as a percentage of the average wage. This definition deviates from the estimates typically used by the OECD because OECD replacement rates are not very meaningful in the transition countries due to the caps on the size of the benefit in many countries. Maximum duration of unemployment benefits is defined as the period for which a 40-year-old person who has been employed for 22 years prior to unemployment receives unemployment benefits, wherever possible. Data are from the Institute for the Study of Labor.
- 39** Data are from the World Bank's database of political institutions; for details, see Beck and others (2001) and Keefer and Stasavage (2003).
- 40** These are, for example, the role of product market reforms (Boeri 2005; Griffith, Harrison, and Macartney 2007) or the importance of adverse economic shocks (Blanchard and Wolfers 2000).
- 41** A modified version of the test hypothesis and statistics was used, because the number of observations in the new member states group is smaller than the number of parameters,  $nNMS < k$ , and thus the standard methods in this case cannot be used. The hypothesis tested is  $H_0: E(\gamma | X; \beta_{OE}) = E(\gamma | X; \beta_{NMS})$ .

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# Chapter 7

## Government

To make sense of the relationship between government and well-being in Europe, Sweden might be a good place to start. The quintessential European welfare state, Sweden does well in social outcomes: children and students enjoy free education, the elderly receive a decent pension, everyone relies on a public health system that helps them live long and healthy lives, and social trust is high. The welfare system redistributes wealth and contributes to an equitable distribution of income. All this is done with big government. From 1980 to 2010, Sweden's government spending accounted on average for 59 percent of GDP.

These three-fifths of economic output that are spent by government are funded mainly by levying charges and taxes on workers, families, and enterprises. Such high taxation surely gets in the way of growth. Or does it? Over the last three decades, Sweden's per capita growth was 1.7 percent—as it happens, just about the same as that of the United States. Yet government spending in the U.S. was only 37 percent, or about three-fifths of government spending in Sweden.

So what exactly allows Sweden to combine a sizable government, enviable social outcomes, and solid growth? After all, the economic literature on the size of government and the rate of growth tends to find that big government generally lowers growth. Is Sweden the exception from the rule, or are many European countries able to square the circle? And for those that don't, what would it take to become like Sweden? Clearly, there are big governments in Europe that fail to deliver impressive results. Observers could point to Italy and Greece in Western Europe, or to Hungary and Ukraine in emerging Europe.



- Are governments in Europe bigger than elsewhere?
- Is big government a drag on growth in Europe?
- If big government impedes growth, how do countries such as Sweden do so well?
- How can governments be made more efficient?
- Should fiscal consolidation be a top policy priority in Europe?

Take Ukraine. Over the last decade and a half, Ukraine's economy expanded at an annual average rate of 2.3 percent per capita. While this might be faster than Sweden or the United States, it is unimpressive relative to its peers: other non-EU Eastern European countries grew almost 3 percentage points faster. At about 41 percent of GDP the size of government was more than 6 percentage points higher in Ukraine than among its peers. And in 2010 government spending was almost half the size of the economy (49 percent of GDP), as public pensions absorbed 18 percent of GDP, among the highest in the world. In addition to large and ineffective public spending, Ukraine faces dim prospects: the growth drivers of the precrisis period up to 2008, such as capital inflows and credit expansion, along with favorable terms of trade adjustments, are unlikely to return. And fiscal pressures are set to increase with a rapidly aging population and large investment needs (World Bank 2010).

This chapter links government and well-being in Europe in five steps. It first looks at whether governments are big spenders and how this affects growth. It next argues that there is more to government than just its size—namely, its quality—so it looks at how the size of government interacts with the quality of government. It then asks how well governments spend money on health, education, and pensions. Last, looking at pressures on public finances, it asks what governments can do to put their fiscal house in order. In other words, the chapter answers five questions:

**First, are governments in Europe bigger than elsewhere?** Yes. Governments in Europe spend about 10 percent of GDP more than their peers. Differences in government size within Europe and between Europe and its peers are largely explained by social spending. In 2010, countries in Western Europe spent 9 percent of GDP more on social transfers and 13 percent of GDP more on overall public spending than four “Anglo-Saxon” countries (Australia, Canada, New Zealand, and the United States) and Japan. In the 2000s, Western Europe spent about 6 percent of GDP more on the social sectors than Eastern Europe, and had bigger governments by about 7 percent of GDP. Countries differ in the way they tax social benefits, however, so when allowing for taxation, the difference in social spending between Western European and Anglo-Saxon countries declines from 11 percent to 6 percent of GDP, and the south is the biggest social spender in Western Europe.

**Second, is big government a drag on growth in Europe?** A qualified yes. Over the last 15 years, higher initial government size has led to slower economic growth. In Europe, a 10 percentage point increase in initial government size leads to a reduction in annual growth by 0.6–0.9 percentage points. Government reduces growth, particularly when it exceeds 40 percent of GDP. Perhaps because governments are smaller outside Europe, there is no evidence that government size generally harms growth in the global sample. In Europe, social transfers tend to reduce growth, and public investments to increase it. Large government revenues tend to reduce growth, but the evidence is less compelling than for public expenditures—perhaps because Western Europe's tax system is often more growth-friendly than the systems of the four Anglo-Saxon countries. Europe combines a high tax burden and labor taxes with low corporate tax rates and a greater reliance on indirect taxes.

**Third, if big government impedes growth, how do countries like Sweden do so well?** The reason is that size is not the only feature of government that matters. What government does and how it finances its activities are as important. European governments regulate the largest economic area in the world; encourage the exchange of goods, services, and capital with other continents; foster voice and accountability; and provide public goods and enable redistribution. Big governments are often good at doing these things, especially when social trust ensures that everybody plays by the same rules. Such big governments can go together with thriving, dynamic economies.

**Fourth, how can governments be made more efficient?** Investigating the efficiency of the public sector is difficult because government output is hard to measure. But many studies identify vast “efficiency reserves” in the public sector: there is considerable scope for saving by moderating public wages and pensions, enforcing private contracts, and other means. The potential for increasing efficiency—getting more for public spending—differs across sectors. European governments are not big spenders in health or education, especially when considering that private spending in these sectors is less than in Anglo-Saxon countries. For health, public spending does well in reducing maternal mortality rates. For education, public spending does less well in raising net secondary enrollment rates. Case studies for Armenia, Moldova, and Poland point to three sources of inefficiencies: the inability to adjust spending patterns to shifting demographic trends, the weak incentives for local cost savings, and attempts to improve equity without proper evaluation of policy outcomes. While public spending on health and education does not stand out as excessive, Europe does spend more than peer countries on public pensions. Indeed, pension spending is the main reason for big governments in Europe—thanks not just to an older population but also to the generosity of pensions. Many countries have initiated reforms of the pension systems since the 1990s.

**Fifth, should fiscal consolidation be a top policy priority in Europe?** Yes. Fiscal pressures are high for five reasons. First, fiscal deficits and public debt increased sharply during the recent global crisis, accentuating structural weaknesses in public finances. Second, because of the crisis, markets now pay more attention to fiscal vulnerabilities. Third, growth will be weaker now than before the crisis. Fourth, rapid aging will add to fiscal pressures over coming decades. Finally, public debt has to be reduced to put fiscal policy on a stable footing before the next crisis. Simulations suggest Western Europe has to improve its primary balance (the difference between revenues and expenditure, not including interest on debt) after adjusting for the business cycle by about 6 percent of GDP this decade to reduce public debt to 60 percent of GDP by 2030. Adjustment needs are highest in the south and lowest in the north. In the EU’s new member states, a fiscal adjustment of about 4 percent of GDP is needed to bring down public debt to 40 percent of GDP.



## Europe's governments are big

How big are governments in Europe exactly, and how did they change in the period before the global economic and financial crisis? Before starting to answer, it is necessary to clarify some data issues. Mainly, it is necessary to decide how to measure government size. Usually, it is best to use public expenditures as a percentage of GDP. Other useful indicators include the tax burden, public employment, or the number of pages of government-drafted regulation. The advantage of government spending is that it focuses attention on the uses of the public money raised from taxpayers and other sources. The mid-1990s are taken as the starting point. This might seem an odd choice, as national governments have been around a lot longer, and government size grew strongly in Europe after the early 1960s. Still, 1995 is a natural reference point for Europe as a whole. While longer time series are available for EU15 and OECD countries, reliable national accounts data and public finance statistics are hard to come by for countries from Eastern Europe before that year (box 7.1).

### Governments are big, even in Eastern Europe

European governments are big. In 2010, government spending accounted for over half of GDP in Western Europe, and over two-fifths in Eastern Europe. Figures 7.1 and 7.2 illustrate three patterns. First, European governments are bigger than non-European governments. In 2010, median government size was larger by 11 percent of GDP in Western Europe, and 13 percent of GDP in Eastern Europe, than among their respective peers. Second, government size is highest in the north, and lowest in eastern partnership countries. In 2007, on the eve of the global crisis, median public expenditure amounted to 47 percent of GDP in the north and 35 percent of GDP in the eastern partnership countries. Public expenditures ranged from over 50 percent of GDP in France, Sweden, and Denmark to around 35 percent in Estonia, Latvia, Lithuania, Romania, the Slovak Republic, and Turkey, and to less than 30 percent in Albania, Armenia, Azerbaijan, and Georgia. Government size in the peer countries was less than 40 percent of GDP. Third, the crisis increased government spending in 2007–10 in Europe and elsewhere, offsetting reductions in government spending in 1995–2007 in the north, the center, and the EU12 (figure 7.2).

#### Box 7.1: Data and groupings

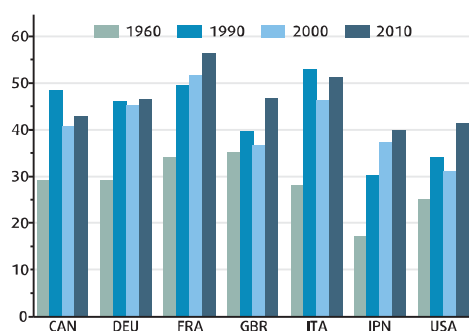
The sample in this chapter covers European and other countries with a population of at least 250,000 in 1995. This gives 167 countries, comprising 6 billion people in 2010, though most variables are available only for fewer countries. The data include 43 countries from Europe that are the focus of this report. In most cases, the unit of analysis is the country. We give the same weight to Germany, Europe's most heavily populated country with a population of 82 million, and Iceland, the smallest with a population of 300,000.

In addition, countries are grouped based mainly on geography to capture broad trends. In Europe, the west (EU15 and European Free Trade Association) is distinguished from the east (EU12, EU candidate, and eastern partnership countries). This results in 18 Western European countries and 25 Eastern European countries. In Western Europe, we distinguish between the north (Denmark, Finland, Iceland, Norway, and Sweden), the center (Austria, Belgium, France, Germany, Ireland, Luxembourg, the Netherlands,

Switzerland, and the United Kingdom), and the south (Greece, Italy, Portugal, and Spain). To benchmark Western Europe against the rest of the world, Anglo-Saxon peers (Australia, Canada, New Zealand, and the United States) and Japan are studied. For emerging Europe, the peers are Brazil, the Republic of Korea, and the Russian Federation, along with other emerging economies. Finally, to make sure that group averages are not driven by outliers or missing data, the median is used more than the mean.

**Figure 7.1: Government size in G7 countries, 1960, 1990, 2000, and 2010**

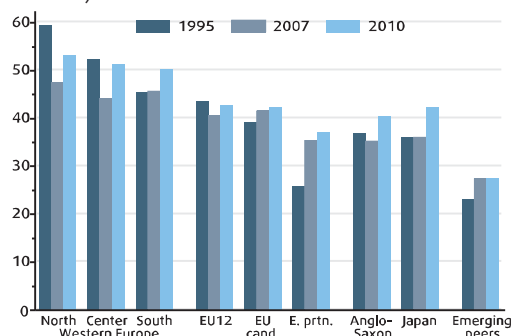
(government spending, percentage of GDP)



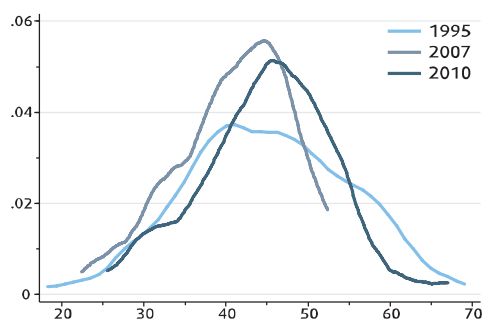
Note: "EU cand." refers to EU candidate countries and "E. prtn." refers to EU eastern partnership countries.  
Source: World Bank staff calculations, based on Eurostat; IMF WEO; and OECD National Accounts Statistics.

**Figure 7.2: Government size, 1995, 2007, and 2010**

(median government spending, percentage of GDP)

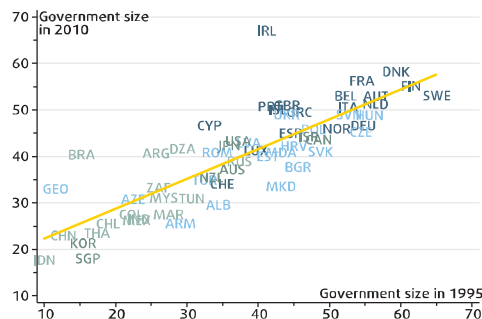


**Figure 7.3: Density of government size in Europe**



Source: World Bank staff calculations, based on Eurostat; IMF WEO; and OECD National Accounts Statistics.

**Figure 7.4: Government size in 1995 and 2010**

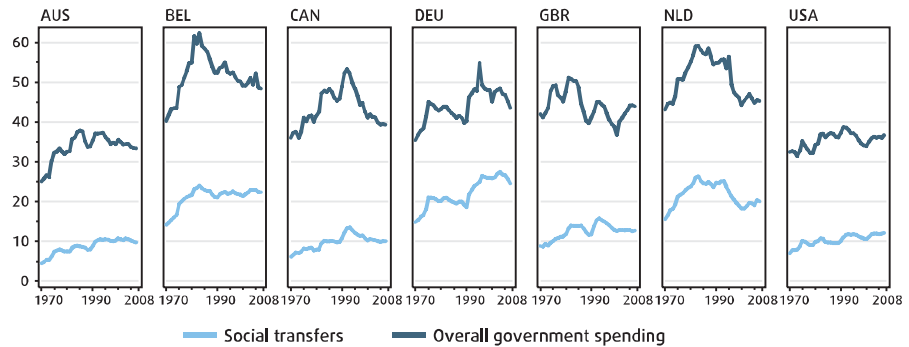


The impact of the crisis on government spending is visible in figure 7.3, which shows a kernel density plot of government spending in Europe for 1995, 2007, and 2010. In 1995–2007, the density became more concentrated, as the variation in government size declined. In 2007–10, the distribution shifted to the right, indicating higher spending induced by the crisis across Europe. Seven European countries spent more than 52 percent of GDP in 2010, versus only one in 2007. Government spending increased during the crisis relative to output mainly for two reasons: governments stepped up social spending to mitigate the social impact of the crisis and stabilize the economy; and the collapse in output meant that government size rose, even with no change in public expenditures. Still, there is a fair amount of persistence in government size across countries (figure 7.4).



### Figure 7.5: Social spending determines the size of governments

(social transfers and overall government spending, percentage of GDP, 1970–2008)



Source: World Bank staff calculations, based on Eurostat; IMF WEO; and OECD National Accounts Statistics.

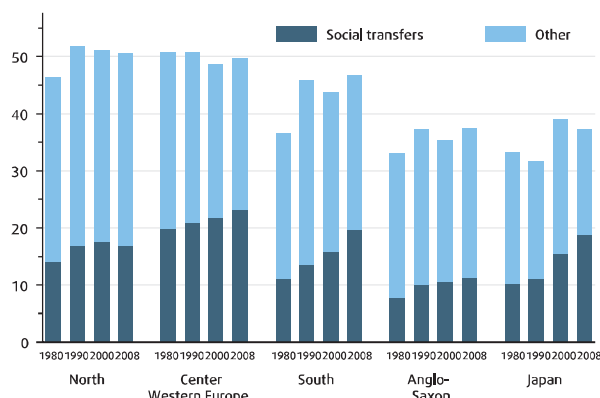
### Social spending makes for big government

Breaking down spending into its components provides better insight into what makes governments bigger in Europe. It makes sense to focus on social spending, as this turns out to drive much of the difference in overall government spending. It makes sense to start with social transfers; after all, the European welfare state is closely tied to large social transfer programs. Social transfers come in various types. They range from basic social assistance for poor families, to family benefits and child allowances, and to social insurance programs for old age, unemployment, disability, sickness, and maternity. They are mostly made in cash but some are in kind, such as some health or housing services.

Looking at social transfers allows us to trace spending patterns for seven OECD countries since 1970 and for 14 OECD countries since 1980. We also have data for Eastern Europe for the 2000s. We will also look at social spending more broadly for the 2000s for Europe as a whole.

Starting in 1970 is useful, much of the government expansion happened before the 1990s. Overall government spending moves in step with social transfers (figure 7.5). Increases in social transfers tend to increase government size, as in Australia (to the early 1990s), Belgium (to the mid-1980s), Canada (to the early 1990s), Germany (to the late 1990s, tied to reunification), the United Kingdom (to the late 1980s), the Netherlands (to the late 1970s), and the United States (to the early 1990s). Likewise, decreases in social transfers tend to reduce government size, as in Canada and the Netherlands (both from the early 1990s).

Of course, the link is not perfect, as expenditure trends on other items often follow a different dynamic. The reduction in government size in Belgium since the mid-1980s, for example, did little to reduce social transfers. Instead, while maintaining social security spending constant, it relied mostly on lower federal spending and reductions in interest payments thanks to fiscal surpluses and declining public debt (IMF 2011). Nevertheless, there is a high correlation between government spending and social transfers in the OECD country sample. A simple regression of government spending on social transfers, including country and year dummies, suggests that an increase in social transfers by 1 percentage point of GDP leads to an increase in overall government spending by somewhat more than 1 percentage point of GDP.



Source: World Bank staff calculations, based on Eurostat; IMF WEO; and OECD National Accounts Statistics.

**Figure 7.6: Social transfers increased fastest in the south**

(social transfers, 1980, 1990, 2000 and 2008, percentage of GDP)

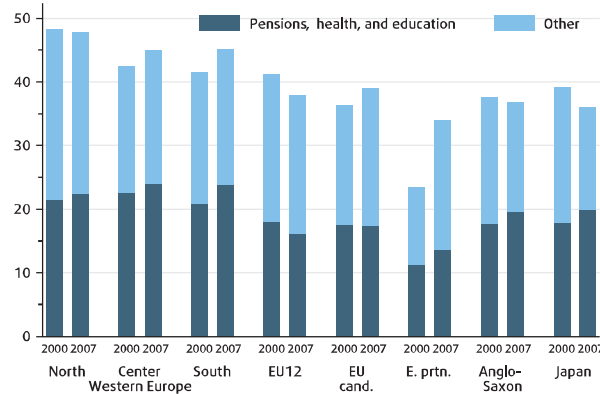
Figure 7.6 groups 14 countries in the usual fashion: Western Europe is represented by Denmark and Finland (north); Austria, Belgium, France, Germany, the Netherlands, and the United Kingdom (center); and Italy and Portugal (south). The peer countries are Australia, Canada, and the United States (Anglo-Saxon), and Japan. Three features stand out.

- Social transfers in Europe are much higher than elsewhere. Median spending on social transfers in 1980–2008 was 20 percent of GDP for Western Europe, but only 11 percent for its peers. Median government size was 50 percent of GDP and 37 percent of GDP, respectively, for the two groups. Hence, higher social transfers accounted for about two-thirds—that is, 9 percent of GDP out of 13 percent of GDP—of the difference in government size.
- Spending on social transfers moved up for Western Europe and the peers in 1980–2008, though slightly less so for Western Europe. These increases resulted in bigger governments for both groups—again, slightly less so for Western Europe.
- Differences within groups emerge. In Western Europe, social transfer spending in 1980 was highest in the center, followed by the north, and lowest in the south. The entitlement reforms of northern countries and a strong economy lowered real growth of per capita social transfers in the 2000s, so that social transfers fell as a share of GDP. By contrast, social transfer spending rose sharply in the south, reaching 20 percent of GDP in 2008 compared with only 17 percent of GDP in the north. Social transfer spending also jumped in Japan. Its share in overall government spending rose from 30 percent in 1980 to 50 percent in 2008, mainly because of population aging.

Social transfers are not all of social spending. They do not include salaries paid to public employees in social sectors, nor do they include education. Figure 7.7 uses a “functional classification” that provides another way to assess social spending. It shows public spending on pensions, health, and education for European countries in 2000 and 2007. Spending on the three social sectors tends to be higher than that on social transfers, though the latter does not include social assistance. Again, social spending is instrumental in determining

### Figure 7.7: Social spending increased in the 2000s

(social and other government spending, percentage of GDP, 2000 and 2007)



Note: "EU cand." refers to EU candidate countries and "E. prtn." refers to EU eastern partnership countries.

Source: World Bank staff calculations, based on Eurostat; IMF WEO; OECD National Accounts Statistics; and WDI.

the size and change in overall government spending (Handler and others 2005). In particular, government size in Western Europe is about 7 percent of GDP larger than in Eastern Europe, and social spending accounts for much of the difference (6 percent of GDP). Western Europe spends around 23 percent of GDP on these sectors, Eastern Europe around 17 percent. The south stands out among the economies of high-income Europe, in that social protection and total spending increased after the 1980s, and showed no signs of slowing until the recent crisis.

Social protection is more than pensions, and includes unemployment benefits, active labor market policies, child and maternity support, and welfare. The north stands out through high spending on social protection unrelated to pensions. In 2007–08, pensions were just over half of social protection spending in the north, compared with over three-fifths in the center and the EU12, about two-thirds in Japan, and close to three-quarters in the south. Anglo-Saxon countries also used about half their social protection spending on public pensions, but social protection spending remained low at less than 10 percent of GDP. Across the three social sectors, the north spent the most and the EU12 countries the least. The Anglo-Saxon countries spent less than Western Europe, the EU12, or Japan as a share of GDP on social sectors.

Social transfers and services—summing pensions, health, and education—as a share of GDP in 2008 relative to per capita income adjusted for purchasing-power shows that social spending increases with income. This is what leads to higher spending in Western than in Eastern Europe. But for a given income, big differences across countries are seen. For example, Germany spent almost 25 percent of its income on social transfers, and Iceland just 6 percent. Ukraine's spending is the highest in Eastern Europe for both social transfers and social sectors, though many countries are notably richer.

Looking at gross public spending in social sectors to assess what governments invest in education, health, and social protection is instructive, but potentially

misleading. Countries differ in the extent to which they tax social benefits. Net public expenditures take into account whether governments tax social benefits or provide tax breaks for social purposes. They are a more accurate measure of the fiscal resources benefiting the social sectors.

The OECD provides comparable numbers on gross public expenditures and net publicly mandated social expenditures for 26 member countries for 2001 and 2007 (Adema and Ladaïque 2009). The tax impact is strong for three main reasons. The social sectors are smaller than suggested by gross public expenditures in Europe. In 2007, taking Western Europe as one group, social spending declines from 34 percent to 29 percent of GDP. And while the center, the EU12, and the north tax many of their social benefits, most of them remain untaxed in the south, giving it Europe's largest social sector net of taxes. Finally, while taxation reduces social sectors in Europe, it leaves them unchanged (or even slightly increased due to tax breaks for social purposes) elsewhere. The gap between Western Europe and Anglo-Saxon countries, for example, declines from 11 percent to 6 percent of GDP.

### Political institutions reveal preferences for big or small government

While government size changes over time, governments are systematically bigger in some countries than others. So what can we say about economic, social, and political factors that lead to big government? Lindert (2004) has conducted perhaps the most careful analysis for Europe, and found that the rise in the welfare state and the expansion of social transfer programs over the last two centuries is linked to five factors: democracy, social affinity, aging, prosperity, and globalization.<sup>1</sup> Democracy gives people an equal vote, irrespective of income. Combined with social affinity across income groups, it makes the decisive median voter more likely to support redistributive tax-based programs. Because older people prefer social insurance and are a key voting group, social transfers increase as the population ages. Social transfers emerged with prosperity. They came about for the first time in 1880–1930 when living standards improved in Europe, reflecting the widening impact of the industrial revolution. Finally, voters might demand protection for those hurt from international competition in open economies.

The political variables deserve closer attention. Economic policies have distributional consequences, as they often create “winners” and “losers” in society. Political institutions such as electoral rules are important for policy outcomes because they determine how competing preferences are turned into public policies. In Europe, political structures differ among groups. Northern countries, for example, have political systems that are based on proportional representation and on coalitions rather than single-party governments, that are more centralized, and that have single legislative chambers and relatively weak presidential power.

But do political institutions matter once we control for economic and social characteristics? For 67 European and peer countries in 1995–2009 it appears that, as expected, government size is influenced by preferences for public

services and social affinity, the age dependency ratio, unemployment, income per capita, trade openness, and the debt servicing costs of public debt.<sup>2</sup> Consistent with the literature, political variables are important: government is bigger in countries with fractionalized (for example, coalition), proportional, and parliamentary political systems. Federalism also increases government size, which suggests cooperation of central and local governments rather than competition among governments. Even when the full set of economic, social, and political factors are controlled for, geographic regularities remain: northern Europe has the biggest governments, the emerging peers the smallest (table A7.1).

## Big government, slow growth?

GDP per capita is the best single measure at hand to proxy a country's living standards. Yet it has faults, including how to factor the government sector in production of domestic value added, how to incorporate quality improvements in provision of services, and how to account for depletion of national resources. Still, it is important to know whether big government helps or hinders growth, and even if well-being and happiness go beyond purely money-oriented notions, being rich and growing richer make it easier to get the things we want, such as food, education, health care, and time off from work.

There are good reasons to suspect that big government is bad for growth. Taxation is perhaps the most obvious (Bergh and Henrekson 2010). Governments have to tax the private sector in order to spend, but taxes distort the allocation of resources in the economy. Producers and consumers change their behavior to reduce their tax payments. Hence certain activities that would have taken place without taxes, do not. Workers may work fewer hours, moderate their career plans, or show less interest in acquiring new skills. Enterprises may scale down production, reduce investments, or turn down opportunities to innovate. High taxes make market work less attractive, and time off from work and work at home more attractive. Thus high-income taxes inhibit the development of markets that offer home-produced services. Such service sector jobs could be important to keep workers in jobs and off the welfare system, especially as traditional manufacturing jobs dwindle (Davis and Henrekson 2005).

Over time, big governments can also create sclerotic bureaucracies that crowd out private sector employment and lead to a dependency on public transfers and public wages. The larger the group of people reliant on public wages or benefits, the stronger the political demand for public programs and the higher the excess burden of taxes. Slowing the economy, such a trend could increase the share of the population relying on government transfers, leading to a vicious cycle (Alesina and Wacziarg 1998). Large public administrations can also give rise to organized interest groups keener on exploiting their powers for their own benefit rather than facilitating a prosperous private sector (Olson 1982).

### Box 7.2: Transaction costs and government bureaucracies

What accounts for government getting bigger even though it means taxes and red tape?

Mulling over the nature of firms, Coase (1937) and Williamson (1985) suggest that transaction costs prevent companies from using market price signals to coordinate their everyday work. Complex production processes lead companies to enter into long-term contracts with employees as it would be too costly to

hire workers daily with on-the-spot contracts for many interrelated tasks.

Olson (1986), using transaction cost theory, sees a similar rationale for government. The public sector facilitates economic arrangements by keeping transaction costs low. Public bureaucracies produce large indivisibles, such as defense, police, justice, and other public goods. They are crucial

for enabling businesses to hire and dismiss workers, sign contracts with suppliers and banks, or, in general, engage in buying and selling of goods and services at low cost. In short, transaction costs make public—and private—bureaucracies inevitable, even though they also generate inefficiencies. Of course, governments might fail just as markets fail, but market failures justify government intervention in the first place.

Yet, although taxes change market outcomes, they are also necessary. Without them, governments cannot fulfill the core functions vital for market economies (box 7.2). Indeed, governments around the world contribute to economic prosperity by financing, providing, or regulating services. Some services are replete with market failures, whether due to monopoly power, externalities, or information problems. Such concerns provide a justification for the welfare state (Barr 1992; Besley and Persson 2001). Of course, public social spending is often not so much about responding to market failure as it is about ensuring that basic needs are met and social inequities do not violate society's values regarding fairness.

What's the upshot of this discussion? Although voters have to judge whether the benefits of public spending outweigh the costs of taxation, economic theory is ambiguous on the impact of government size on growth. But economic models argue that the excess burden of tax increases disproportionately with the tax rate—in fact, roughly proportional to its tax rate squared (Auerbach 1985). Likewise, the scope for self-interested bureaucracies becomes larger as the government channels more resources. At the same time, the core functions of government, such as enforcing property rights, rule of law and economic openness, can be accomplished by small governments. All this suggests that as government gets bigger, it becomes more likely that the negative impact of government might dominate its positive impact. Ultimately, this issue has to be settled empirically. So what do the data say?

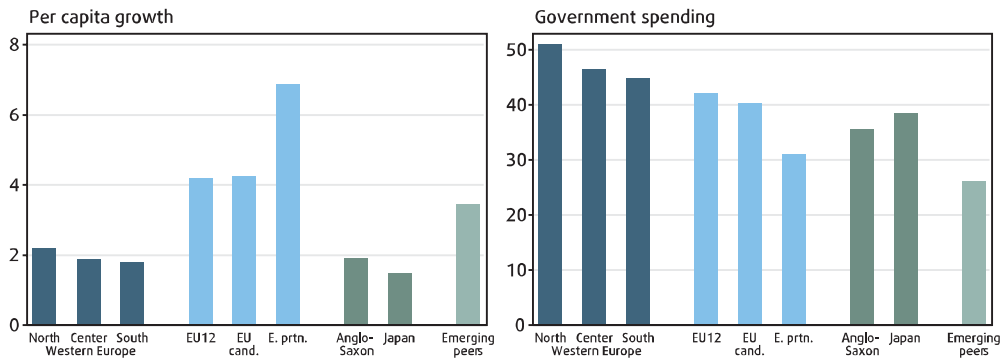
### Europe is different

At first glance, the relationship between government size and growth is not clear-cut. In 1995–2010, median growth was higher in Western Europe than in its peers, but its governments were also bigger (figure 7.8). Yet, emerging peers had smaller governments and grew faster than advanced regions. This suggests that there is no simple relationship between government size and growth at the regional level.

A different look at the data reveals another picture. Figure 7.9 groups annual observations in four categories according to the share of government spending in GDP during that year. Both samples show a negative relationship between government size and growth, though the reduction in growth as government becomes bigger is far more pronounced in Europe, particularly when government size exceeds 40 percent of GDP.

**Figure 7.8: Government spending is higher in richer countries, and income growth is slower**

(median growth, percent, and median government size, percentage of GDP, 1995–2010)



Note: “EU cand.” refers to EU candidate countries and “E. prtn.” refers to EU eastern partnership countries.

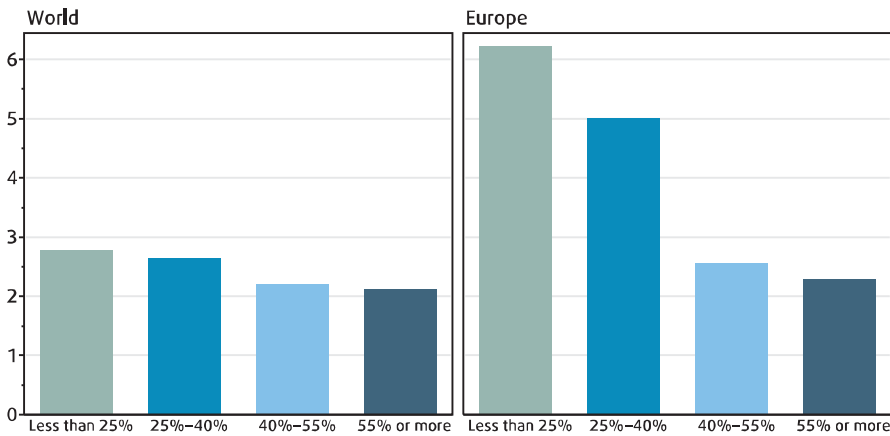
Source: World Bank staff calculations, based on Eurostat; IMF WEO; OECD National Accounts Statistics; and WDI.

Since regional aggregates could hide a lot of variation across economies, it is worth analyzing the picture at the country level. Looking at initial government size allows us to rule out reverse causality: low growth or contractions could lead to higher government spending rather than the other way around. The Europe sample shows a clear negative relationship between government size and growth. Taken at face value, this suggests that big government lowers growth in Europe, but not for the world as a whole.

This correlation might simply be picking up the impact of income levels. For example, growth was high in Armenia, Azerbaijan, and Georgia. This may be not so much because they have small government but because they are low-income countries benefiting from strong income convergence. And since government size tends to go up with higher-income levels, this leads to a spurious negative relationship between government size and growth. However,

**Figure 7.9: Growth is slower as government gets bigger**

(median growth by average government size, percent, 1995–2010)



Note: The horizontal axis shows government spending as a percentage of GDP.

Source: World Bank staff calculations, based on Eurostat; IMF WEO; and OECD National Accounts Statistics; and WDI.

many governments in Eastern Europe are already the same size as some in Western Europe, even though their income levels are lower. In only 7 of 24 countries in Eastern Europe, governments spent in 2010 less than 40 percent of GDP. For the other 17, government size ranged between 40 percent and 50 percent of GDP, similar to spending levels in richer countries such as Canada, Germany, Norway, and the United States. Bosnia and Herzegovina, Hungary, Montenegro, Slovenia, and Ukraine stand out as countries with the largest excess spending. Since the crisis boosted government spending relative to economic activity more in advanced Europe than in emerging Europe, these comparisons were even starker before the crisis.

## Big governments come with slower growth

The standard way to isolate the impact of government size on growth from the impact of other variables is econometric analysis. A large economic literature explores the link between government size and economic growth, as reviewed in Bergh and Henrekson (2011), Barrios and Schaechter (2008), and Pitlik and Schratzenstaller (2011). Although many studies find a negative relationship between government size and growth, no consensus has emerged on whether big government is harmful to growth. The failure to establish robust findings is not unusual. The inherent difficulties of empirical growth studies, along with the importance of the subject, have led to a busy research area called growth econometrics (Durlauf, Kourtellos, and Tan 2008; Durlauf, Johnson, and Temple 2005).

A practitioner of growth econometrics confronts four difficulties. First, the data are poor. Consistent national accounts data are available only since 1960, and only for some 100 countries. Data series for the countries from Eastern Europe start only in the mid-1990s. Second, there is “model uncertainty” because growth theories are not explicit about the salient determinants of growth. Third, macroeconomic analysis cannot exploit randomized trials as an investigation tool, making it difficult to establish causality. Fourth, growth econometrics has struggled to reconcile the desire to uncover common growth patterns across countries with the need to account for country-specific features as well as differences at different stages of countries’ growth processes (Solow 1994; Eberhardt and Teal 2011).

For this chapter, we provide new econometric evidence on the impact of government size on growth using a panel of advanced and emerging economies since 1995. As estimates can be biased due to problems of omitted variables, endogeneity, or measurement errors, it is necessary to rely on a broad range of estimators. Depending on data availability and specification, the regressions in annex 1 report findings on 25–152 countries.

The results show a robust inverse relationship between initial government size and subsequent growth in Europe, but not worldwide. The parameter estimates differ in size and significance, which is not surprising given the host of estimation issues. They suggest that a 10 percentage point increase in initial government spending as a share of GDP in Europe is associated with a reduction in annual real per capita GDP growth of around 0.6–0.9 percentage points a year (table A7.2). The estimates are roughly in line with those from panel regressions on advanced economies in the EU15 and OECD countries for periods



### Box 7.3: Europe's tax burden is caused by high labor and indirect taxes—in spite of low corporate taxes

Evaluating the impact of a country's tax system on growth is no less a job than figuring out how public expenditures influence growth. This report does not attempt this task. Still, since taxation is central for growth and public finances, it does include a brief discussion. After all, taxes are the principal source of financing for public expenditures and the impact of an expansion of a particular government program depends always on how it is financed.

Overall, Europe's tax system is less growth-friendly than those of Anglo-Saxon countries and Japan because of a high tax burden and heavy reliance on labor taxes, but it is more growth-friendly because of low corporate tax rates and greater reliance on indirect taxes (Pitlik and Schratzenstaller 2011).

- Europe's tax take is high. This is especially true for the north and center, but even the EU12 countries in 2004–08 collected more taxes as a share of GDP than the Anglo-Saxon countries or the Republic of Korea. This is a concern, as high taxes are often a drag on growth. However, they are also often good for fiscal balances: fiscal deficits tend to be lower in countries with a high tax-to-GDP ratio.

- High personal income taxes are one reason why Western European countries collect high tax revenues. In addition, social security contributions are often high, giving rise to big marginal and average income tax wedges. So overall, labor gets taxed heavily. In contrast, many countries in Eastern Europe undertook reforms to reduce, simplify, and unify personal income tax rates, and their top personal income tax rates are now often lower than in Anglo-Saxon countries. Most studies find that workers with decent skills do not respond strongly to high labor taxes, but unskilled workers are discouraged from taking up formal work or working regular hours. High income taxes might also inhibit the development of markets that offer home-produced services such as restaurants and personal services, as work at home becomes more attractive.
- European countries—especially the EU12—stand out in taxing goods and services more heavily than Anglo-Saxon countries and Japan. Many European countries rely on value-added tax (VAT) as the main indirect tax. Along with property taxes, VAT is often considered among the taxes least harmful for growth. Since VAT taxes only consumption, it encourages exports. And as it is imposed on the whole production chain,

it does not distort production, distribution, or sales choices. In addition, many European countries impose sizable excise taxes on products such as tobacco, alcohol, and gasoline. Since their consumption can lead to bad health or bad air, such taxes not only generate revenues but may also improve society's welfare as people cut back on these products in response to taxation. Property taxes in Europe tend to be less important than goods and services taxes, at least outside the center.

- Although European countries leverage high personal income taxes and indirect taxes, corporate income taxes are generally low. Why do some European countries levy high taxes on labor and low taxes on capital? The answer is that, as globalization showed up the mobility of capital and the immobility of labor, the efficiency costs of taxing capital heavily quickly became apparent. In the late 1980s, Scandinavian countries began introducing dual tax systems, which combine low and uniform taxation of capital income with a higher and progressive taxation of labor income. Indeed, corporate income tax rates have been cut around the globe in the last few decades, although fiscal concerns during the global crisis might have halted the trend for now.

from 1960 or 1970 to 1995 or 2005 (Bergh and Henrekson 2010 and 2011). This is by no means obvious. After all, our regressions cover a different and shorter period, and relate to a more varied group of countries. Among the 43 European countries, 18–24 countries were low- or middle-income economies in 1995–2010.

A few points need emphasis:

- In a race between the importance of initial per capita income and government size for growth, the former wins hands down. Growth declines with higher initial income both in Europe and the world.
- The estimates for government size are consistently negative for Europe, but less so for the global sample. They are significant and negative for Europe ten times, but only three times for the world sample.
- The results hold for two different time periods. Including all 16 years over the period 1995–2010 seems logical. But the global crisis led to a collapse in output in most countries, which inflated government size even without increases in spending programs. This is a case of reverse causality: a decline in growth leads to bigger government size, not the other way around. But the same analysis using data for 1995–2006 broadly confirms the findings for the whole period.

- There can be threshold effects of government size, where size starts to matter only after it reaches a crushing mass. While the choice of a threshold for what constitutes “big government” is arbitrary, this chapter uses 40 percent of GDP, which is close to the average government size in high-income countries in 1995–2010.<sup>3</sup> Tanzi and Schuknecht (2000), for example, suggest this as the upper limit for sufficient public spending. The results provide support for a threshold effect. The impact of government size on growth is negative for the countries with initial government spending of 40 percent of GDP or more, but positive (and mostly insignificant) for countries with smaller government sizes. The same pattern holds for the world sample. This might explain why government size is harmful for growth in Europe but not elsewhere. Median government expenditures over the last decade and a half were 26 percent of GDP in the world, but 43 percent of GDP in Europe.
- Parameter estimates can be sensitive to the selection of variables. Sala-i-Martin, Doppelhofer, and Miller (2004) have used the method of Bayesian averaging of classical estimates (BACE) to find out which combination of these variables explains economic growth best. BACE uses all possible combinations and generates average coefficients for each variable, weighted by the goodness-of-fit of each regression, as well as inclusion probabilities. Our goal is more modest: to find out whether government size is one of the variables among the set of nine explanatory variables that contributes to a high explanatory power of the regression model. This implies running more than 500 regressions. The coefficient on government size is negative in both Europe and the world, but larger in absolute terms in Europe. The inclusion probabilities are in excess of 90 percent for Europe, but below 33 percent for the world. This confirms our findings of a robust negative relationship between initial government size and growth in Europe, but not in the world sample.
- Government revenues can be studied as alternative measures of government size. Bergh and Karlsson (2010) argue that looking at tax revenues is one way to address concerns about reverse causality. Tax revenues as a share of GDP tend to increase during booms and decline during recessions (table A7.3). This makes it less likely that the causality runs from higher growth to lower government size. Since tax revenue data are harder to come by, total revenues have to be used rather than tax revenues. (For the sample of EU and OECD countries, tax revenues make up about 85 percent of overall revenues.) The results suggest that large public revenues come with slower growth (box 7.3).

## Social transfers hinder growth—and public investments help

Some types of public spending increase growth, others reduce it (for example, Lucas 1988; Barro 1990; Barro and Sala-i-Martin 1992; Gemmell, Kneller, and Sanz 2011). But the literature fails to agree on which categories of public spending are likely to be growth-friendly. Consensus is hard to come by because the growth impact of public spending is tied to a range of factors. Public spending programs can be executed well or poorly, and may work well in some stages of development but not others. High government consumption can reflect well-paid public servants who provide vital services to people

and businesses, or it can be a sign of bloated and ineffective bureaucracies. Whether government spending turns out to boost or dampen growth depends also on the way it is financed. In short, public spending's impact on growth depends on institutional, financial, and economic factors (Bayraktar and Moreno-Dodson 2010).

Keeping these caveats in mind, we must ask: do social transfers hinder growth in Europe? Governments are big in Europe mainly due to high social transfers, and big governments are a drag on growth. The question is whether this is because of high social transfers. The answer seems to be that it is. The regression results for Europe, using the same approach as outlined earlier, show a consistently negative effect of social transfers on growth, even though the coefficients vary in size and significance (table A7.4). The result is confirmed through BACE regressions. High social transfers might well be the negative link from government size to growth in Europe.

A sizable economic literature argues that, unlike social transfers, public investment more often than not supports growth. Over the last decade and a half, public investment was higher in Eastern than Western Europe, as a share both of GDP and of total public spending, reflecting three factors. Since the east is more capital-scarce than the west, the return on investment is likely to be higher there. Also, capital flows downhill in Europe, enabling emerging economies to boost investment. Finally, the EU's structural funds allowed prospective and new member states to increase public investment. So, while the evidence is less clear-cut than for social transfers, it suggests that public investment is more likely to help than hinder growth in Europe.

## Bumblebees can fly

Big government is associated with slower growth in Europe. But the estimations discussed above pick up only the average patterns across Europe, and there are clearly countries that manage to combine big government with healthy growth. To return to the example at the start of this chapter, Sweden has managed to grow richer with big government, just as a bumblebee seems to defy the laws of aerodynamics. Sweden is not alone. In fact, the role of government has increased since the end of World War II in many countries, even during the "golden age" of European growth from the 1950s to the early 1970s. As market economies became richer, governments grew bigger. Government spending as a share of GDP among the G7 countries doubled from about 20 percent in 1950 to more than 40 percent in 2010. Big governments might be more commonly associated with paper reshuffling and red tape rather than the frictionless machinery imagined by Max Weber (Gerth and Mills 1946). Yet the persistent rise in government size suggests a deliberate choice of societies to expand government.

The fiscal footprint of governments through taxation and spending is only one feature of government. A growing literature explores the role of government more generally. This research comes under different names, including quality of government, good government, governance, government capacity, or institutions. Institutional economists point out that the accumulation of physical, human, and intellectual capital—emphasized by neoclassical and endogenous

growth theories as drivers of growth—are only proximate causes of growth. Institutions, along with geography, culture, and trust, are possible fundamental causes of growth that can explain why some countries fail to accumulate these forms of capital while others put them to good use and grow.

## The five dimensions of government quality

Poorly run governments result in improperly functioning markets, and well-run governments can make up at least part of any negative effects of big government on growth. Does this happen in Europe? It appears it does. To answer this question, the relationship between government size and the quality of government in Europe and the world are contrasted. The approach of La Porta and others (1999) is adapted to establish whether government size is systematically correlated with quality of government, after considering economic, political, and geographic factors. Five government responsibilities are assessed: regulator of the private sector, facilitator of economic openness, manager of its resources, enabler of voice and accountability, and enabler and provider of public goods.

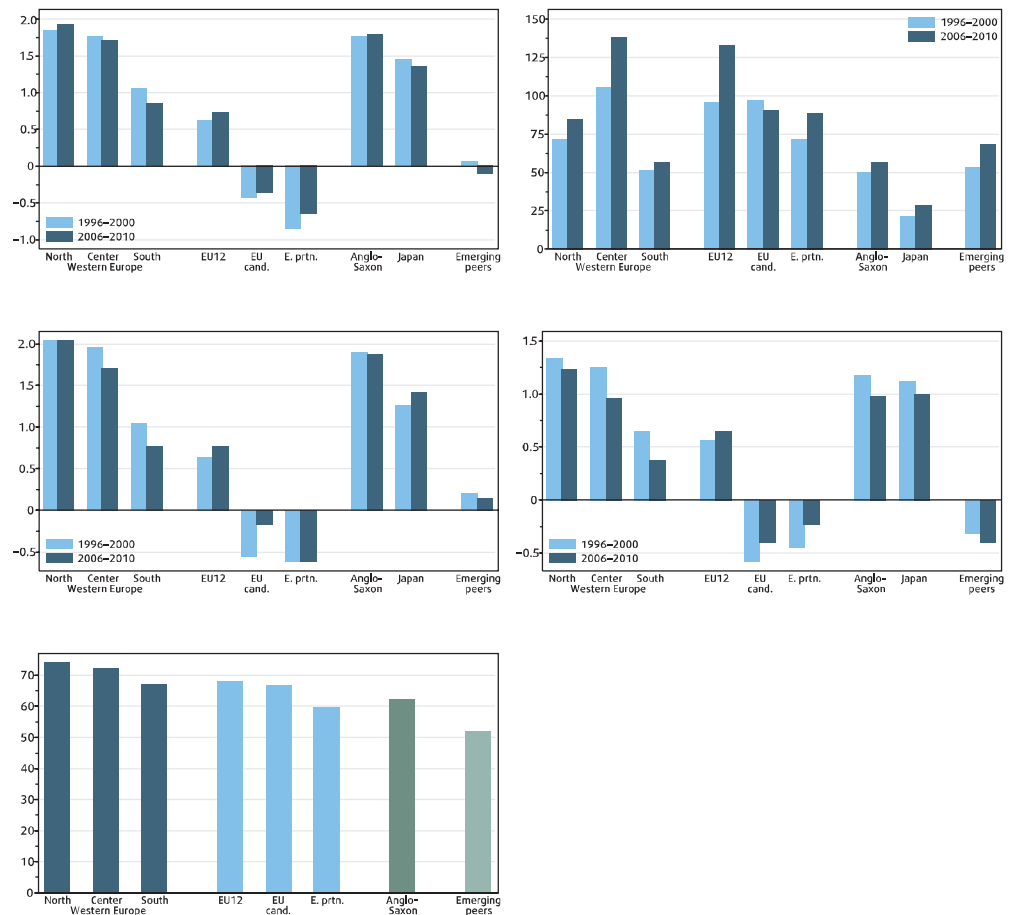
- Establishing well-defined property rights and ensuring a functioning legal system is a core responsibility of government. Since the work of Adam Smith in the eighteenth century, the protection and enforcement of property rights and contracts has been seen as a precondition for the operation of markets and economic specialization.
- Openness brings competition and pressures to improve productivity (Doucouliagos and Ulubasoglu 2006; Dreher 2006). It gives countries access to large, fast-growing markets that allow them to diversify and upgrade their products. Openness channels knowledge and technology through production networks, foreign direct investment, and learning from competitors. As chapter 2 discussed, Europe's growth is also in good measure due to trade. Countries took their export-to-GDP share from 28 percent in 1970 to 54 percent in 2009 in Western Europe, and from 36 percent in 1995 to 49 percent in 2009 in Eastern Europe.
- The government can run more or less efficient bureaucracies. With governments commanding around 40–50 percent of GDP, productivity in the public sector, while hard to measure, is a key driver of growth. Managing civil servants well, keeping a cap on the public sector wage bill, and borrowing tools from the private sector to run services efficiently are all important to keep the public sector lean and productive.
- Voice and accountability capture important aspects of European countries. Citizens' voice in society and participation in politics connect them to politicians and policymakers who represent government. Elections and informed voting can make political commitments more credible and produce better outcomes. In addition, better information, thorough public disclosure, citizen-based budget analysis, service benchmarking, and program impact assessments and an active independent media can strengthen voice and accountability (World Bank 2004).

**Figure 7.10: Quality of government declines from north to south and west to east**

(rule of law (left) and trade openness (right) [exports and imports as percentage of GDP], median, 1996–2000 and 2006–10)

(government effectiveness (left) and political stability (right), median, 1996–2000 and 2006–10)

(income equality (100 – Gini coefficient), median, 2000–06)



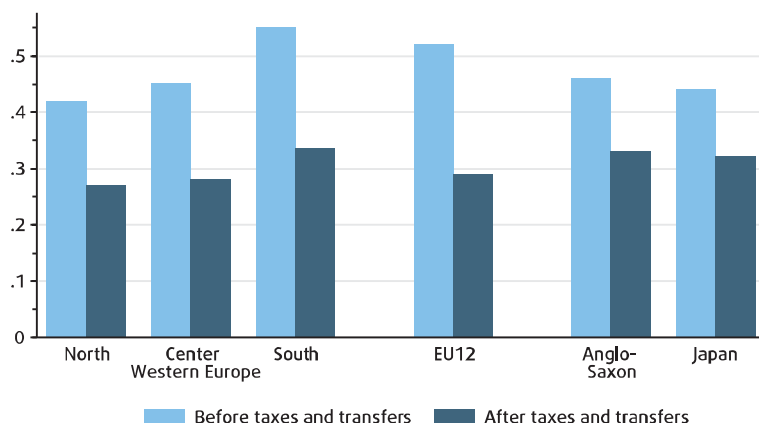
Note: "EU cand." refers to EU candidate countries and "E. prtn." refers to EU eastern partnership countries.

Source: World Bank staff calculations, based on Worldwide Governance Indicators (Kaufmann, Kraay, and Mastruzzi 2010); IMF WEO; and UNU-WIDER 2008.

- Ensuring the supply of public goods such as health care or education is another responsibility of government, whether as provider, financier, or regulator.

The quality of government varies considerably across Europe. Figure 7.10 shows one illustrative indicator for each of the five dimensions. In Western Europe, the south does worse than the north or center in level, and, from the late 1990s to the late 2000s, in change. In Eastern Europe, the EU12 countries stand out as the best performers. Indeed, even though their per capita income is still only about three-quarters of the south's, they match the south on several indicators.

The dimensions of government quality are interlinked. For example, voice and accountability, along with social trust, makes public programs accessible for lower-income households (Lindert 2004). Combined with a progressive tax system, this heavily reduces income inequality. OECD figures, for example,



**Figure 7.11: Governments reduce inequality more in Europe**

(Gini coefficients of income inequality before and after taxes and transfers for mid-2000s)

Source: OECD Income Distribution and Poverty Database.

suggest that the impact of Europe's public spending and taxation is more redistributive than in the Anglo-Saxon countries or Japan (figure 7.11; see figure 1.15 in chapter 1). As a result, the income distribution (after taxes and transfers) is more equal in the north, the center, and the EU12 (not in the south) than in the Anglo-Saxon countries and Japan. Atkinson, Piketty, and Saez (2011) argue that this greater equality is also related to Europe's greater ability to ensure that households at the top of the income distribution contribute adequately to government finances. For example, while the share of the top 1 percent of households in total after-tax earnings remained unchanged over the last four decades at about 11 percent in Germany, it increased from 9 percent to 20 percent in the United States.

## Big, high-quality government

A fairly consistent pattern emerges from the analysis in this chapter. Big government is systematically correlated with better quality of government, with two exceptions: collective wage bargaining and tax rates. This holds both for the world sample and for Europe. It holds also for all five dimensions of government quality. And it holds in most cases, even when we control for basic economic, political, and geographic determinants of institutions (table A7.6).

- Big government is associated with better enforcement of property rights, better regulation, and more independent judiciaries in both the world sample and Europe. Big governments come with more centralized collective bargaining, though there is no correlation with dismissal cost of workers in Europe. In addition, while tax compliance costs are not related to government size, income tax rates are higher in countries with big government. Clearly, for both labor markets and taxes, it is necessary to look at how systems work as a whole, country by country.
- Big government is related to economic globalization elsewhere, but not in Europe. Tariffs go up with government size generally, but not in Europe, perhaps because of the EU's common external tariff. In Europe, countries' trade shares are not related to government size.

#### Box 7.4: Nordic social protection programs seem to be different

Nordic countries stand out for large spending on social protection outside pensions. This includes support for child care and women's careers as well as active labor market policies. Generous social benefits lead to high taxes and large tax wedges, which might undermine growth. But the Nordic countries have streamlined their welfare systems and reduced incentive costs over the last two decades, while maintaining comprehensive insurance against economic, social, and health risks.

For jobs, the system combines flexibility for firms with security for workers, to facilitate structural change and job creation. A worker whose living standards are protected through

a social welfare system has to worry less about losing his or her job. By protecting workers and not jobs, governments can foster job creation and destruction and keep the economy productive. Job search assistance is individualized and provided with light bureaucracy.

Investment in skills and careers of mothers can also help job creation and income growth. Women will find it easier to combine family and work with a publicly funded infrastructure of affordable and quality child care, generous parental leave, and options for part-time work. Part-time work is encouraged, allowing women to combine family and work, and social

benefits are prorated for part-time work.

Since entitlement to programs does not depend on income, universalist programs ensure that low-income earners can improve their income by taking up work. They help to keep administrative costs down because targeted benefit entitlement is hard to determine. They also benefit from strong political support. At the same time, the recipient of social benefits has to meet certain obligations, including welfare-to-work elements.

Source: Aiginger 2004; Kielos 2009; Rodrik, Subramanian, and Trebbi 2004.

- Big government is related to effective government, better control of corruption, and small informal economies in both the world as a whole and in Europe. Low informality means, for example, a larger tax base, which in turn makes it easier to fund big government without imposing high taxes. These correlations also hold when controlling for other institutional determinants.
- Big government goes with stronger institutionalized democracy, more voice and accountability, and greater political stability. This holds in the world and Europe, with and without additional covariates.
- Big government does well with public goods. It is correlated with higher years of schooling, lower infant mortality, longer healthy life expectancy, and more equality in both the world and Europe. The relationship remains significant with the exception of schooling in Europe when controlling for other determinants.

#### Social trust makes for “big government lite”

Countries with efficient courts, open and deregulated economies, and impartial, honest, and accountable public administrations find it easier to combine big government with growth and well-being. Yet, efficient, high-quality government is a fairly recent phenomenon, limited to some high-income countries. For most countries for much of their history, governance was drenched in endemic corruption, patronage, and abuse of power.

But given the importance of the right institutions for well-being, how is it that some societies maintain institutions that perpetuate economic failure? Turning bad governance into good governance could well require more than just a technical fix or a political push; it needs, rather, a profound change in institutions. Yet, such change takes time, as the seeds for strong institutions in some countries go back at least to the nineteenth century. And there is likely to be resistance to change. Acemoglu, Johnson, and Robinson (2005) argue that different institutions not only have different implications for economic growth,

but also for the distribution of the rewards from growth across different groups. Those groups that command the largest resources will push for economic and political institutions favorable to their interest, thus perpetuating their hold on power.

There is another factor, beyond profound institutional change, that matters. Developing good institutions may well be easier in countries with high social trust, where people are less worried about others taking advantage of the system. They abide by the rules not because of enforcement but social trust. Low welfare fraud and tax evasion allow the public sector to function more efficiently. And while social trust does not stop governments from becoming too big, it can raise the threshold at which big government becomes a drag on growth and well-being.<sup>4</sup>

As social trust facilitates good institutions, and big government often relies on good institutions, is big government also correlated with strong social trust? We extend the regression specification used in the last section to look at this issue using World Values Survey data (table A7.7). We find, indeed, that big government tends to be correlated with high social trust, though the coefficients are not always significant, especially when we control for other institutional determinants. Big government is associated with more trust in other people, more tolerance of diversity, the opinion that government should take more responsibility, and the view that claiming benefits is justified (box 7.4). So strong quality of government and social trust go a long way toward explaining how a country like Sweden manages to grow fast with big government (box 7.5).

Of course, even in countries with strong social trust and good quality of government, governments can be too big. But strong institutions help countries to undertake successful fiscal consolidation. For example, in 1993, Sweden's economy was in recession and the public finances in dire straits. General government expenditures reached a record high of 72 percent of GDP, and the fiscal deficit ran at over 12 percent of GDP. Sweden put together a strong fiscal adjustment package to meet the EU Maastricht criteria. The program was successful: growth returned quickly and the fiscal balance turned positive within five years.

#### Box 7.5: The north performs better than predicted in the models, and the south and the EU candidate countries worse

We have looked at Europe as a whole in our analyses of growth, quality of government, and trust. For example, we assumed that the growth model is the same across the west and east, or the north and south. Yet, to paraphrase a remark from the econometrician Harberger (1987): What do Greece, Sweden, and Ukraine have in common that merits their being put in the same regression analysis? This point is especially valid in the current context where we try to analyze why countries like

Sweden can defy the growth moderation coming from big government.

One way to address this point would be to estimate country-specific models. Values of parameter, and not just variables, could then vary from one country to another. However, the tradeoff would be that we lose the insights from unveiling common characteristics across a group of countries. In addition, time series for individual countries, especially in Eastern

Europe, are simply too short for meaningful analysis. Instead, we use a simpler approach: we illustrate the regional differences by the differences in how well our models predict actual values of growth, quality of government, and trust. The pattern is fairly uniform: the north does better than predicted by our models for all indicators; the south does worse for all indicators; and the EU candidate countries do worse on all indicators except trust.



Other Northern European countries have carried out similar reforms since the early 1990s, building on a long tradition of quality in public service:

*Many of the northern European countries that started to develop encompassing welfare states during the first half of the twentieth century had successfully increased their quality of government during the preceding century. For example, during the nineteenth century Bavaria, Prussia, Britain, Denmark, and Sweden carried out large-scale changes in their government institutions that did away with systemic corruption and pervasive patronage and introduced impartial (meritocratic) systems for recruiting civil servants and implementing public policies. (Rothstein 2011, p. 126)*

## Doing more with less

With governments financially squeezed for a long time to come, making public sectors work better has become a main motivation for public finance reforms. Looking for ways to reduce fiscal imbalances and to lower public spending, governments in Europe and elsewhere are seeking ways to improve the efficiency of the public sector. Standard policy prescriptions include making budget processes more responsive, reforming management practices, improving information and accessibility through e-government, using market signals for publicly provided goods, and enlisting the private sector and communities to deliver services.

Collaboration with others can take many forms: transferring revenues to subnational governments and mandating service provision; contracting with commercial companies to supply public goods; and entering public-private partnerships to finance, build, and operate infrastructure projects and other public projects. If done well, such reforms can reduce public bureaucracy and increase the productivity of services by introducing practices from the private sector. If done poorly, they can lead to high transaction costs and replace public with private red tape—without improving services. Ultimately, high-quality government is needed to outsource well, too. Outsourcing, whether directly to the end user or for government inputs, amounted to 10 percent of GDP in OECD member countries in 2009. The Netherlands, the leader, outsourced almost twice that.

With public wages absorbing about one-quarter of total government spending, reining in public sector pay is a potentially powerful instrument for improving public sector efficiency (Clements and others 2010). Indeed, the north and the center (and Japan) managed to keep a cap on public wages relative to GDP after the mid-1990s, when public sector wages rose in other regions, though higher public sector pay there rarely translated into better public services.

More recently, in response to the global crisis, many countries have imposed nominal freezes or cuts in employees' remuneration and hiring, or have streamlined bonuses and allowances. Such actions can be important to shore up macroeconomic stability by lowering the wage bill. More systemic changes are also often needed, however, including rationalizing the size and structure of the public sector, strengthening payroll systems, and tightening the link between pay and performance. While they take longer to implement, if done

### Box 7.6: Private social spending is low in Western Europe, especially the south

Public and private expenditures are to some degree substitutes. For public services, families pay taxes and social security contributions to the government. For private services, households pay fees to the private school or health center. Of course, families might be able to select their preferred type of service in a better way and to hold the service provider accountable in the private sector. Nevertheless, the impact on family income

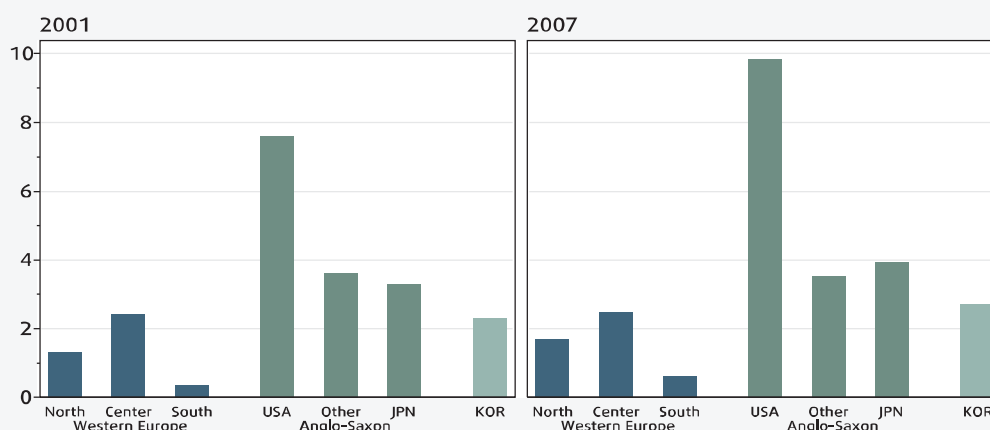
might be similar, whether the school or health center is public or private. Indeed, once one accounts for private health insurance, the U.S. tax burden is no longer far below Western European levels.

Accounting for private social expenditures gives a better picture of the national resources invested in social sectors. The Organisation for Economic Co-operation and Development

presents numbers for private social spending by 26 member countries for 2007 (box figure 1). The United States stands out in its heavy and increasing reliance on private social spending. But Western Europe also lags the other Anglo-Saxon countries, as well as Japan and the Republic of Korea. In Western Europe, private social spending matters least for the south and most for the center.

### Box figure 1: Private social spending for OECD countries, 2001 and 2007

(percentage of GDP)



Source: Adema and Ladaïque 2009; and OECD Social Expenditure Database.

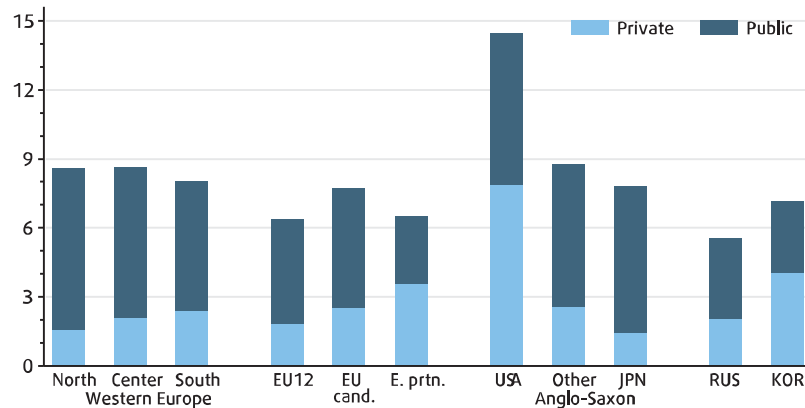
well, systemic reforms can make the adjustments sustainable and give a boost to public sector efficiency.

## Measuring public sector performance is hard

Making the public sector work better might well be harder than doing the same thing for the private sector. Let us take the case of civil servants. Improving their incentives to perform well through bonus payments is difficult without good measures of what they produce. Yet, public sector outputs are often indivisible and their production function is unknown. And since the output of civil servants is hard to define and seldom priced in markets, it is intrinsically hard to measure their productivity and to reward them according to their contribution to output. Because putting a value on the output of governments is difficult, national accounts therefore typically assume that the value of that output is simply equal to the total cost of the input. This implies that larger public spending translates one for one into larger output, rendering investigations of public sector productivity based on national accounts data meaningless.

**Figure 7.12: Private spending makes the United States the biggest health care spender in the world**

(private and public health spending, percentage of GDP 1995-2009)



Note: "EU cand." refers to EU candidate countries and "E. prtn." refers to EU eastern partnership countries.

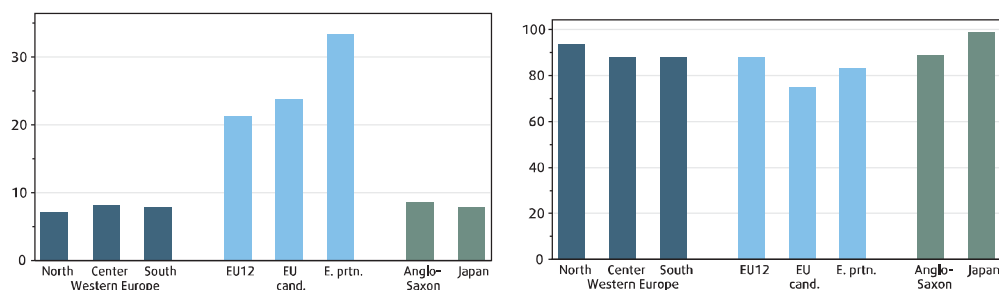
Source: World Bank staff calculations, based on WHO Global Health Expenditure Database.

The issue is not just about measuring output. The uncertainty about public sector output might make it easier for bureaucracies to appropriate some of the surplus that otherwise would belong to taxpayers, at least as long as politicians and citizens cannot exercise appropriate control.

Although measuring government output is tricky, economists often adopt a methodology originally designed for firms. Taking education and health as examples, the idea is to relate the amount of public resources to outputs and outcomes, such as education enrollment rates or life expectancy. The results show that differences in performance and efficiency across countries are substantial; that there is no systematic link from more government spending to higher efficiency; and that public sector efficiency relates systematically to income levels, institutional factors, and demographic trends (Hauner and Kyobe 2010; Tanzi and Schuknecht 1997 and 2000; Alfonso, Schuknecht, and Tanzi 2005; Afonso, Schuknecht, and Tanzi (2010); Mandl, Dierx, and Ilzkovitz 2008; Estache, Gonzalez, and Trujillo 2007).

Analyzing public sector performance and efficiency is not easy. In particular, the link between public spending and social outcomes is often tenuous. Public spending is only one among many factors explaining public sector performance, including a host of economic, social, and institutional variables. In addition, comparing public expenditure ratios across countries assumes that public sectors have a homogenous production function. Nevertheless, these attempts to measure public sector performance serve a purpose. Comparisons of the performance of public sectors are inevitable, so this is best done in a rigid and transparent fashion rather than using more or less ad hoc approaches.

The following sections present three ways to analyze public sector performance. First, we link public spending on education and health to secondary school enrollment rates and maternal mortality ratios. Then, we illustrate potential inefficiencies in education using examples from Eastern Europe. Finally, we discuss how governments have adjusted spending on pensions and other social transfers in response to population aging.



**Figure 7.13: Western Europe has good health and education outcomes**

(maternal mortality ratios (left) and net secondary enrollment rates (right), 1995–2009)

Note: “EU cand.” refers to EU candidate countries and “E. prtn.” refers to EU eastern partnership countries.

Source: World Bank staff calculations, based on data from WHO and UNESCO.

## Public spending is more effective for health care than education

Health and education absorb sizable amounts of Europe’s public spending in social sectors, although public health spending is higher in Anglo-Saxon countries and Japan than in Western Europe. Eastern Europe spends less on public health, despite the fact that eastern partnership and especially EU candidate countries have increased their spending in the last decade. The north leads education spending in Western Europe, and the EU12 countries in Eastern Europe. Anglo-Saxon countries spend almost as much as the north, while Japan spends less than the center and the south. Despite shrinking school cohorts, EU candidate and eastern partnership countries raised education spending over the decade. Taking health and education together, Anglo-Saxon countries spent as much as or more than Western European countries, even though they rely more on private spending than Western Europe (box 7.6).

In Europe, private health spending is highest in the eastern partnership countries (figure 7.12).

How effective are public resources in improving health and education outcomes? It is illustrative to compare the impact of government spending on maternal mortality ratios and net secondary enrollment rates. The maternal mortality ratio—the number of maternal deaths per 100,000 live births—is

### Box 7.7: Randomized public health, Oregon

In 2004, Oregon closed its public health insurance program for low-income people for lack of public funds. By 2008, it had enough resources for 10,000 people. Because 90,000 people were on the waiting list, a lottery was used to select the people who can apply.

Analyzing the impact of public health insurance on people’s health, Finkelstein and others (2011) write: “This lottery provides a

unique opportunity to gauge the effects of expanding access to public health insurance on the health care use, financial strain, and health of low-income adults using a randomized controlled design. In the year after random assignment, the treatment group selected by the lottery was about 25 percentage points more likely to have insurance than the control group that was not selected. We find that in this first year, the treatment group had

substantively and statistically significantly higher health care utilization (including primary and preventive care as well as hospitalizations), lower out-of-pocket medical expenditures and medical debt (including fewer bills sent to collection), and better self-reported physical and mental health than the control group” (from abstract).

Source: Finkelstein and others 2011.

often used as a measure of the quality of health care, and is correlated with infant and under-five mortality rates. The net secondary enrollment rate provides a measure of the extent to which the population eligible to participate in secondary education is actually enrolled. Net rates are a more precise measure of participation than gross rates as they exclude over-age and under-age children. However, enrollment rates do not measure the quality of education and learning achievements. The analysis contrasts the impact of public spending on health and education outcomes as measured by these two indicators. This exercise is merely suggestive, as a proper consideration of health and education would require a more disaggregated look at inputs and outputs for a range of outcomes.

Figure 7.13 shows the geographic variation of the performance measures. Maternal mortality ratios are far lower, and net secondary enrollment rates somewhat higher, in Western than Eastern Europe. As a measure of the quality of government, we use the commonly used International Country Risk Guide indicator averaged over the dimensions of corruption, law and order, and quality of bureaucracy. We interpret this indicator as a broad measure of government effectiveness. As we saw earlier, quality of government declines in Europe as we move north to south and west to east.

How does the impact of public spending vary across the two outcome measures? (The regression results are summarized in table A7.8). For maternal mortality, a 1 percent increase in government spending leads to a 1 percent reduction in the maternal mortality ratio. By contrast, we find that the elasticity of public spending on education with net secondary enrollment rates is only 0.2, suggesting that spending on health is effective than on education. Similarly, analyzing 114 countries over 1980–2004, Hauner and Kyobe (2010) argue that the link from more public spending to better performance is more tenuous in health than in education.

What might account for these differences between the two sectors? One interpretation is that public spending is more effective in promoting good health care than good education because of the different nature of the services. In particular, infrastructure and equipment play a bigger role in health than education. In addition, there is a fundamental difference between health and education in most countries: education is delivered by the public sector; health is purchased by the public sector even though it owns some of the institutions. For all its problems, health may have been far more effectively privatized than education as far as provision is concerned (except at tertiary level).

Furthermore, the public sector seems better able than the private sector to control costs for health care and to give access to a broad spectrum of people without any major loss in the quality of services, when one contrasts the experience of the United States with that in other countries (box 7.7). A final interpretation would be not so much about why public health spending works, but why public education spending does not. One aspect is that private spending might be better able to substitute for public spending in education. Another aspect is that public education systems might suffer from inefficiencies. The next section illustrates these inefficiencies in three countries.

## Identifying inefficiencies in government spending: three examples

Europe has made great achievements in the education sector, and education has made a vast contribution to growth and prosperity over the last half century. In the early 1960s, only the privileged benefited from higher education, while today about one in three young adults has a tertiary degree (OECD 2011a). While there are many good things to say about education, this section presents three examples of inefficient government spending on education and highlights policy responses aimed at improving sector efficiency that have been suggested in recent World Bank reports.

**Moldova: adjusting the school network to changing demographics.** Like many of its neighbors, the country has experienced a steady population decline in the past two decades. Lower birthrates combined with high levels of emigration have also led to a sharp aging of the population—particularly in rural areas—resulting in 43 percent fewer students in Moldova’s schools over this period. But the school network has failed to adjust to the demographic changes: the number of teachers employed in 2009 was the same as in 2003, while the number of schools was virtually unchanged from 1994. The average school now enrolls 160 fewer students than it did in the early 1990s, with student-teacher ratios dropping from 14.5 in 2003 to 10.4 in 2009.

Shrinking schools and classes have caused education to become a drain on public resources, its spending surpassing 9 percent of GDP by 2009. Recent work at the World Bank examined the expenditures in Moldova’s general education subsector and identified fiscal savings from optimizing the country’s school network. The government will have to do a lot: increase class and school sizes in rural areas by consolidating and closing underutilized schools; raise class sizes in large schools by consolidating small classes; implement nationwide per student financing of general education; and overhaul the legislative framework governing education to allow for a more efficient use of resources in line with actual needs, instead of ensuring compliance with outdated norms.

The fiscal savings resulting from the proposed reforms—estimated to exceed 7 percent of the general education budget—can then be used to improve the quality of education by investing in infrastructure, teacher training, technology, learning materials, and so on.

### **Poland: aligning spending with results in a decentralized education system.**

Poland’s education reforms are considered a great success. By restructuring schooling, deferring tracking in secondary education, launching curriculum reform, and boosting school autonomy, between 2000 and 2009, Poland rose from below to above the OECD average in the OECD Programme for International Student Assessment reading scores.

Not all aspects of the reform have worked equally well. The decentralization reforms of the 1990s devolved responsibility for managing primary and secondary education to local governments (Rodriguez and Herbst 2011). In primary education (grades 1–6) most direct financing decisions are now made by the municipality (gmina), allowing for wide variations in funding and other inputs for primary schools across the country’s more than 2,000 municipalities.

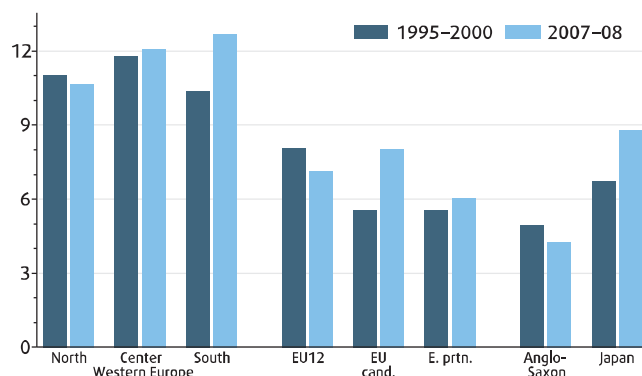
Given the high degree of discretion in municipalities' decisions on how—and how much—to invest in primary education, one may ask whether municipalities that spend more per student receive a higher return on this investment in the form of better educational outcomes than similar municipalities with lower levels of spending. It seems not. Recent World Bank analysis found no relationship between municipal spending on primary education and grade 6 test scores when municipalities' demographic and socioeconomic characteristics were taken into account.

This finding raises another question: Why do some communities get less from spending on education than seemingly similar but more “efficient” communities? For a possible explanation, consider two rural communities. The village of Rutka-Tartak spent less than half as much per student as did Tarłów village, yet its students scored significantly higher on the national grade 6 exam. The two municipalities are similar—population density, household structure, adult education levels, and so forth—yet one community seems to be “more efficient” in converting inputs proxied by spending per student into outcomes, as measured by standardized test scores.

The difference in unit costs between Tarłów and Rutka-Tartak is explained in large part by the difference in average class sizes across the two municipalities. While one municipality groups students, on average, in classes of 24, the other has smaller classes of 15 students. Smaller classes increase unit costs but do not appear to contribute to improving education outcomes. In short, this suggests that some of Tarłów's resources could be saved with little impact on the quality of education of its primary schools.

**Armenia: protecting equity while ensuring quality of rural schools.** A major concern in deciding how to allocate public resources in education arises from the goal of ensuring adequate access to high-quality education for all children. The focus is often on protecting access for vulnerable children, such as those from households with poor or less educated parents or in remote rural areas. In Armenia, the government's policy of providing equal access to education is manifest in a large network of small rural schools that allows virtually all students to attend school in their village—Armenia averages one school per village. The question is: While this raises the unit costs of education, does it foster equality by providing high-quality education to vulnerable students?

Sadly, no. The government's policy of maintaining a vast network of small rural schools is not only fiscally inefficient but also fails to provide high-quality education to the target student population. The average allocation per student under the country's per capita financing formula is nearly three times as high in the smallest schools as the national average. By itself, this is not surprising given the financing formula's generous fixed per school component and the government's commitment to funding schools in even the smallest villages. But more detailed analysis revealed a persistent gap in student achievement between urban and rural schools and between large and small schools. Of the students who took the university entrance exam at the end of the 2009/10 academic year, those attending the smallest schools were almost 20 percentage points less likely to pass. These students were also less likely to take the unified



**Figure 7.14: The south spends more on pensions than others**

(public pensions, percentage of GDP, 1995-2000 and 2007-08)

Note: "EU cand." refers to EU candidate countries and "E. prtn." refers to EU eastern partnership countries.  
Source: World Bank staff calculations, based on Eurostat and OECD Pensions Statistics.

entrance exam. After controlling for a variety of demographic, socioeconomic, and geographic characteristics of the communities where these schools are located, it was still the case that the achievement gap between small and large schools remained.

The inability to ensure equal quality of education for rural students undermines the rationale for spending heavily on maintaining small schools in the more than 800 villages. The World Bank study recommended that the government consider shifting its focus from providing access to a school building in every village to ensuring access to high-quality education for every student. Potential measures include assessing the quality of education provided by rural schools, adjusting the per capita financing formula, addressing the low quality of teaching in rural areas, and finding better ways of providing education to students in rural areas by, for example, forming fewer "hub schools" for groups of villages. With more informed analysis and a willingness to experiment, equity and efficiency in public service provision need not be conflicting objectives.

These three country examples illustrate how inefficiencies in government spending can be caused. One is the public sector's inability to adjust spending patterns to shifting demographic trends (Moldova). Another (Poland) is that devolving spending decisions to local governments creates a laboratory that can illustrate the impact of different resource allocation decisions on results in otherwise similar municipalities. The challenge is for municipalities to learn from each other and adopt winning solutions. And last (Armenia), government policies that seek to improve equity at the expense of efficiency may achieve neither without proper evaluation of the policies' outcomes.

## Aging and social transfers

An aging population puts pressure on pension systems. But who bears the costs? Is it the working-age population who have to pay more taxes or to face cuts in family benefits imposed by the politically powerful elderly? Or does the burden fall on the elderly through less generous pensions?

Population aging in the last three decades is almost a global phenomenon, but to different degrees in different regions. Taking 1980 as the benchmark and the



### Box 7.8: Some countries have managed to reform pensions in spite of a growing elderly population

Australia, a leader in pension reforms, has a near-universal system of mandatorily funded employer pensions. In the late 1990s, Canada raised the contribution rate for the public pension system well above current costs to build up a large trust fund for the future. Germany, Japan, and Sweden have all indexed their public pensions system, at least partly, to changes in longevity. Germany has also taken steps to encourage funded private pensions.

Italy began in the early 1990s to adopt reforms to scale back benefits, though with long transition periods. The Netherlands has a large, nearly universal, and fully funded occupational pension system, allowing the public pension system to be relatively modest. In the late 1990s, Sweden introduced a new system of national defined contribution accounts along with a mandatory system of personal retirement accounts. Many countries

are cutting back expensive early-retirement options. The United States has a modest public pension system thanks to a large funded private system and a young population.

On the basis of median voter models, Razin, Sadek, and Swagel (2002) and Galasso and Profeta (2004) argue that aging could either increase or decrease the size of social welfare depending on whether the political effect or the economic effect dominates. Population aging makes the median voter older, and hence increases that person's demand for social welfare spending (the political effect). Aging also leads, however, to a higher tax burden on the median voter as the share of the old-age population increases, and this could reduce the median voter's preference for social spending (the economic effect). Empirical analysis suggests that population aging is linked to higher social spending. Disney (2007),

for example, uses fixed-effect panel analysis to show that demographic aging is associated with a larger welfare state using data from 21 Organisation for Economic Co-operation and Development (OECD) countries for the 1970s to the 1990s.

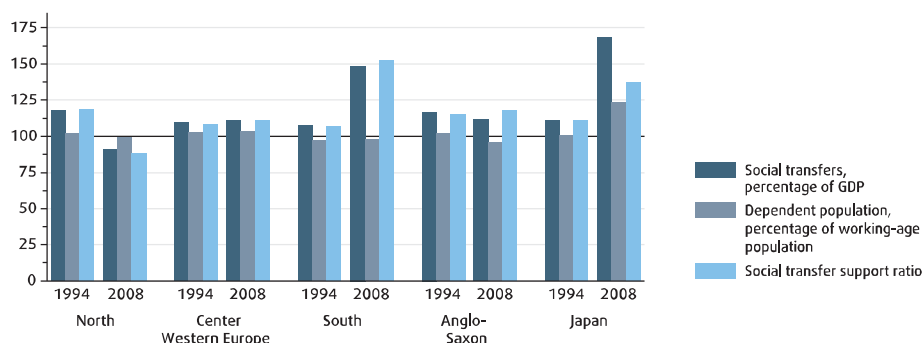
Using similar data and an error-correction specification, Sanz and Velázquez (2007) establish that aging is the main driving force in the growth of government spending. Likewise, Tepe and Vanhuysse (2009 and 2010) analyze OECD countries from 1980 to the early 2000s and find that population aging drives up pension spending, but not health spending or welfare programs for families and the unemployed. In addition, Capretta (2007) and Meier and Werding (2010) find that the increase in aggregate spending on pensions is mitigated by reductions in the generosity of benefits.

old-age dependency ratio as the indicator, it was most rapid in Japan and the Republic of Korea. In Europe, it was fastest in the EU candidate countries, the eastern partnership countries, and the south. Populations in the north and the center aged relatively little. But the regions started at different points. Despite rapid aging, Korea and Eastern Europe still have fairly young populations. In 2009, for each person age 65 or older there were seven working-age persons in Korea, but only three in Japan. In Europe, there were more than five working-age persons in EU candidate and eastern partnership countries, but only fewer than four in the south.

The trends in public pension spending since the mid-1990s also reveal notable differences across regions. As a share of GDP, public pension spending increased in the south, the EU candidate countries, and Japan, but decreased in the north, the EU12, and the Anglo-Saxon group (figure 7.14).

Comparing the trends in public pensions spending with population aging gives us a way to assess whether spending on public pensions is driven mainly by demographics or also changes in generosity and coverage. A good indicator is the pension support ratio (Lindert 2004), which is the public pension per elderly person relative to GDP per worker or, alternatively, the ratio of the share of public pensions in GDP relative to the share of elderly in the working-age population. This section looks first at OECD countries over 1980–2007, and then extends the analysis to Eastern Europe for 2000–2007/08. A similar approach is used to look at changes in social transfers.

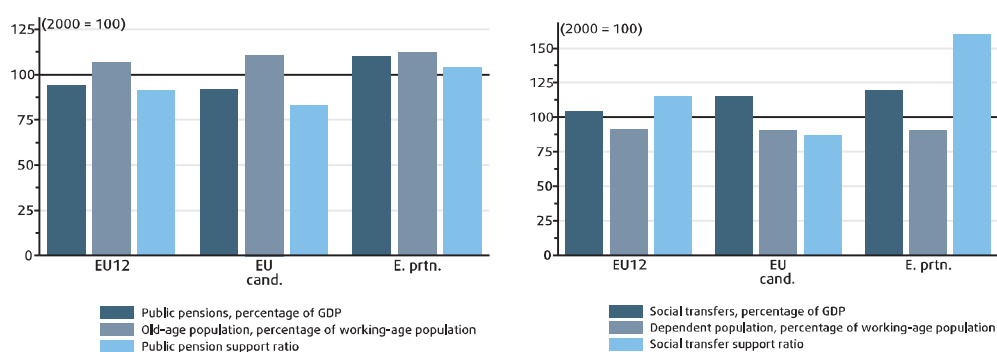
For a group of 20 OECD countries, we find that pension payments increased over and above aging pressures only in the south, especially in Greece and Portugal. In other regions, pension payments increased in line with the rising share of the elderly in the working-age population (the north and Japan) or even declined due to a tightening of generosity (the center and Anglo-Saxon).



Source: World Bank staff calculations, based on Eurostat; OECD National Accounts Statistics; and WDI.

**Figure 7.15: The burden of social transfers grew most in the south**

(trends in social transfers, 1994 and 2008, 1990 = 100)



Note: "EU cand." refers to EU candidate countries and "E. prtn." refers to EU eastern partnership countries.

Source: World Bank staff calculations, based on Eurostat; and WDI.

**Figure 7.16: The eastern partnership countries increased social transfers the most**

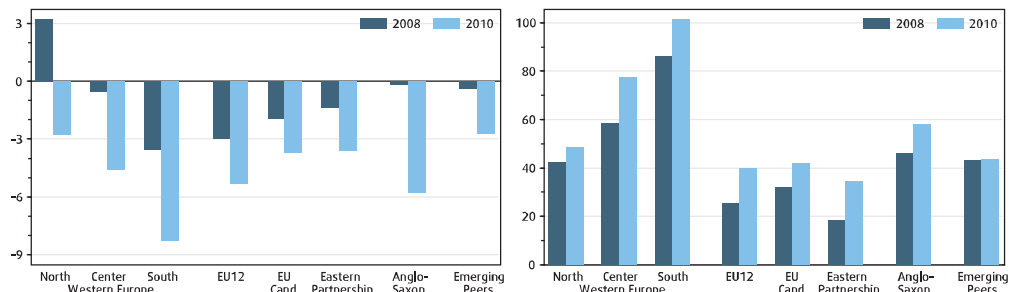
(trends in pensions and social transfers, 2007/08, Eastern Europe)

In addition, there is a notable shift in pension policy in the mid-1990s in the north and the center. Up to the mid-1990s, public pension pressures tended to increase over and above population aging partly due to policies to encourage early retirement. In response to the economic recession and rise in unemployment in the early 1980s, some countries encouraged early retirement of workers because rigid labor laws made it difficult for enterprises to lay off workers. By contrast, with growth and income convergence with other EU countries, the south responded to rising expectations of its populations in the 1990s by adopting the former social benefit norms that the north and the center were beginning to tighten.

There is a remarkably consistent pattern in the links between aging and spending (table A7.9). In 1980–94, for all OECD countries as well as just the European OECD countries, a 1 percent increase in the old-age dependency ratio triggered roughly a 1 percent increase in public pensions as a share of GDP. In other words, the pension support ratio remained constant, as public pension spending increased in line with population aging. In 1995–2007, the elasticity of the old-age dependency ratio for public pension payments was less than unity. Furthermore, it was smaller for European OECD countries (around 0.6–0.7) than for all OECD countries (around 0.8–0.9). In other words, the pension support ratio declined. Countries reduced the generosity of pension payments to limit the rise in public pensions as population aging became more pressing. Led by the north and the center, pension reforms helped mitigate the fiscal impact of population aging. These findings confirm the results in the literature (box 7.8).

**Figure 7.17 Public debt rose everywhere during the crisis except in the emerging peers**

(fiscal balances (left) and gross public debt (right), percentage of GDP, 2008 and 2010)



Note: "EU cand." refers to EU candidate countries.

Source: World Bank staff calculations, based on IMF WEO.

A slight modification allows a similar assessment for social transfers (table A7.10). Since social transfers include various family, child, and unemployment benefits, the dependent population has to be redefined to include the elderly, the population under 15 years old, and the unemployed. As before, we relate this dependent population to the working-age population. Of course, such analysis is simplistic, as the link between demography and social transfers is more complicated. For example, social transfers include social assistance—not just unemployment benefits but also payments linked to sickness, disability, and maternity.

Figure 7.15 shows the trends in social transfer indicators relative to 1990 for the 19 OECD countries with data. In 1990–94, social transfer payments grew faster than the dependency ratio in all regions. After 1994, the social transfer support ratio improved substantially in the north, and deteriorated in the south and Japan. Regression analysis confirms this pattern, even though the coefficients are seldom significant. Including all countries with data from 1980, we find that the elasticity of the dependency ratio for social transfer payments declined after 1994, and more so in Europe than for the whole OECD sample.

The discussion so far has looked only at OECD countries. The data also permit a review of the changes in pension payments and social transfers in Eastern Europe since 2000. Some of these countries carried out pension reforms by modifying pay-as-you-go systems into multipillar systems (figure 7.16). These include Hungary and Poland in the 1990s, and Bulgaria, Estonia, Latvia,

### Box 7.9: Debt and growth

Reinhart and Rogoff (2010) analyze the relationship of growth and debt for 44 countries over about 200 years. They sum up their main findings as follows:

First, the relationship between government debt and real GDP growth is weak for debt-to-GDP ratios below 90 percent of GDP. Above the threshold of 90 percent, median growth rates fall by 1 percent, and average growth falls considerably more. The threshold for

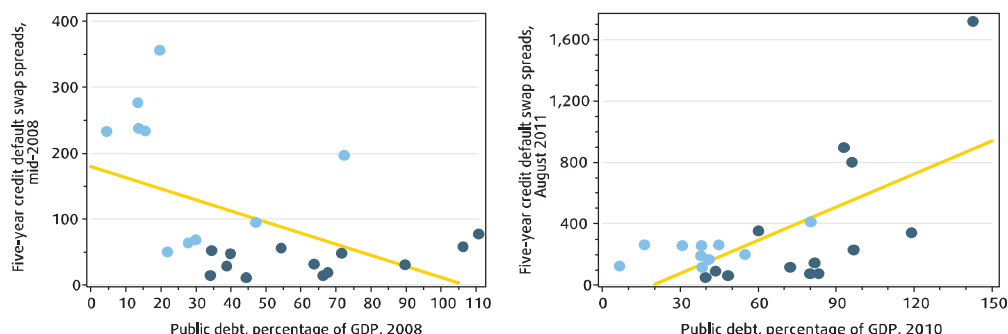
public debt is similar in advanced and emerging economies and applies for both the post-World War II period and as far back as the data permit (often well into the 1800s).

Second, emerging markets face lower thresholds for total external debt (public and private)—which is usually denominated in a foreign currency. When total external debt reaches 60 percent of GDP, annual growth declines about 2 percent; for higher levels,

growth rates are roughly cut in half.

Third, there is no apparent contemporaneous link between inflation and public debt levels for the advanced countries as a group (some countries, such as the United States, have experienced higher inflation when debt-to-GDP is high). The story is entirely different for emerging markets, where inflation rises sharply as debt increases.

Source: Reinhart and Rogoff 2010.



Note: Dark blue dots represent EU15 countries, and light blue EU12 economies.

Source: Eurostat; and Bloomberg.

**Figure 7.18: Markets have learned to look at fiscal vulnerabilities**

(five-year credit default swap spreads and public debt, mid-2008 and August 2011)

Lithuania, Romania, and the Slovak Republic in the 2000s. These reforms moderated the impact of population aging on public finances. But eastern partnership countries lag their European peers in these reforms. In addition, they also expanded social transfers faster than increases in the dependency ratio, as they appear to have responded to the expectations of people to meet the social standards of Western Europe. Naturally, Western European countries can be more generous; they can mobilize resources for social programs more easily, possibly with smaller disincentive effects on work.

## Getting the fiscal house in order

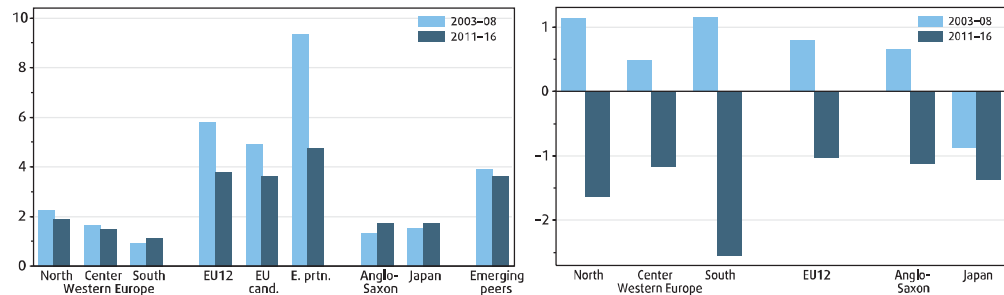
With the economic recovery losing steam three years after the Lehman crisis broke, governments in Europe would like to focus on creating jobs and generating growth. Instead, they are confronted with a public debt crisis. In many countries, putting the fiscal house in order has become the main preoccupation of policymakers for five reasons: the size of government, fiscal deficits, and public debt have risen due to the economic crisis, boosting the scale of the fiscal challenge; learning from the crisis, financial markets have turned their attention to potential fiscal vulnerabilities; the postcrisis growth prospects look uncertain, making fiscal adjustment more difficult; population aging will accelerate in the coming decades; and restoring the ability of fiscal policy to respond will help prepare for future crises.

### A bigger fiscal challenge

Even without the crisis, governments in Europe already had large public sectors. During the crisis, government expenditures increased even further. In 2010, expenditures reached more than 50 percent of GDP in Western Europe and 42 percent of GDP in Eastern Europe, the highest in a decade and a half. The crisis also led to an unprecedented peacetime deterioration in fiscal balances as the revenue base collapsed, GDP contracted, and government spending rose to stabilize the economy and mitigate social impacts. The median general government deficit jumped from 0.5 percent of GDP in 2008 to 4.7 percent in 2010 for Western Europe and from 2 percent to 4.2 percent in Eastern Europe (figure 7.17).

**Figure 7.19: The biggest declines in growth will be in Europe**

(growth (left), percent, 2003–08 versus 2011–16; output gap (right), percentage of GDP, 2003–08 versus 2011–16)



Note: "EU cand." refers to EU candidate countries and "E. prtn." refers to EU eastern partnership countries.

Source: World Bank staff calculations, based on IMF WEO.

In Western Europe, the increase in deficits was the largest in the north. Nevertheless, the 2010 fiscal deficits of the north remained among the lowest in Europe, as this region had run fiscal surpluses before the crisis. By contrast, the already weak fiscal position of the south deteriorated further. In Eastern Europe, the deterioration in fiscal deficits was less striking and similar across the three groups, as governments were less active in supporting domestic demand and stabilizing the banking system.

The large increases in fiscal deficits—and to a lesser extent governments' acquisition of unhealthy banks' financial assets—sharply raised public debt-to-GDP ratios. The median general government debt increased from 57 percent of GDP in 2008 to 74 percent of GDP in 2010 in Western Europe. Of 18 countries in Western Europe, 5 had public debt-to-GDP ratios higher than 90 percent in 2010 (box 7.9). Public debt ratios increased from 25 percent of GDP in 2008 to 39 percent in 2010 in Eastern Europe. Of the 25 countries in Eastern Europe, 11 had debt above 40 percent of GDP. High public debt ratios put pressure on real interest rates and dampened growth prospects. International evidence suggests, for example, that a 10 percentage point increase in the public debt-to-GDP ratio leads to a rise in long-term interest rates of 30–50 basis points, and a slowdown in growth of 0.15 percentage points a year (Kumar and Woo 2010).

For most countries, the increase in public debt has not triggered increases in public debt service burdens because of low interest rates. However, markets pay close attention to fiscal deficits and public debt burdens and so, though government bond spreads in the European Union bore little relation to public debt before the crisis, bond spreads are now rising with higher public debt (figure 7.18). The recurrent volatility in euro area markets is a reminder of how quickly doubts over fiscal solvency can trigger a loss of confidence in financial markets. Government financing needs are expected to stay high in the coming years in view of high fiscal deficits and large maturing debts. The supply of government bonds could increase further in high-income countries once central banks unwind extraordinary monetary policies.

Strong growth could make debt problems fade in importance, as investors care about the debt burden relative to GDP. Yet the prospects for a strong rebound are feeble. Even before the latest slowdown in the economic recovery, International Monetary Fund (IMF) growth projections from April 2011 suggested that growth in Europe will decline from before the crisis (figure 7.19). The

### Box 7.10: Improving regional development policies—follow the Irish

Regional development is again coming to the forefront of debates in the European Union and the Organisation for Economic Co-operation and Development (OECD). This time, these policies are being debated in different economic conditions than before the global economic crisis of 2008–09. OECD economies now face weak growth prospects, with weakened fiscal balances. Regional development efforts will have to contend with more pressing national growth imperatives, and there will be greater pressure to be more frugal with national fiscal resources.

Some countries have done better than others in using EU cohesion funds. Box table 1 shows three progressively more successful approaches to regional development in Europe, only a little simplistically called the Italian, Iberian, and Irish models.

The experience of Ireland is especially educational. Between 1977 and 2008, Ireland's GDP per capita grew from less than 75 percent of the EU average to more than 125 percent. Despite the crisis, Ireland remains among the 10 countries with the highest per capita income in the world. What is behind Ireland's success? Among other things, a sensible regional development policy for a small economy.

Since joining the European Union in 1973, Ireland received approximately €17 billion in EU Structural and Cohesion Funds through

the end of 2003. In the first two rounds of EU funding, the entire country was classified as an Objective One area. Between 1993 and 2003, cohesion funds supported 120 infrastructure projects at the cost of about €2 billion. The choice of projects was based on a national development plan, which focused on investments in economic infrastructure that stimulated national economic growth. The Irish invested aggressively in education and training and general public services in all of Ireland to create a good business climate countrywide. Today, Ireland is one of the top 10 countries for doing business. Infrastructure improvements were more selective. These included investments in leading regions and in connecting leading and lagging areas, such as the M50 (Dublin Ring Road), M1 (Dublin-Belfast), and improvements in others. With its business-friendly policies and good logistics, Ireland has become a popular destination for American firms and European workers.

Contrast the Irish approach to cohesion funds with the "Iberian approach." Ireland's rapid convergence toward the incomes of Europe's leaders was accompanied by a rising spatial concentration of economic activity. Compared with the other cohesion countries—Greece, Portugal, and Spain—Ireland's economic concentration rose much more. But its per capita income grew much faster too. In 1977, Greece, Ireland, and Spain had per capita incomes of about \$9,000; Portugal's was

\$6,000. By 2002, Portugal had an income of \$11,000, and Greece and Spain close to \$15,000. Ireland's per capita income had risen to \$27,500.

Today, almost all regions in the new member states of the European Union qualify for EU financial support. They should consider using the funds for international convergence and not—until later stages—for spatially balanced economic growth within their borders. European Union candidates—such as the countries of the former Yugoslavia and Turkey—may also be well advised to be single-minded in using the funds for international convergence and not to try to spread economic activity out too soon.

As the older member states of Western Europe try to find new drivers of growth and greater efficiency in public spending, they too would do well to shift from an overreliance on place-based interventions to a mix of policies that strengthen social services such as education, health care, and general administration everywhere, combined with selective investments in infrastructure to connect leading and lagging regions. In a few cases, place-based interventions such as special incentives to firms to locate in lagging regions might be necessary. But these should be used least and last, and only along with efforts to improve basic social services and connective infrastructure.

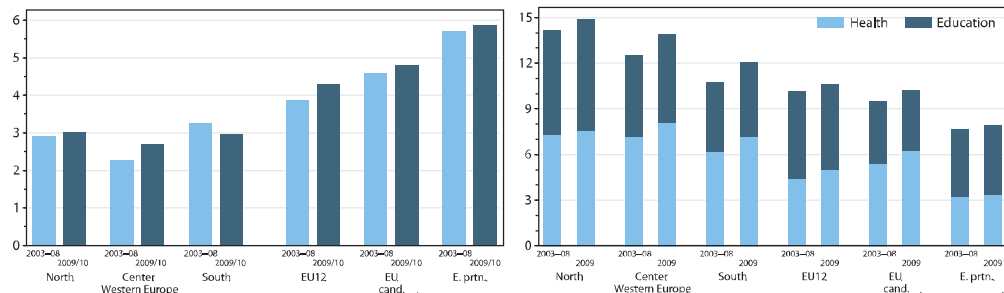
Box table 1: Three approaches to Regional Development in Europe

	"Italian" Model	"Iberian" Model	"Irish" Model
Rationale	Bring jobs to people	Bring jobs to people and enable them to access product markets	Prepare people to get jobs wherever they are
Objective	Bring economic activity from leading to lagging regions	Facilitate access of producers in lagging regions to markets in leading regions	Integrate lagging and leading regions
Instruments	Emphasize spatially targeted Interventions	Emphasize Interventions and connective Infrastructure	Emphasize Institutions and connective Infrastructure

economic expansion of 2003–08 was fueled by large capital inflows, rapid credit expansion and, in some countries, rising current account deficits and fiscal expansion. By contrast, growth in 2011–16 is set to remain weak, as households and governments reduce their debt, banks deleverage their balance sheets, and investors remain cautious about risks. In Western European countries and their peers, actual output could stay below an economy's capacity to produce goods and services for years to come, even though the crisis may have lowered

**Figure 7.20: Spending on investment, education, and health was protected during the crisis**

(public investment (left), and health and education spending (right), percentage of GDP, 2003–08 and 2009/10)



Note: “EU cand.” refers to EU candidate countries and “E. prtn.” refers to EU eastern partnership countries.

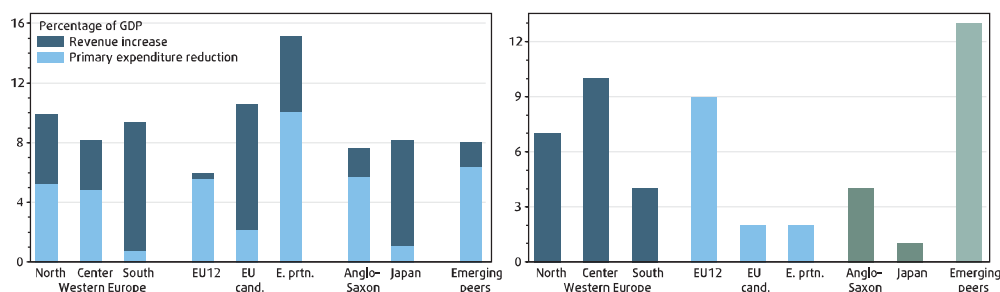
Source: World Bank staff calculations, based on Eurostat; OECD National Accounts Statistics; and WDI.

potential output in many countries. Eastern Europe is likely to see the sharpest slowdown. Weak growth in turn implies that tax collection will be sluggish and public expenditure pressures elevated. This will make it difficult to rein in fiscal deficits and decrease public debt.

Besides, the population is aging faster. By 2040, there will be only two working-age people for each elderly person in Southern Europe, against five to one in 1980. The ratios are only slightly higher for the other regions in Europe. Population aging tends to dampen growth. Other things being equal, a country with a large share of elderly people and children is likely to grow slower than a country with a large share of working-age people. The link is pretty straightforward: as workers age, they cut back on hours worked or retire. Declining hours and lower labor participation reduce labor supply, which in turn cuts growth. In addition, the skill composition of workers may worsen, as older workers tend to have more obsolete skills than younger workers. This can affect growth even more.

Aging not only undermines growth but also makes it hard to improve public finances. Aging is a direct cost driver for public finances, especially for pensions and health. Looking at the G7 countries over 1960–2007, Cottarelli and Schaechter (2010) find that health and pensions accounted for 80 percent of the increase in primary government spending as a share of potential GDP. This reflects population aging, along with other factors such as increases in coverage and generosity of social security plans as well as advances in technology to prolong people’s lives.

While the scale of the fiscal challenge is large, a key lesson from the crisis is that it is essential to use the good times to improve fiscal balances. Fiscal policy played a central stabilizing role during the crisis (Blanchard, Dell’Ariccia, and Mauro 2010). Monetary policy had reached its limits through low interest rates and quantitative easing in stimulating the economy. At the same time, the usual concerns about mistiming the fiscal stimulus were less pressing as it became clear early on that the crisis would be long-lasting. Hence fiscal policy became the main policy tool to support domestic demand in some countries, though others could not rely on fiscal policy because they entered the crisis with weak fiscal balances and high public debt. Indeed, some economies ran



**Figure 7.21: Large fiscal adjustments are not unusual**

(size, percentage of GDP (left), number of large fiscal adjustments (right))

Note: The figure includes fiscal consolidations over at least three years that reduced the cyclically-adjusted primary balance by 5 percent of GDP or more.

Source: Abbas and others 2010.

procyclical fiscal policies driven by consumption booms and had to cut spending and increase taxes in spite of large recessions. The implication is that in order to prepare for the next crisis, many countries have to reduce public debt to below precrisis levels.

## Bringing about a sizable fiscal adjustment

Governments in Europe have to implement fiscal consolidation strategies that ensure that the economic recovery translates into improved fiscal positions. Most countries have started to implement bold entitlement reforms in response to fiscal pressures, while safeguarding core social spending (Bornhorst and others 2010). An encouraging feature of the fiscal adjustments to date is that countries succeeded in protecting or even increasing outlays for public investments in 2009 and 2010, apart from the south, as well as public education and health spending in 2009 (figure 7.20). In Eastern Europe, access to structural funds or preaccession assistance played a vital stabilizing role, and can be used to improve growth prospects. But their use will have to be rethought; the experience in southern Italy and the original “cohesion countries”—Greece, Ireland, Portugal, and Spain—should be reassessed in deciding how these funds can best be used to foster economic growth and convergence (box 7.10).

In 2011, countries envisaged sizable reductions in fiscal deficits and public debt over the coming years. The pace and the structure of the fiscal adjustment vary, reflecting primarily the differences in initial fiscal positions, prospects, and market pressures. Countries with larger fiscal deficits and public debt levels are planning larger fiscal adjustments. Countries facing high unemployment rates tend to plan for less ambitious fiscal adjustment, to limit additional short-term costs that arise from frontloaded fiscal retrenchment. Countries facing higher borrowing costs tend to plan larger adjustments in the near future. For some countries, frontloaded fiscal consolidation can ensure access to markets and the ability to finance deficits at reasonable rates.

International experience shows that successful fiscal consolidations share common features (Gray, Lane, and Varoudakis 2007; Clements, Perry and Toro 2010; Blanchard and Cottarelli 2010). First, a fiscal consolidation strategy is crucial to shore up confidence in fiscal sustainability. Indeed, when markets lack



confidence in the government's commitment to achieve the needed primary surpluses, a vicious cycle could emerge. Markets could demand higher risk premiums to hold public debt, worsening public debt dynamics further.

Second, laying out a clear timeline for fiscal measures can be a way to square the need to shore up sluggish private demand and give public support today with the urgency to inspire confidence in financial markets in sustainable long-term fiscal balances. It might also be easier to phase in structural reform over time, as this allows people and businesses to adjust to the new circumstances.

Third, while fiscal consolidation can involve a mix of expenditure and revenue measures (figure 7.21), many countries would need to reduce expenditures. Coming into the recent crisis, many countries had poor structural primary fiscal balances, reflecting the lack of progress in public expenditure reforms, generous spending, and weak public expenditure controls. If well done, fiscal consolidation does not simply make across-the-board cuts. Instead, it focuses on areas where there is little value for money. Entitlement reforms are often part of such structural adjustments, as they are central to strengthening long-term fiscal positions. Indeed, successful fiscal adjustments rely on reducing transfers and wages more than investments in physical and human capital, which are crucial for strengthening an economy's growth potential (Tsibouris and others 2006). Such measures have to be balanced with the objective of maintaining effective provision of public services to poor and vulnerable families, also because such reforms are more sustainable. Revenue measures can also help to make the fiscal adjustment fairer.

Finally, fiscal institutions can make commitments to reducing debt-to-GDP ratios more credible. Medium-term budgetary frameworks, an effective budget process, and independent fiscal agencies that monitor policy design and implementation all make fiscal policy more effective. For example, fiscal rules that limit public expenditure increases during an economic upturn could, with multiyear and performance-based budgeting, contribute to sustainable fiscal finances over the long term. Many EU12 countries have moved in this direction. In addition, the European Council has decided to strengthen economic governance to increase fiscal discipline, broaden economic surveillance, and deepen coordination.

### Large adjustments are needed

Public debt ratios are a good reference point for establishing longer-term fiscal adjustment needs. We build on the analysis and methodology of the IMF Fiscal Monitors to assess the size of the required adjustment in Europe, along with possible options for reforms in pensions, health, and education. Western Europe and its peers are assumed to reduce debt to 60 percent of GDP by 2030, and Eastern Europe and its peers to 40 percent—for both groups, roughly precrisis levels. The debt threshold is lower for Eastern Europe, as financial markets have lower tolerance levels for public debt in emerging economies; their revenue bases might be more volatile; and public debt is shorter-term, more likely to be held by foreigners, or denominated in foreign currency. The assumption is that countries will meet these targets exclusively through improvements in their primary balances.

Table 7.1: Illustrative adjustment needs by 2030, median, percentage of GDP

	IMF projections, 2010			Illustrative fiscal adjustment to achieve debt target in 2030					
	Gross debt	PB	CAPB	CAPB in 2020–2030	Required adjustment in PB between 2010 and 2020	Required adjustment in CAPB between 2010 and 2020	Required adjustment in CAPB between 2010 and 2020 including pensions	Required adjustment in CAPB between 2010 and 2020 including pensions and health	Required adjustment in CAPB between 2010 and 2020 including pensions, health, and education
Western Europe	73.6	-2.8	-0.6	1.9	4.7	2.5	3.4	6.1	5.8
North	48.4	-2.5	0.0	0.7	3.2	0.7	1.2	4.3	3.6
Center	77.2	-2.2	-0.9	1.9	4.1	2.8	5.4	8.7	8.3
South	101.2	-3.9	-3.1	4.0	7.8	7.0	8.6	11.1	10.9
Eastern Europe	39.5	-3.3	-2.8	0.4	3.7	3.2	-	-	-
EU12	39.7	-4.0	-1.9	0.9	4.9	2.8	2.2	3.7	3.7
EU cand.	40.9	-2.9	-2.9	0.5	3.4	3.4	-	-	-
E. prtn.	34.4	-2.6	-2.8	0.3	2.9	3.0	-	-	-
Anglo-Saxon peers	84.0	-4.9	-4.2	0.9	5.8	5.1	6.3	8.4	-
Anglo-Saxon	57.8	-4.9	-4.1	0.7	5.6	4.8	6.2	8.7	-
Japan	220.3	-8.4	-6.7	6.6	15.0	13.3	13.1	14.1	-
Emerging peers	42.7	-1.0	-1.1	0.5	1.5	1.6	2.6	3.7	-

Note: "EU cand." refers to EU candidate countries and "E. prtn." refers to EU eastern partnership countries. PB and CAPB mean primary balance and cyclically-adjusted primary balance, respectively. The numbers in the last three columns include the fiscal impact of aging in pensions, health, and education. They are missing for EU candidate and eastern partnership countries due to lack of data. Source: Calculations by staff of the Institute for Structural Research in Poland and the World Bank, based on IMF WEO.

A large and sustained improvement in fiscal balances is necessary to bring public debt in Europe to prudent levels. Table 7.1 presents the results:

- In Western Europe, the median required improvement in the primary balances is close to 5 percent of GDP. The south faces the largest adjustment (8 percent of GDP). Adjustment needs are lower in Eastern Europe (3.7 percent of GDP), though they are close to 5 percent of GDP for the EU12 countries.
- These numbers do not factor in the improvement in the fiscal balances from the recovery. On that basis, the required adjustment goes down to 2.5 percent of GDP for Western Europe and 3.2 percent for Eastern Europe.
- Countries have already adopted measures to improve fiscal deficits. Taking into account the fiscal impact of consolidation plans announced by spring 2011 for the next five years, the additional average adjustment need goes down to 0.1 percent of GDP for Western Europe and 0.4 percent for Eastern Europe, net of the impact of trends affecting entitlement spending after 2016 (figure 7.22). Implementing the fiscal adjustment path over the next five years would go a long way to put public finances on a sustainable footing.

Figure 7.22: Illustrative adjustment needs  
(median, percentage of GDP)

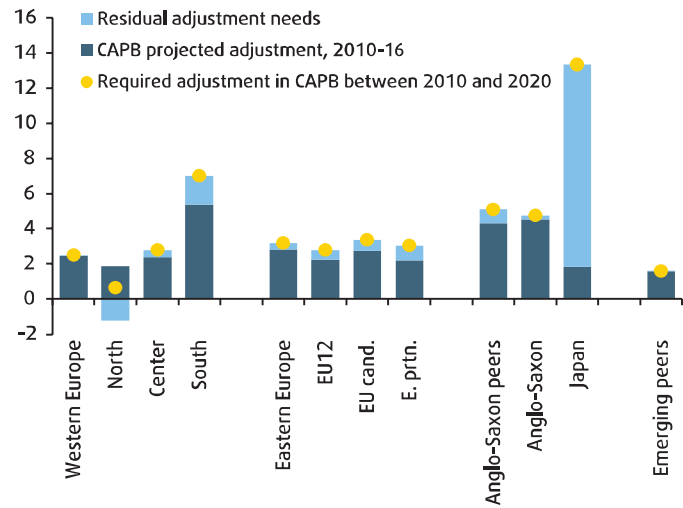
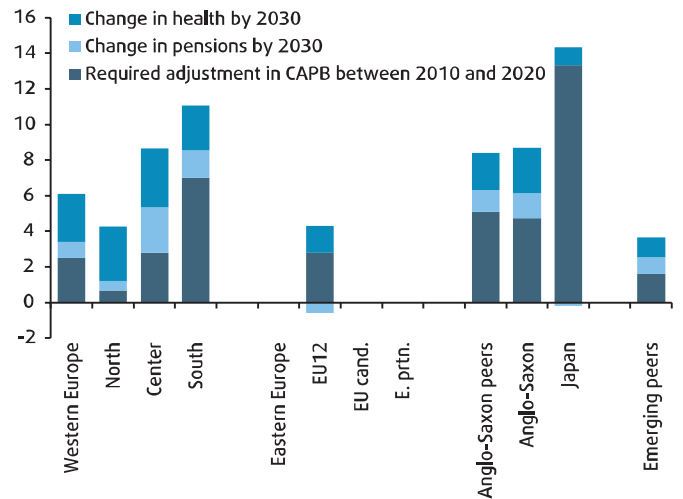


Figure 7.23: Illustrative adjustment needs and projected increase in health and pension expenditures  
(median, percentage of GDP)



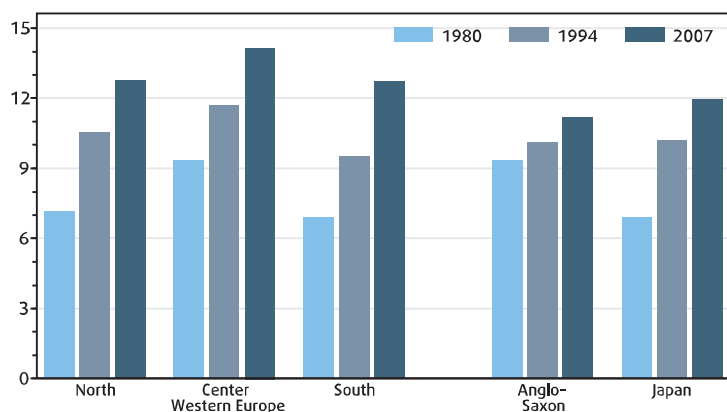
Note: "EU cand." refers to EU candidate countries and "E. prtn." refers to EU eastern partnership countries. CAPB means cyclically-adjusted primary balance.  
Source: Calculations by staff of the Institute for Structural Research in Poland and the World Bank, based on IMF WEO.

### Box 7.11: Changes in behavior and policies enable countries to adjust to aging

Pessimism about Europe's ability to meet economic challenges in the light of population aging may be unwarranted. One reason this concern may be misplaced is that the rise in life expectancy is not foremost an economic problem but a boon to people's well-being. Also, age accounting, while useful as a benchmark, is also likely to overstate the impact of aging on growth and fiscal outcomes for two reasons: people change their behavior, and policymakers change policies. As people

age, they are likely to work in later years. A rise in healthy life expectancy enables people to work productively for more years, without reducing the number of years in retirement. In addition, as people realize they might live longer, they tend to increase their savings at working ages to fund consumption in old age. The reduced fertility that adds to the shift toward older populations also means that more women can enter the labor force. Policy

is crucial to support these changes in behavior. In particular, there should be no incentives for early retirement, as in an extreme form of a mandatory retirement age. Other measures include flexible old-age pension arrangements, legal efforts to ensure that employers do not discriminate against older workers, lifelong learning programs, investments in old-age health, and policies encouraging migration.  
Source: Bloom, Canning, and Fink 2008.



Source: World Bank Social Protection database.

**Figure 7.24: Pensions are more generous in Western Europe than elsewhere**

(real public pensions per elderly person, thousand US\$ PPP, 1980, 1994, and 2007)

- Adjustment needs increase with population aging. Assuming unchanged policies, expenditures on health and pensions are likely to increase the needed fiscal adjustment by close to 3.6 percent of GDP in Western Europe and 0.9 percent in the EU12 (figure 7.23). Public spending on health care alone is expected to contribute most to the spending increases. In Western Europe and the EU12, almost three-quarters of the increase in age-related spending is due to health expenditures. Overall, accounting for the fiscal costs of aging in health, pensions, and education, the required adjustment in 2010–20 increases to 6 percent of GDP for Western Europe and 3.7 percent of GDP for the EU12.

Structural reforms are necessary to deal with the long-term fiscal challenges in Europe arising from precrisis weaknesses, the debt overhang from the crisis, and pressures from population aging. They are also needed to reinvigorate growth. Higher growth can help countries reduce the size of required fiscal adjustment. For example, our simulations suggest that boosting growth by 1 percentage point throughout 2011–30 would lower the required correction in cyclically adjusted primary balances by 0.6 percent of GDP in Western Europe and 0.4 percent in Eastern Europe. As the population adjusts to the tough economic reality, aided by the right policies, Europe might find out that the adjustment is easier to make than now imagined (box 7.11).

## Reforming public pensions

Large spending on pensions is the main reason why governments are bigger in Europe than elsewhere. Public pensions are high relative to those in Anglo-Saxon countries and Japan (figure 7.24). This holds especially for the center, but also for the north and the south. Similarly, gross pension replacement rates are high in Europe (see figure 1.14 in chapter 1). High public spending on pensions, combined with moderate spending on education and health, suggests that governments favor the elderly over the young and working-age generation, desiring long-term growth prospects. This indicates that there is room for further savings on public pensions, especially as private pensions become more important in providing incomes to the elderly. European OECD countries have succeeded in reducing pension generosity in response to population aging

### Box 7.12: Reversal of private pension pillars

Many countries in Eastern Europe have overhauled their pension systems during the last 15 years. Fourteen countries introduced a second private pillar to complement the first (mandatory unfunded) pillar. The second pillar is typically mandatory (workers are required to participate), funded (pensions are paid from a fund accumulated from contributions), and with defined contributions (pension benefits are determined by the assets accumulated for a person's pension). Countries often combine the first and second pillars with a third, voluntary privately funded pillar.

In response to the crisis, however, several countries reduced funding for the second pillar (box table 1).

Countries backtracked on reforms for three reasons. First, the crisis has underlined the importance of making sure that first-pillar benefits can be financed. Contributions to the first pillar have taken a hit with lower wages and higher unemployment. For example, while the first pillar was originally targeted to run a surplus from 2012, Poland feared the first pillar might remain in deficit until 2060. At the same time, it has become harder for government to be a backstop for deficits in pension systems.

Second, the introduction of second pillar pensions makes it more difficult for countries to comply with the EU Stability and Growth Pact. To support the buildup of second pillar funds, governments run higher fiscal deficits and accumulate more public debt during the transition phase. While this comes at the benefit of improved long-term fiscal balances, the Stability and Growth Pact's fiscal deficit and public debt criteria do not take this into account sufficiently. In addition, financial markets worry more about explicit than implicit debt.

Third, while the reforms might take more time to bear fruits because as the size of second pillars is in many countries still modest, the second pillar systems have not always performed as hoped. Private pillars generated decent rates of return before the crisis. Countries with second pillar pension systems also tend to look better in terms of long-term sustainability, though this mostly reflects that they were more active in lowering pension benefits under the first pillar. Yet, it is clear that expectations proved too optimistic. Governments have had to subsidize the buildup of funds for the second pillar more than expected.

Poland's finances illustrate these points. Due to the crisis, the fiscal cost rose to 1.5 to 2 percent of GDP in 2000–10 instead of the predicted 0 to 1 percent of GDP. The transition costs have turned out to be higher in part because of worse than anticipated trends in the economy (weaker growth), demography (sharper drop in fertility, larger emigration), and labor market (lower rise in formal employment). In addition, individuals have responded less well to incentives to increase savings for old age than expected. Private savings have been almost entirely offset by public dissaving. The public support of the second pillars was financed through public debt issues of about 15 percent of GDP, while private pension assets amounted to about 16 percent of GDP by end-2010.

Many countries in Eastern Europe are set to make further adjustments in their pension systems. Most countries require further adjustments to their first pillar regimes; others are considering reversing or modifying their second pillar regimes; still others are considering introducing new second pillar systems. All of them would be well advised to

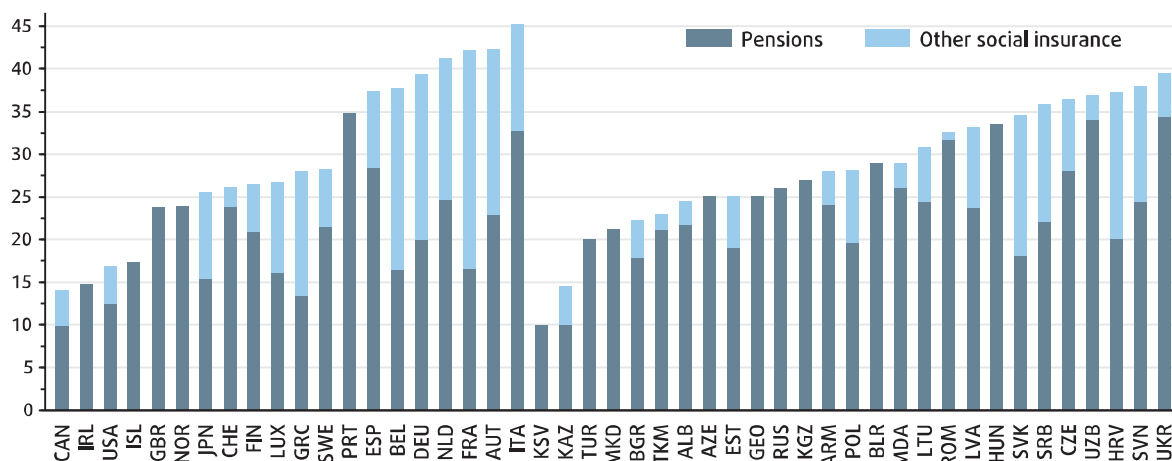
consider some lessons of the recent reforms:

- Abrupt changes lead to instability and can undermine the credibility of pension systems and the trust in government.
- The fiscal effects of reversals are often negligible, as they trade off improvements in the short run with deteriorations in the long run in headline fiscal balances.
- The reversal of second pillar regimes should be no excuse to delay addressing structural problems, whether in the area of pensions or elsewhere. Many countries should raise the retirement age, rationalize special schemes and disability benefits, move from wage- to inflation-indexation of pension benefits, and improve the regulation of private pension funds.
- Countries like Chile and Sweden have managed to get benefits from second pillar pensions. Countries in Eastern Europe considering second pillars should think carefully whether they will be able to replicate these successes. This involves looking at economic, distributional, and institutional aspects. Institutional prerequisites include a sustainable first pillar system, sound macroeconomic policies, adequate supervision and regulation of the financial sector, administrative capacity to manage individual accounts, and the political institutions to prevent undue political interference with the second pillar over generations.

Source: Barr 2010; Barr and Diamond 2008; OECD 2011b; Soto, Clements, and Eich 2011; Velculescu 2011; World Bank 2010a.

Box table 1: Recent measures to reduce contributions to the second pillar

Country	Measure
Estonia	Temporary suspension of contribution (4 percent)
Hungary	Permanent diversion of contribution to first pillar; second pillar changed from mandatory to voluntary
Latvia	Temporary reduction of contribution from 10 percent to 2 percent
Lithuania	Temporary reduction of contribution from 5.5 percent to 2 percent
Poland	Reduction of contribution from 7.3 percent to 2.3 percent from May 2011; increase to 3.5 percent by 2017



Source: World Bank Social Protection database.

since the early 1990s, even though the elderly are a political force. And many countries in the EU12 have adopted pension reforms to mitigate the impact of aging on public finances (box 7.12).

As pension systems become more and more unsustainable, some governments show a propensity to push certain entitlements in the (noncontributory) social assistance area, while preserving eligibility and benefit formulas. For example, when the pension system went into deficit in 2005 in Romania, entitlements financed from social security contributions, such as farmers' pensions and paid parental leave, were shifted to the general budget and are now tax-financed. These moves only created the illusion of restoring fiscal sustainability of the pension system. They also maintained a regressive benefit (parental leave) that paid high benefits for long periods to middle- and high-income parents, keeping them out of the labor market for about two years, while denying such benefits to parents from low-income households. When former pension benefits have to be shed, governments are well advised to design them using the objectives for good safety net programs, including restricting them to the most needy.

Increasing longevity and lower fertility put increasing pressure on pension systems. Following the European Commission methodology, without policy change, pension expenditures would increase by 1.1 percent of GDP by 2030 in Western Europe, and decline by 0.3 percent of GDP in the EU12. In Western Europe, the challenge is largest in the center but moderate in the north. The required savings are not huge. For example, the pension reforms introduced in Finland, Germany, Italy, Spain, and Sweden in 1995–2005 should reduce public pension expenditures by more than 2 percent of GDP by 2030 (Clements, Perry, and Toro 2010).

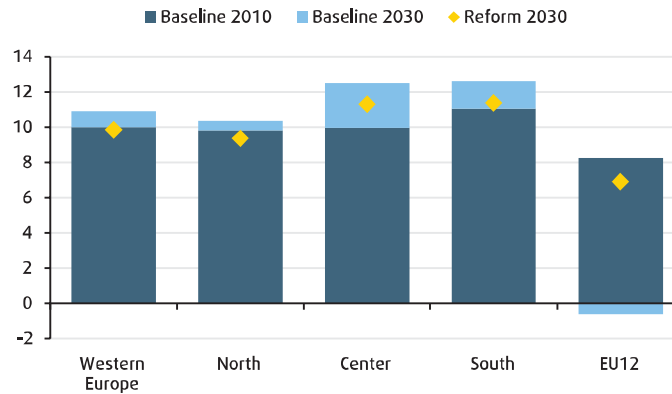
As people get older, pension benefits cannot simply keep up with workers' incomes. These pressures are visible in both public and private pension plans, where actuarial changes are making systems less generous. Whatever the system, prolonging the retirement phase means that for a given return on savings, retirement benefits have to shrink relative to wages earned during the

**Figure 7.25: Social insurance contribution rates in Europe are often high**

(contribution rates of pensions and social insurance, percentage of gross earnings, latest data)

### Figure 7.26: Raising the retirement age helps stabilize pension spending

(projected increase in pension expenditures and impact of pension reforms, medians, percentage of GDP)



Source: Calculations by staff of the Institute for Structural Research in Poland and the World Bank.

working life. Making the pension system more sustainable involves moderating the increase in the ratio of retirement to working life or moderating the ratio of pension benefits relative to wages (or a combination). As pension contributions in Europe are already high, the second option mainly involves reducing the generosity of pension benefits (figure 7.25).

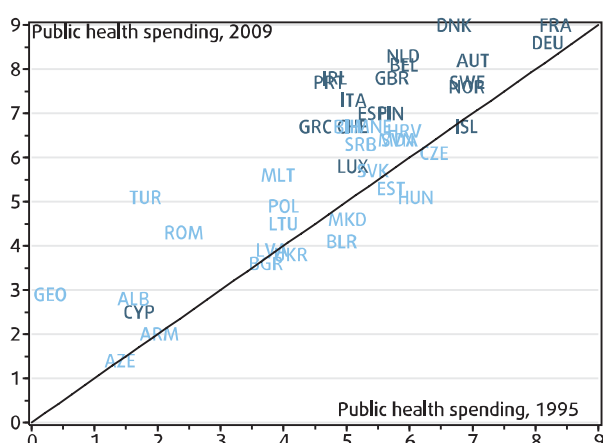
Encouraging people to work longer would involve a combination of raising the statutory retirement age, penalizing early retirement, and removing legal or other impediments for people age 50 or older to get a job. Changes in indexation formulas from a combination of wage growth and inflation to inflation only is one way to adjust pension benefits, especially for countries in Eastern Europe. Such reforms have been implemented in Japan, the Republic of Korea, and Sweden; others should consider them too.

Alternatively, countries can focus public pension systems on the low-income elderly. Canada, the Netherlands, and New Zealand combine low public pension spending with low old-age poverty because their public pension systems are relatively redistributive. This approach can work well when countries succeed in encouraging people to compensate for lower public pensions with higher savings through private pensions (OECD 2011b).

As an illustration, one can look at the impact of raising the effective retirement age (for example, increasing the employment rate among those of working age) and increasing the statutory retirement age (for example, increasing the employment rate of the elderly) by 5 percent (figure 7.25). For the EU12, this is equivalent to increases of three years in the effective and statutory retirement ages, resulting in longer working lives by six years. Of course, increases in the statutory retirement age do not lead to one-to-one increases in working lives. Instead, governments have to work on measures on both the supply side (strengthening incentives to work) and demand side (ensuring that there are jobs for the elderly) to make this happen. These reforms would keep public pension expenditures at 2010's level in Western Europe. The EU12 countries would reduce outlays for public pensions from more than 8 percent of GDP in 2010 to less than 7 percent in 2030. Such reforms would also be good for economic recovery. As people's future income increases, they are likely to scale up today's consumption (figure 7.26).

## Reforming public health

Europe's public health spending is still moderate and most health outcomes are impressive. While some countries in Eastern Europe are struggling to overcome the challenges of the past—including heavy hospital infrastructure, overreliance on inpatient and specialized care, and neglect of preventive care—the problems of public health systems lie foremost in the future. Health care expenditures around the world tend to rise faster than incomes, and Europe, where median public health spending increased from 5.2 percent of GDP in 1995 to 6.4 percent in 2009 (figure 7.27), is no exception.



Source: Eurostat; and OECD Social Expenditure Database.

**Figure 7.27: Public health spending has increased faster than GDP**

(public health spending in Europe, percentage of GDP, 1995 and 2009)

### Box 7.13: Long-term care policies for older populations in new member states and Croatia

The new EU member states and Croatia are facing rapidly aging populations. In 2025, more than 20 percent of Bulgarians will be age 65 or older, up from just 13 percent in 1990, and the average Slovene will be 47 years old, among the oldest in the world. One consequence of these demographic changes is the expected increase in demand among the older population for long-term care (LTC). LTC services refer to the organization and delivery of a broad range of services and assistance to people who are limited in their ability to live independently over an extended period.

Experience from Organisation for Economic Co-operation and Development (OECD) countries shows that LTC is expensive and generates a financial burden for individuals and households. Much financial uncertainty surrounds future LTC expenditures, and private LTC insurance systems are underdeveloped. Increasing good practice in OECD countries means promoting a policy of universal

coverage. Yet if countries are to adopt such policies—given the growing size of the older population and growing dependency ratios—they must closely examine the policies' fiscal sustainability.

Thus the key policy challenge facing new EU member states and Croatia is how to balance the twin objectives of fair financing (where those in need can afford LTC) with fiscal sustainability. Governments can meet this challenge in four ways:

- Develop a policy for universal LTC financing based on the concept of intergenerational fiscal sustainability. Use actuarial and other financial models to cost out the revenue and expenditure implications of expanding universal LTC coverage. Identify the appropriate package and identify the role of supplementary LTC coverage through other instruments.

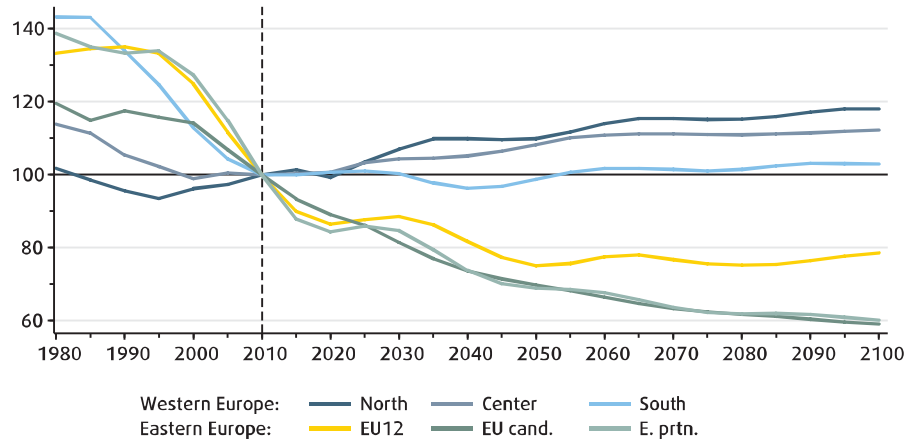
- Do not expand LTC coverage on an inefficient base but use LTC financing to control demand for services and channel it toward the right types of services (home-based with care coordination and conversion of hospitals into community centers and not LTC institutions).
- Think about how to leverage LTC service-delivery reforms and encourage private provision. (This depends heavily on LTC financing policies and the overall regulatory environment.)
- Develop a strong evidence base on LTC financing and provision. As part of developing an LTC policy, begin monitoring LTC expenditures to learn whether they pose a burden on households or how households are coping with them during old age. Build a database on coverage of LTC services and trends over time.

Source: World Bank 2010b.



**Figure 7.28: Young cohorts are shrinking in Eastern Europe**

(population ages 5–24, 1980–2100, 2010 = 100)



Source: UN 2011.

Based on historical trends, unit costs of health treatment grow 1 percentage point faster than GDP per capita. This leads to increases in public health spending of 2.7 percent of GDP in Western Europe and 1.5 percent in the EU12 by 2030. Further costs pressures could arise from faster technology adoption and imitation. For the EU12, this could imply that public health spending increases by as much as 3.5 percent of GDP by 2030.

The challenge is how to manage the pressures that lead to escalating costs and expenditures without undermining many countries' generally sound health-system performance. After all, reducing public health spending in a bad way can ultimately undermine important health policy goals or simply defer spending. Governments are striving to control cost escalation while preserving the public sector's crucial role in providing good health care.

One major pressure point is spending on long-term care services (box 7.13). A recent IMF cross-country analysis concluded that international experience offers various options to control the growth of public health spending (Clements, Perry, and Toro 2010). They include pushing through with provider payment reforms using case-based payment or global budgets rather than fee for service, strengthening evaluations of the cost-effectiveness of medical treatments and technology, implementing health information technology to increase the efficiency of service delivery, and increasing patient cost-sharing to encourage patients to go to the doctor only when needed. At the same time, the most sustainable way to control health spending over the decades is to ensure value for money, though sometimes this might mean investing more upfront (OECD 2010).

### Reforming public education

Population aging puts upward pressures on the costs of public pensions and public health, but also provides an opportunity for fiscal saving in education. The population age 5–24 years changes little in 2010–30 in Western Europe but

is set to decline by about 15 percent in Eastern Europe (figure 7.28), where many countries maintain too many schools, and are failing to consolidate schools and reduce teaching staff in line with shrinking student numbers.

Other problems are Europe-wide, including disappointing learning achievements in international assessments for some countries and minority groups, graduation of pupils and students without the skills needed by industry and other employers, little lifelong learning, and poor information on learning outcomes. Supporting education and training systems that serve the needs of the economy is one of the important roles of a high-quality government. Some European countries start focusing on technical skills too early in a student's career, leaving graduates ready for their first job but possibly without enough generic skills to be retrained into a different field later. Other European countries now have sophisticated adult education and training systems in place; others have barely started. With aging populations, it is essential to have options, incentives (for workers and firms), and quality assurance mechanisms; and these systems cannot be built overnight.

Following the methodology of the European Commission, we project public expenditures on education to change little in 2030 relative to 2010. Median expenditures on education would decline by 0.3 percent of GDP in Western Europe, and remain unchanged in the EU12 countries. Adjusting the number of education personnel in line with the changes in the number of students would generate sizable fiscal gains. Education spending would decrease by 1.1 percent of GDP in the EU12 countries, 0.7 percent in the south, 0.3 percent in the north, and 0.1 percent in the center.<sup>5</sup> Such saving could either be used to invest in education quality, or pay off public debt and reduce the size of government.

## Make government more efficient, or make it smaller

Governments in Europe generate plenty of reasons to worry. When big, they hamper growth. The crisis has made governments even bigger, and countries are struggling to reassure nervous financial markets in the face of large fiscal imbalances and rising public debt. These concerns are weighing on growth. The recovery has relied on public support and the global upturn rather than domestic investment and FDI. Population aging further dampens the outlook, as labor gets scarcer and demand for public services stronger.

Reform is an unrelenting task for all governments, but some governments need more—and more urgent—reforms than others. The south does poorly on key dimensions compared with the rest of Western Europe and, increasingly, with countries in Eastern Europe:

- Although the south still has somewhat smaller government than the center and the north, government size has been increasing in the south over the last decade and a half. Efforts to consolidate government spending weakened in Europe during the boom years before the global financial crisis in 2008-09. But spending on pensions and social transfers rose far more in the south than in the rest of Western Europe. The south spends more than the north or center when taxes are factored in on the social sector as a share of GDP.

- Europe has been an economic convergence machine, helping poorer countries to catch up to richer economies. Yet even though the forces of convergence should have translated into faster growth in the south, growth in the south has been slower than in the north and the center over the last decade and a half. One reason for the south's poor growth is that quality of government is worse than elsewhere. The south has fallen further behind the north and the center in quality of government, even though its public sector wage bills expanded.
- Oversized government, moderate growth, weak institutions, and a rapidly aging population give rise to large fiscal imbalances. And it is the south that faces the largest fiscal adjustment in coming decades.

For Eastern Europe, the differences across countries are less striking than for Western Europe. Nevertheless, taking the EU candidate countries as an example, the need for substantial reform is evident:

- Although the EU candidate countries are poorer than the EU12 countries, their government size (measured as government spending as a share of GDP) is about the same. Size declined in the EU12 from the mid-1990s to the late 2000s, but increased in the candidate countries. Spending on pensions, health, and education as a share of GDP is higher in the candidate countries than in the EU12 and eastern partnership countries.
- The candidate countries have seen less convergence in living standards than the rest of Eastern Europe, even though they are poorer than the EU12 countries. One reason is that many of the candidate countries have benefited less from trade integration since the late 1990s than the EU12 countries. The other reason, more pertinent for this chapter, is that candidate countries lag the new member states of the EU in quality of government, and the gap has been widening over the last decade.
- Candidate countries have weaker fiscal balances than EU12 or eastern partnership countries, and face a larger longer-term fiscal adjustment to stabilize public debt.

Such an array of difficulties makes it easy to give in to pessimism. But there are also good reasons to be optimistic.

First, Europe has repeatedly shown a capacity to reform. The list of countries that have succeeded in bringing about large improvements in their fiscal balances since the 1980s is long, though the advances have not always been sustained.<sup>6</sup> But soon we might be able to talk about sustained fiscal consolidation in countries like Estonia, Ireland, or Latvia. Indeed, public finance reform might be easier today than in the past, largely because the crisis has convinced more people of its urgency, even if some countries' large public debt originates in the private sector. Many countries are lowering public benefits, reducing salaries, and increasing working hours. Countries like France, Greece, Italy, Portugal, Spain, and the United Kingdom have recently adopted fiscal reforms whose scope and size might have been unthinkable just a few years ago.

Second, to ensure prosperity and well-being, well-run governments can make an enormous difference. With public sectors accounting for half of domestic output, making sure that government works better can help spur productivity and innovation in the economy. Absorbing lessons from other countries about what works (and what does not), countries can make the bureaucracy leaner, fiscal institutions more reliable, public services more competitive, tax administration more effective, and citizens more informed through electronic government.

Third, Europe has demonstrated that it can adjust public finances to population aging. In Western Europe, many countries have altered pension parameters to put a lid on public pension spending as elderly cohorts started to grow. In Eastern Europe, countries such as Estonia, Poland, and the Slovak Republic revamped their pension programs so that they have sound system finances. As pensions remain fairly generous in Europe, many countries still have room to advance pension reforms as population aging accelerates. Countries also need to address education and health with equal urgency. Cost escalation in health care—driven by increased demand from rising incomes and by new, high technology-related health procedures—is the main risk to fiscal sustainability. Countries in Eastern Europe can learn from their neighbors to the west about how to adjust spending on teachers in line with demographic trends.

Fourth, beyond putting public finances in order, Europe can do much to improve trade, finance, enterprises, innovation, and labor. Lifting growth even a little over the coming decade can cut the size of the required fiscal adjustments. Faster growth increases tax revenues and can also lower government spending on social programs as earnings increase, on unemployment benefits as jobs become more plentiful, and on servicing public debt as markets charge lower interest on government bonds. A well-run welfare state can help make this happen—its safety net allows people to take risks and invest in their business ideas without worrying about their families' health insurance or children's education if plans go awry.

There is no one "best" government form and size. Some societies care more about strong growth, others more about inclusive growth. Countries have diverse institutions, histories, and politics, which make governments different in more ways than size. Each country has to decide what type of government it wants and how it wants to reform what it has. Northern Europe outperforms much of the rest of Europe on many fronts, including growth, public services, equity, and quality of government. Northern Europeans have found that these benefits come with big government but with many individual responsibilities: they have higher labor force participation rates, they stay engaged in the formal economy despite having to pay high taxes, they have enabled women to combine work and family, they have provided enterprises with the economic freedom needed to compete globally—undertaking sweeping economic reforms when necessary—and they maintain high levels of social trust.



Doing all this is not easy. It might be more feasible for most countries to keep government small until the institutional and social prerequisites of “big government lite” are put in place. All the countries in Southern Europe, many in Eastern Europe, and even some in Western Europe should keep the main point of this chapter in mind: without high quality of public services and social programs, big government will be a heavy burden and become a drag on economic growth. With poor economic growth prospects, even reasonably sized governments inevitably become an unbearable burden.

#### Answers to questions on page 353

- Governments in Europe spend about 10 percent of GDP more than their peers, and this is almost entirely because they spend more on social protection.
- Controlling for other differences, European economies with government spending greater than 40 percent of GDP have had much lower growth rates during the last 15 years.
- Countries like Sweden have big governments, but they deliver high-quality social services, make it easy for citizens and enterprises to comply with taxes and regulations, and have high levels of social trust.
- Countries where government works have made their bureaucracies leaner, fiscal institutions more reliable, public services competitive, tax administration effective, and citizens more empowered.
- To respond to market pressures and aging populations, almost every country in Europe must make big fiscal adjustments to reduce public debt to precrisis levels.

## Chapter 7: Annexes

**Table A7.1: Political institutions influence government size**

(OLS regression results on the logarithm of government size, 1995–2009)

Variables	(1)	(2)	(3)	(4)
Log per capita GDP PPP				.27 (8.9)
Log public debt (percentage of GDP)		.10 (10.8)	.08 (9.4)	.08 (8.3)
Log trade openness (percentage of GDP)		-.08 (5.4)	-.05 (4.0)	-.05 (3.6)
Log old-age dependency ratio			.09 (1.4)	.12 (1.9)
Log unemployment rate			.10 (9.0)	.09 (8.1)
Fractionalization				.06 (2.5)
Federalism				.04 (2.7)
Electoral system				-.07 (4.2)
Bicameralism				.01 (0.9)
Constitutional design				-.06 (2.8)
Western Europe				
Center	-.09 (2.0)	-.07 (2.5)	-.09 (3.5)	-.10 (3.3)
South	-0.12 (2.3)	-0.18 (5.7)	-0.21 (6.8)	-0.19 (5.8)
Eastern Europe				
EU12	-0.20 (4.8)	-0.07 (2.6)	-0.10 (3.5)	-0.07 (2.3)
Accession	-0.27 (5.9)	-0.15 (4.7)	-0.24 (6.6)	-0.23 (6.2)
Eastern partnerships	-0.67 (14.2)	-0.19 (4.7)	-0.11 (2.6)	-0.11 (0.2)
Anglo-Saxon and Japan	-0.27 (5.8)	-0.33 (10.8)	-0.32 (11.0)	-0.25 (7.1)
Emerging peers	-0.65 (17.2)	-0.57 (20.9)	-0.56 (20.9)	-0.48 (14.1)
Constant	3.9 (76.7)	3.27 (37.4)	2.1 (7.1)	2.1 (7.1)
Year controls	Yes	Yes	Yes	Yes
R squared	0.42	0.68	0.71	0.73
Number of observations	1,023	833	808	800

Note: Western Europe North is omitted. t-statistics in parentheses. OLS refers to ordinary least squares.

Source: World Bank staff calculations.

Table A7.2: Regression Results for Growth and Initial Government Expenditures, 1995 to 2010

Variables	(1) OLS	(2) OLS	(3) Pooled OLS	(4) Robust regression
<b>1. World 1995 to 2010</b>				
Government size	-0.0003	-0.0003	-0.0001	0.0001
Real per capita income	-0.0000**	-0.0000***	-0.0000***	-0.0000***
Number of observations	152	106	399	399
Adjusted R squared	0.0123	0.2703	0.2095	0.2337
Arellano-Bond AR(2) test (p value)				
Hansen J-statistics (p value)				
<b>2. World 1995 to 2006</b>				
Government size			-0.0001	0.0002
Real per capita income			-0.0000***	-0.0000***
Number of observations			301	301
Adjusted R squared			0.1992	0.2199
Arellano-Bond AR(2) test (p value)				
Hansen J-statistics (p value)				
<b>3. World 1995 to 2006 and government size more than 40 percent of GDP</b>				
Government size			-0.0009*	-0.0005
Real per capita income			-0.0000***	-0.0000***
Number of observations			78	76
Adjusted R squared			0.3476	0.4163
Arellano-Bond AR(2) test (p value)				
Hansen J-statistics (p value)				
<b>4. World 1995 to 2006 and government size less than or equal to 40 percent of GDP</b>				
Government size			0.0001	0.0004
Real per capita income			-0.0000***	-0.0000***
Number of observations			223	223
Adjusted R squared			0.1968	0.1797
Arellano-Bond AR(2) test (p value)				
Hansen J-statistics (p value)				
<b>5. Europe 1995 to 2010</b>				
Government size	-0.0016***	-0.0009**	-0.0007**	-0.0004*
Real per capita income	-0.0000**	-0.0000***	-0.0000***	-0.0000***
Number of observations	42	33	124	124
Adjusted R squared	0.3978	0.6701	0.5350	0.6023
Arellano-Bond AR(2) test (p value)				
Hansen J-statistics (p value)				
<b>6. Europe 1995 to 2006</b>				
Government size			-0.0010*	-0.0004
Real per capita income			-0.0000***	-0.0000***
Number of observations			91	91
Adjusted R squared			0.3955	0.5176
Arellano-Bond AR(2) test (p value)				
Hansen J-statistics (p value)				
<b>7. Europe 1995 to 2006 and government size more than 40 percent of GDP</b>				
Government size			-0.0014**	-0.0011**
Real per capita income			-0.0000***	-0.0000***
Number of observations			66	65
Adjusted R squared			0.3586	0.4698
Arellano-Bond AR(2) test (p value)				
Hansen J-statistics (p value)				
<b>8. Europe 1995 to 2006 and government size less than or equal to 40 percent of GDP</b>				
Government size			0.0022	0.0028*
Real per capita income			0.0000	0.0000
Number of observations			25	25
Adjusted R squared			0.5438	0.5750
Arellano-Bond AR(2) test (p value)				
Hansen J-statistics (p value)				

\*\*\*, \*\*, and \* denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

Note: The rows government size and real per capita income show parameter estimates except for the last column. Standard errors are heteroskedasticity and country-specific autocorrelation consistent. Except for (1), the regressions also include these additional right-hand side variables: years of schooling, inflation, trade openness, old-age dependency ratio, terms of trade growth, quality of regulation, and rule of law. All regressors are initial values. Regressions (1) and (2) are cross-sectional regressions. Regressions (3) to (8) are four-year period panels. Regressions (3), (4), (6), (7), and (8) also include time-fixed effects. The null hypothesis of the Arellano-

(5) BE	(6) FE	(7) SGMM	(8) BACE, BE	
			Coefficient	Including probability
-0.0003 -0.0000*** 399 0.2039	-0.0003 -0.0000*** 399 0.3120	0.0011** -0.0000* 399 0.0550 0.0740	-0.0005 -0.000001 399	0.2822 0.2067
-0.0001 -0.0000*** 301 0.1971	-0.0004 -0.0000* 301 0.2695	0.0013 -0.0000** 301 0.4920 0.4970	-0.0002 -0.000001 301	0.0000 0.9997
-0.0013* -0.0000*** 78 0.4335	-0.0012 -0.0000** 78 0.2221	-0.0017* -0.0000** 78 0.5360 0.6000	-0.0015 -0.000002 78	0.0000 0.9959
0.0003 -0.0000*** 223 0.1798	-0.0003 0.0000 223 0.2238	0.0004 -0.0000* 223 0.3080 0.4030	-0.0001 -0.000001 223	0.0319 0.9659
-0.0004 -0.0000* 124 0.3235	-0.0006 -0.0000** 124 0.5876	-0.0017** -0.0000* 124 0.5090 0.8700	-0.0006 -0.000001 124	1.0000 0.9455
-0.0008* -0.0000** 91 0.5761	-0.0002 -0.000001 91 0.5640	-0.0006 -0.000001 91 0.4420 0.1890	-0.0009 -0.000001 91	0.9996 0.9994
-0.0023** -0.0000*** 66 0.5015	-0.0006 -0.000001 66 0.3305	-0.0010 -0.000001 66 0.7980 0.2970	-0.0022 -0.000002 66	0.9408 0.9882
0.0000 0.0000 25 0.7984	0.0001 -0.0000* 25 0.8906	0.0071 0.0000 25 0.5360 0.9900	-0.0005 0.0966 25	0.0000 0.9598

Bond AR(2) test is that the first-differenced errors exhibit no second-order serial correlation. The null hypothesis of the Hansen J-statistics is that the instruments are not correlated with the residuals. The prior mean model size in the BACE regressions is 3. For the estimation methods, OLS, BE, FE, SGMM, and BACE refer to ordinary least squares, between effects, fixed effects, system GMM (generalized method of moments), and Bayesian averaging of classical estimates, respectively.

Source: World Bank staff calculations.



Table A7.3: Regression results for growth and initial government revenues in Europe, 1995–2010

Variables	(1) OLS	(2) OLS	(3) Pooled OLS	(4) Robust regression
<b>Europe 1995 to 2010</b>				
Government size	-0.0003	-0.0005	-0.0007	-0.0001
Real per capita income	-0.0000**	-0.0000**	-0.0000***	-0.0000**
Number of observations	42	33	124	124
Adjusted R squared	0.2944	0.6253	0.5363	0.6033
Arellano-Bond AR(2) test (p value)				
Hansen J-statistics (p value)				
<b>Europe 1995 to 2006</b>				
Government size			-0.0009	-0.0001
Real per capita income			-0.0000***	-0.0000***
Number of observations			91	91
Adjusted R squared			0.4109	0.5259
Arellano-Bond AR(2) test (p value)				
Hansen J-statistics (p value)				

Table A7.4: Regression results for growth and initial social transfer spending in Europe, 1995–2010

Variables	(1) OLS	(2) OLS	(3) Pooled OLS	(4) Robust regression
<b>Europe 1995 to 2010</b>				
Government size	-0.0023	-0.0003	-0.0011**	-0.0005
Real per capita income	-0.0000**	-0.0000*	-0.0000***	-0.0000**
Number of observations	42	33	127	127
Adjusted R squared	0.3307	0.6017	0.5487	0.5934
Arellano-Bond AR(2) test (p value)				
Hansen J-statistics (p value)				
<b>Europe 1995 to 2006</b>				
Government size	-0.0023	-0.0003	-0.0017**	-0.0008**
Real per capita income	-0.0000**	-0.0000*	-0.0000***	-0.0000***
Number of observations	42	33	94	94
Adjusted R squared	0.3307	0.6017	0.4497	0.5262
Arellano-Bond AR(2) test (p value)				
Hansen J-statistics (p value)				

Table A7.5: Regression results for growth and average public investment spending in Europe, 1995–2010

Variables	(1) OLS	(2) OLS	(3) Pooled OLS	(4) Robust regression
<b>Europe 1995 to 2010</b>				
Government size	0.0101**	0.0033	0.0011	0.0009
Real per capita income	-0.0000***	-0.0000*	-0.0000**	-0.0000**
Number of observations	42	33	126	126
Adjusted R squared	0.4341	0.6170	0.5646	0.5901
Arellano-Bond AR(2) test (p value)				
Hansen J-statistics (p value)				
<b>Europe 1995 to 2006</b>				
Government size	0.0101**	0.0033	0.0035	0.0036**
Real per capita income	-0.0000***	-0.0000*	-0.0000**	-0.0000***
Number of observations	42	33	93	93
Adjusted R squared	0.4341	0.617	0.4494	0.5268
Arellano-Bond AR(2) test (p value)				
Hansen J-statistics (p value)				

\*\*\*, \*\*, and \* denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

Note: See note for table A7.2.

Source: World Bank staff calculations.

(5) BE	(6) FE	(7) SGMM	(8) BACE, BE	
			Coefficient	Including probability
-0.0008*	-0.0003	-0.0023**	-0.0009	0.9979
-0.0000*	-0.0000**	0.00000	-0.000001	0.9933
124	124	124	124	
0.4210	0.6011			
		0.63		
		0.46		
-0.0010**	0.0002	-0.0008	-0.0008	0.0272
-0.0000**	-0.000001	-0.000001	-0.000001	0.9588
91	91	91	91	
0.6132	0.5775			
		0.221		
		0.206		

(5) BE	(6) FE	(7) SGMM	(8) BACE, BE	
			Coefficient	Including probability
-0.0007	-0.0022	-0.0029**	-0.0010	0.9982
-0.0000	-0.0000**	-0.0000	-0.0000007	0.6956
127	127	127		
0.3425	0.5900			
		0.215		
		0.621		
-0.0012	-0.0039	-0.0044	-0.0017	1.0000
-0.0000**	0.000000	0.000000	-0.000001	0.7850
94	94	94		
0.5012	0.4585			
		0.674		
		0.577		

(5) BE	(6) FE	(7) SGMM	(8) BACE, BE	
			Coefficient	Including probability
0.0010	-0.0016	-0.0069	0.0023	0.9998
-0.0000	-0.0000**	-0.0000	-0.0000006	0.8710
126	126	126		
0.4185	0.6007			
		0.452		
		0.597		
0.0017	0.0109***	-0.0139	0.0007	0.2223
-0.0000	-0.0000**	-0.0000**	-0.000001	0.8522
93	93	93		
0.5072	0.5215			
		0.836		
		0.859		

\*\*\*, \*\*, and \* denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

Note: See note for table A7.2.

Source: World Bank staff calculations.

Table A7.6: Regression results of quality of government on initial government size

	(1) World	(2) Europe	(3) World	(4) Europe	(5) World	(6) Europe
1. Enabler of private sector						
Indicator	Rule of law		Regulation		Indep. judiciary	
Source	WB Governance		WB Governance		Henisz Polcon	
Bivariate regression						
Coefficient	0.05	0.06	0.04	0.05	0.02	0.02
Robust t-statistics	7.80***	7.42***	5.67***	5.46***	6.44***	4.26***
Number of observations	167	43	166	43	160	42
Adjusted R square	0.34	0.38	0.25	0.38	0.21	0.25
Multivariate regression						
Coefficient	0.03	0.03	0.02	0.02	0.01	0.02
Robust t-statistics	4.20***	2.57**	2.51**	1.85*	3.05***	1.73*
Number of observations	155	41	155	41	151	40
Adjusted R square	0.56	0.79	0.44	0.61	0.35	0.24
2. Enabler of economic globalization						
Indicator	Free trade		Econ. globalization		Tariff rate	
Source	Fraser Institute		KOF Index		Fraser Institute	
Bivariate regression						
Coefficient	0.96	0.63	0.04	0.04	-0.16	0.01
Robust t-statistics	8.39***	3.78***	4.46***	2.90***	5.03***	0.31
Number of observations	133	41	120	34	138	42
Adjusted R square	0.34	0.25	0.15	0.15	0.12	-0.02
Multivariate regression						
Coefficient	0.59	0.29	0.03	0.04	-0.12	0.02
Robust t-statistics	3.32***	1.45	2.16**	1.62	2.18**	0.36
Number of observations	128	39	115	34	131	40
Adjusted R square	0.41	0.37	0.15	0.31	0.2	-0.08
3. Efficient administrator						
Indicator	Gov. effectiveness		Control of corrupt.		Formal economy	
Source	WB Governance		WB Governance		Schneider	
Bivariate regression						
Coefficient	0.05	0.06	0.05	0.07	0.52	0.88
Robust t-statistics	7.05***	6.19***	8.37***	6.54***	6.50***	5.79***
Number of observations	167	43	166	43	145	40
Adjusted R square	0.31	0.36	0.35	0.35	0.23	0.47
Multivariate regression						
Coefficient	0.03	0.02	0.03	0.02	0.35	0.46
Robust t-statistics	3.64***	1.79*	4.74***	2.73***	3.48***	3.27***
Number of observations	155	41	155	41	141	40
Adjusted R square	0.53	0.76	0.55	0.82	0.36	0.73
4. Enabler of voice and accountability						
Indicator	Instit. democracy		Voice and account.		Political stability	
Source	Polity IV		WB Governance		WB Governance	
Bivariate regression						
Coefficient	0.11	0.17	0.04	0.06	0.04	0.04
Robust t-statistics	4.06***	3.69***	5.37***	6.43***	7.28***	4.64***
Number of observations	155	39	167	43	167	43
Adjusted R square	0.11	0.52	0.22	0.53	0.28	0.31
Multivariate regression						
Coefficient	0.08	0.17	0.02	0.04	0.03	0.02
Robust t-statistics	2.03**	3.16***	2.48**	3.09***	4.18***	2.27**
Number of observations	146	37	155	41	155	41
Adjusted R square	0.2	0.51	0.38	0.69	0.33	0.51

\*\*\*, \*\*, and \* denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

Note: The quality of government indicators are 2003–08/9 averages. Higher values indicate higher quality of government. The multivariate regressions also include these additional right-hand side variables: 1995 to 2002 average per capita income and the time-invariant variables ethno-linguistic fragmentation, French legal origin, socialist legal origin, and distance to Brussels.

(7) World	(8) Europe	(9) World	(10) Europe	(11) World	(12) Europe	(13) World	(14) Europe
Dismissal cost WB Doing Bus.		Centr. collect. bar. Glob. Compet. Rep.		Tax compl. cost WB Doing Bus.		Top mar. tax rate Fraser Institute	
0.08	0.02	-0.03	-0.09	0.04	0.06	-0.06	-0.17
3.90***	0.46	3.00***	4.11***	2.92***	1.85*	3.15***	5.13***
133	41	122	42	135	41	125	42
0.08	-0.02	0.07	0.22	0.03	0.05	0.08	0.46
0.05	0.00	-0.03	-0.06	0.01	0.01	-0.04	-0.12
1.58	0.05	1.94*	2.22**	0.39	0.22	1.65	3.30***
127	39	116	40	129	39	118	40
0.11	0.07	0.23	0.47	0.12	0.24	0.19	0.49
Trade openness Penn World Table							
0.74	0.25						
1.92*	0.53						
167	43						
0.02	-0.02						
-0.07	-0.6						
0.18	0.83						
155	41						
0.07	0.12						

Source: World Bank staff calculations.

Table A7.7: OLS regression results of people's values on initial government size

	(1) World	(2) Europe	(3) World	(4) Europe	(5) World	(6) Europe	(7) World	(8) Europe
	Trust other people		Tolerance of diversity		Gov. more responsib.		Claiming benefits	
Bivariate regression								
Coefficient	0.01	0.01	0.02	0.04	0.01	0.05	-0.02	0
Robust t-statistics	2.89***	2.44**	4.04***	6.95***	1.03	4.72***	2.82***	0.07
Number of observations	56	20	52	20	56	20	55	20
Adjusted R square	0.16	0.24	0.18	0.49	0	0.39	0.1	-0.06
Multivariate regression								
Coefficient	0.00	0.00	0.02	0.02	0.02	0.03	-0.02	0.04
Robust t-statistics	1.53	0.46	2.71***	2.64**	0.84	1.82*	1.36	2.18**
Number of observations	53	19	49	19	53	19	52	19
Adjusted R square	0.34	0.66	0.28	0.82	0.04	0.51	0.09	0.01

\*\*\*, \*\*, and \* denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

Note: OLS refers to ordinary least squares. See note for table A7.6.

Source: World Bank staff calculations, based on World Values Survey (waves 2004 to 2008).

Table A7.8: Public spending helps improve health, spending on public schooling is less effective

(regression results for public spending in health and education, 1995–2009)

#### Maternal Mortality Ratio

Ln Government Spending (% of GDP)	-0.99 (5.1)
Ln Private Spending (% of GDP)	-0.09 (1.9)
Ln Age Dependency	1.2 (6.1)
Government Quality	-.43 (3.0)
Economic Controls (Openness, Debt Ratio)	YES
Political Institutions (Electoral System)	YES
Year Dummies	YES
Geo-group Dummies	YES
R2	0.83
No. Observations	819
First Stage R2	0.68
Sargan	chi2(1) .4368(p=0.51)

#### Net Secondary Enrollment Rates

Ln Government Spending (% of GDP)	.22 (3.3)
Ln Age Dependency	-0.05 (0.6)
Government Quality	.09 (1.2)
Economic Controls (Openness, Debt Ratio)	YES
Year Dummies	YES
Geo-group Dummies	YES
R2	0.54
No. Observations	378
First Stage R2	0.59
Sargan	Chi2(4) 5.961(p=0.20)
First Stage R2	0.68
Sargan	chi2(1) .4368(p=0.51)

Note: Instruments used are debt ratio in logs, federal structures in political institutions. t-statistics in parentheses.

Source: World Bank staff calculations.

Table A7.9: Regression results for log public pensions as a share of GDP

Variables	(1) OLS	(2) RE	(3) FE	(4) OLS	(5) RE	(6) FE
	1980-1994			1995-2007		
OECD						
Log Old Age Dep. Ratio	0.9956***	0.9880**	0.9956*	0.8276***	0.8925***	0.8276***
Log PC GDP PPP	-0.2431***	-0.23930	-0.2431	-0.1392***	-0.1506**	-0.1392*
GDP Growth	-0.0082***	-0.0083***	-0.0082***	-0.0147***	-0.0154***	-0.0147**
Inflation Rate	-0.0081***	-0.0081**	-0.0081**	-0.0178***	-0.0176***	-0.0178***
Democracy Index	0.0512	0.0471**	0.0512*	0.0046	-0.0029	0.0046
Number of observations	266	266	266	260	260	260
Adjusted R squared	0.9314		0.1845	0.9809		0.3176
OECD Europe						
Log Old Age Dep. Ratio	1.0042***	0.9335	1.0042	0.6151***	0.7046**	0.6151
Log PC GDP PPP	-0.2580***	-0.2426	-0.258000	-0.0815**	-0.095200	-0.0815
GDP Growth	-0.0097**	-0.0101***	-0.0097**	-0.0157***	-0.0167***	-0.0157**
Inflation Rate	-0.0110***	-0.0110***	-0.0110***	-0.0210***	-0.0207***	-0.0210***
Democracy Index	0.0456	0.0409	0.0456	0.0099	0.0037	0.0099
Number of observations	196	196	196	195	195	195
Adjusted R squared	0.9130		0.1787	0.9812		0.218

\*\*\*, \*\*, and \* denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

Note: The estimates are from a regression of the logarithm of public pensions as a share of GDP on the logarithm of the old-age dependency ratio, along with other controls. They include basic economic characteristics (GDP growth, per capita income, and the inflation rate) and a democracy index to capture any impact of elderly voters on pension entitlements. The regressions are run as pooled ordinary least squares (OLS), random effects (RE), and fixed effects (FE). In addition, we run separate regressions for 1980-94 and 1995-2007; as well as for the whole OECD group, including Australia, Canada, New Zealand, and the United States, and for the European OECD countries only.

Source: World Bank staff calculations.

Table A7.10: Regression Results for Log Social Transfers as a share of GDP

Variables	(1) OLS	(2) RE	(3) FE	(4) OLS	(5) RE	(6) FE
	1980-1994			1995-2007		
OECD						
Log Dependency Ratio	2.0234**	1.5682	2.0234	1.1568***	1.1589***	1.1568**
Log PC GDP PPP	0.2885	0.24970	0.2885	-0.00560	-0.0075000	-0.0056
GDP Growth	-0.0087**	-0.0080***	-0.0087***	-0.0135***	-0.0137**	-0.0135**
Inflation Rate	-0.0185**	-0.0187*	-0.0185*	-0.0219***	-0.0221***	-0.0219***
Democracy Index		-0.2191**		-0.0062	-0.0109	-0.0062
Number of observations	92	92	92	247	247	247
Adjusted R squared	0.9578		0.4014	0.9455		0.2591
OECD Europe						
Log Dependency Ratio	1.9568**	1.3012	1.9568	0.7310***	0.7351	0.7310
Log PC GDP PPP	0.3568	0.325	0.356800	-0.049000	-0.050400	-0.0490
GDP Growth	-0.0071	-0.0065**	-0.0071**	-0.0140***	-0.0143*	-0.014
Inflation Rate	-0.0182*	-0.0179	-0.0182	-0.0297***	-0.0300***	-0.0297***
Democracy Index	0.1638*	-0.1334		-0.0114	-0.0155	-0.0114
Number of observations	67	67	67	182	182	182
Adjusted R squared	0.9458		0.3747	0.9253		0.1827

\*\*\*, \*\*, and \* denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

Note: Dependent population includes population less than 15 years old, more than 64 years old, and the unemployed. For the estimation methods, OLS, RE, and FE refer to ordinary least squares, random effects, and fixed effects, respectively.

Source: World Bank staff calculations.

## Notes

- 1 The United States does not have a European-style welfare state for, no doubt, related reasons. Most Americans seem to believe that redistribution favors minorities; they believe that the country is an open and fair society, so poverty is self-inflicted; and, probably because of these beliefs, political institutions, marked by a pluralist system and strong courts that traditionally consider private property more important than public interest, limit the scope of government (Alesina, Glaeser, and Sacerdote 2001).
- 2 The economic and social factors are as expected—except trade openness, which reduces government size. This could be because of the sample, which includes successful emerging economies with small governments and open economies.
- 3 Reinhardt and Rogoff 2011, (pp 31-34) defend their use of the 90 percent of GDP public debt threshold as follows: “Anyone who has done any work with data is well aware that mapping a vague concept, such as ‘high debt’ or ‘over-valued’ exchange rates to a workable definition for interpreting the existing facts and informing the discussion requires making arbitrary judgments about where to draw lines. ... We do not pretend to argue that growth will be normal at 89 percent and subpar at 91 percent debt/GDP any more than a car crash is unlikely at 54mph and near certain at 56mph. However, mapping the theoretical notion of ‘vulnerability regions’ to bad outcomes involves defining thresholds, just as traffic signs in the US specify 55mph”.
- 4 A number of empirical studies find that social trust matters for strong institutions and growth. Knack and Keefer (1997) show that higher trust in strangers is correlated with better government performance. Nannestad (2008) and Jensen and Svendsen (2011) argue that social trust makes social welfare systems more sustainable. Aghion and others (2010) find that low trust leads voters to demand government regulation. This is because detailed regulation disciplines bureaucrats, and because voters prefer state control to private sector corruption. Similarly, Bergh and Bjørnskov (2011) show that countries with strong social trust have lower business and credit market regulations. Bjørnskov (2009) finds that a 10 percentage point increase in social trust is associated with an increase of 0.5 percentage point in the annual real growth rate.
- 5 The size of the fiscal saving depends on several assumptions, including the trends in enrollment rates and labor market participation rates, and physical infrastructure. Drawing on a more cautious set of assumptions, World Bank simulations find that potential saving amounts to 0.4 percent of GDP for the new member states and Croatia.
- 6 Austria, Belgium, Bulgaria, Cyprus, Denmark, Estonia, Finland, Georgia, Germany, Greece, Hungary, Iceland, Ireland, Italy, Lithuania, Luxembourg, the Netherlands, Portugal, Romania, the Slovak Republic, Spain, Sweden, Switzerland, Turkey, Ukraine, and the United Kingdom.

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## Spotlight Two

### Greening Europe's growth

Europe's success in adopting an environmentally sustainable growth model depends on companies developing cutting-edge products, generating jobs at home, and competing successfully abroad. Gamesa, a Spanish wind turbine manufacturer, is considered a European green growth success story.<sup>1</sup> Founded in 1976, the company moved into wind energy in 1994, and within 10 years it became the world's second-largest turbine maker. Gamesa's experience shows how growth comes with both opportunities and challenges.



#### Emissions

Past to 1990

Present to 2008

Future to 2030

The maps show per capita CO<sub>2</sub> emissions from fuel combustion. 1990 and 2008 data by country are from the International Energy Agency's World Energy Outlook 2010. The 2030 map is based on an IEA scenario that limits atmospheric CO<sub>2</sub> concentrations to 450 parts per million (ppm), consistent with a global temperature increase of 2 degrees centigrade.



Very high



High



Medium



Low

Three points stand out:

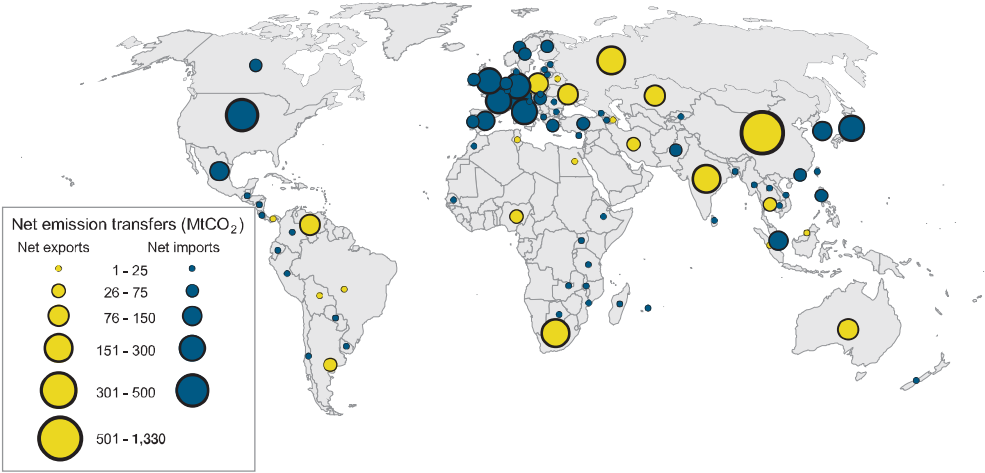
First, Europe’s production is greening thanks to popular policies.<sup>2</sup> Consumption is becoming cleaner too, but less than one might think. Structural change plays an important role in these shifts. In much of Europe, the rise of high-tech companies making green products contrasts with an overall decline in manufacturing. Between 2000 and 2010, the manufacturing employment share in Spain dropped about 20 percent, while imports of consumer goods from China increased eightfold. Polluting industries left, reducing local emissions, but emissions embedded in products imported from China rose. Spain’s net emissions imports increased almost fivefold between 1998 and 2008, similar to those of many other European countries (figure S2.1). For a truly green economic model, Europe needs even cleaner production, but it also needs cleaner consumption.

Second, green policies and investments will create growth opportunities for European countries, but not all countries will benefit equally. Ambitious national and EU policies, motivated by environmental and job-creation objectives, encouraged Gamesa to enter the wind turbine business. These policies created a large home market for Gamesa’s products, which also helped enter export markets. By the mid-2000s, Gamesa had created more than 5,000 jobs, most of them in Spain. Besides Spain, Denmark and Germany were Europe’s main wind turbine manufacturers, together accounting for more than half of global production by 2007. These countries used incentives to create domestic demand and develop research and innovation capacity. As national green policies expand in Europe, will many countries see growth and jobs benefits? Or will such benefits be confined to a small group of early market leaders?

Third, some economic benefits of EU green policies will leak outside the European Union. This leakage is expected and should be welcomed. Addressing global environment imperatives requires that many countries contribute, especially the world’s largest economies: the European Union, the United States, and China. Gamesa’s experience is illustrative. In 2005, Gamesa held a third of the Chinese wind turbine market. Five years later, its market share was down

**Figure S2.1: Europe is the world’s largest importer of carbon dioxide**  
(net carbon dioxide emission transfers [territorial minus consumption emissions], 2008)

Note: MtCO<sub>2</sub> = million tons of carbon dioxide.  
Source: World Bank staff, using data from Peters and others (2011).





to 3 percent. The company entered the Chinese market early, but as green technology became a higher priority for the Chinese government, preferences for domestic industry forced Gamesa to transfer know-how and technology to Chinese suppliers. Some of the policies that helped Gamesa in Spain—including local content requirements and cheap land and credit—now helped Chinese wind turbine manufacturers. Today, some of Gamesa’s products are 95 percent Chinese, and 4 of the 10 largest wind turbine makers in the world are Chinese. Despite its shrinking market share, Gamesa’s Chinese business grew, and the company did not protest Chinese policies. In 2010, Gamesa opened its fifth manufacturing facility in China, from where it now ships equipment to North America. While Gamesa dropped to sixth place among global wind turbine companies, its revenues increased from \$1.7 billion in 2005 to \$3.3 billion in 2009. During this time, globally installed wind energy capacity rose from 60 gigawatts to 160, and by 2010 reached almost 200. Helped by technological progress and economies of scale, the price for wind power dropped about 27 percent.<sup>3</sup>

Europe’s efforts alone are not enough to tackle global environment problems like climate change. Green technology investments will happen sooner if global innovation and manufacturing networks are mobilized. Europe will not always be able to compete in mass-producing standardized green products. It will need to retain its strength in knowledge-intensive green services and technology and rely on cheaper production in places such as the EU12, the EU candidate and eastern partnership countries, and even in East Asia. If Europe succeeds, its growth model will not just be the best in the world in helping its poorer parts and neighbors prosper, it will also lead the world to a greener future.

## The green golden rule

Environmental policies have been essential in Europe since the early 1970s (Hey 2005). They have been outlined in six environmental action programs and formalized in numerous directives.<sup>4</sup> Early policies focused on local environmental quality: highly visible but mostly reversible environmental problems that could be eliminated or reduced by strict emission and effluent standards, such as air and water quality. More recently, Europe has focused on environmental problems with less visible impacts but nonetheless severe and potentially irreversible effects. Global threats such as climate change, biodiversity loss, and nuclear waste now command Europe’s attention.

This second type of environmental problem poses new challenges. These complex problems resemble other large societal problems, like poverty or public health, with long-term consequences and no easy solutions (Hulme 2009). There is great danger in postponing action until future welfare diminishes and the ability to manage or reverse harmful trends is lost. These long-term threats call for a “green golden rule”—achieve the highest level of growth and welfare that does not diminish future generations’ ability to benefit from environmental goods and services<sup>5</sup>

Considering the welfare of both current and future generations means that environmental policymaking must walk a fine line. Reducing carbon emissions, for instance, costs both firms and consumers. Given the uncertainty about the

effectiveness of policies and the impacts they avoid, determining the level of climate action that reduces emissions enough to avoid future damages without unduly affecting economic growth will be difficult. It implies determining the “optimal” or acceptable level of pollution—a controversial task.

Following the green golden rule, Europe has embarked on an ambitious program to ensure continuing growth with fewer environmental side effects. Policymakers still worry about employment, social stability, and fiscal balances, but protecting natural resources long considered practically free and inexhaustible is now prominent and, in some countries, just as important. If Europe overcomes the significant technical, financial, political, and social barriers to implementing a green economy, it will become a world model—one with lessons for both developed countries that urgently need to reduce their environmental impacts and developing countries that need to achieve higher incomes without excessive environmental degradation.

## Greening

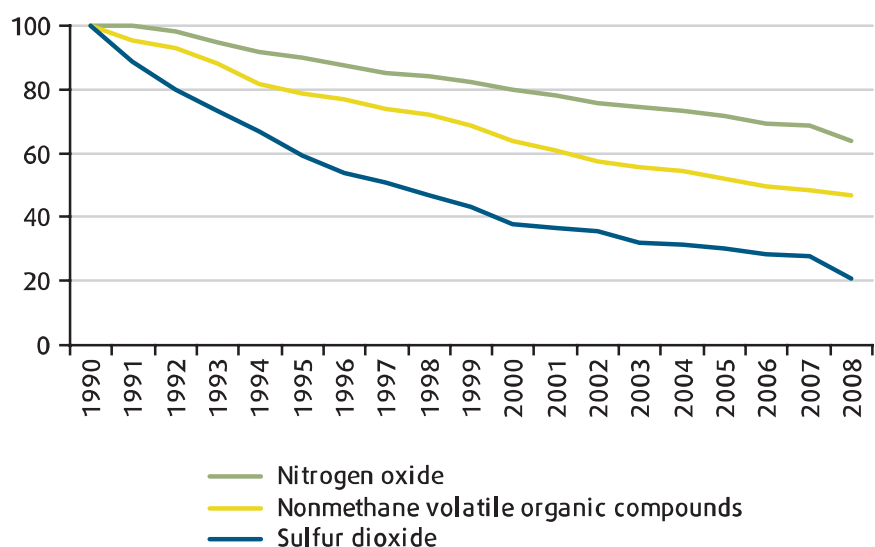
Over the last two decades, Europe has improved environmental quality in many areas and reduced the impacts of its production. Europe measures its environmental progress in climate change, environmental health, nature and biodiversity, and natural resources and waste. Major sources of local air pollution in the EU15 dropped 30–70 percent over 1990–2008 (figure S2.2). Organic water pollution dropped almost 20 percent since 1998, and fine particulate matter dropped 20 percent on average (European Environment Agency 2010). Despite a commitment to reduce waste generation and materials consumption, both have increased modestly, but far less than economic output. But Europe’s progress on biodiversity conservation has been mixed. It did not reach its goal of halting biodiversity loss by 2010, despite making progress in habitat conservation and introducing biodiversity concerns in sector policies, such as the Common Agricultural Policy.

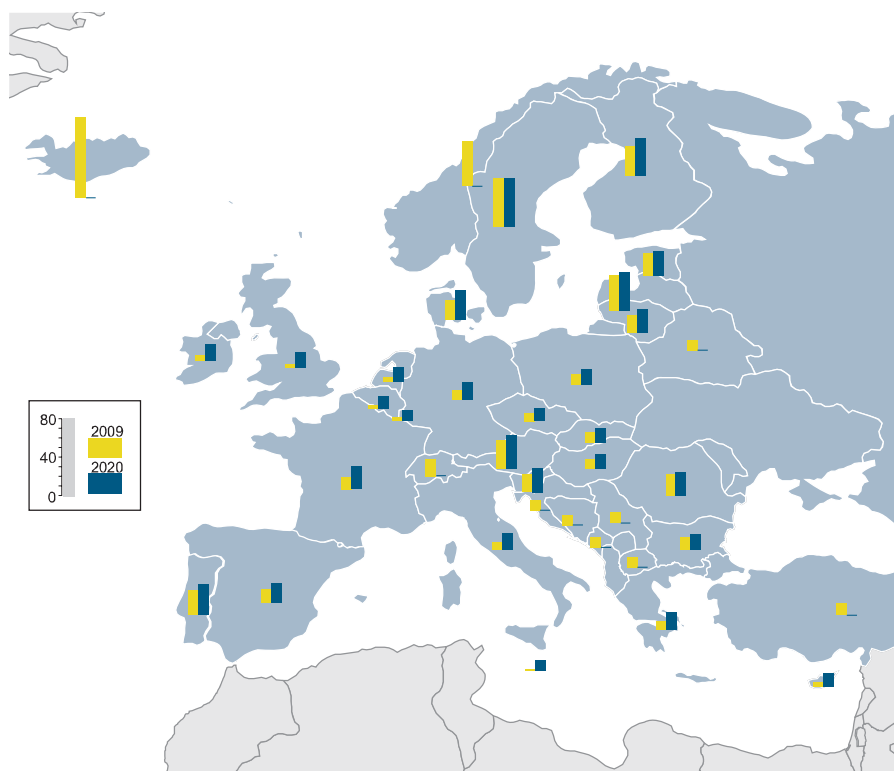
**Figure S2.2: Advanced Europe has cut air pollution in half since 1990**

(trends in air pollution in the EU15, 1990–2009, 1990 = 100)

Note: Excluding the United Kingdom (no pre-2000 data).

Source: European Environment Agency 2010.





**Figure S2.3: Europe's north is leading the push for cleaner energy**

(percentage of final energy from renewables in 2009—and the targets for 2020)

Source: REN21 2011.

EU climate policies sometimes veer into micromanagement (a recent directive limits carbon dioxide emissions in producing a ton of toilet paper to no more than 334 kilograms), but they have been effective. While in most parts of the world, greenhouse gas emissions have increased, over 1990–2008 they dropped 7 percent in the EU15 and 11 percent in the EU27, despite a considerable increase in economic activity (European Environment Agency 2010).<sup>6</sup> Europeans are also using energy more efficiently. Europe's 2008 economic output per unit of energy was twice that in 1990. By further decoupling economic growth from energy use and emissions, the European Union is on track to achieve its climate policy goals for 2020: reduce greenhouse gas emissions 20 percent below 1990 levels, lower primary energy use to 20 percent less than "business as usual," and obtain at least 20 percent of energy from renewable sources. Some member states have already met some goals, for instance on renewable energy (figure S2.3). The targets are more ambitious for 2050, as the European Union aims for an 80 percent reduction in emissions.

These gains have come from popular policies. One instrument for climate action is the European Emission Trading Scheme, introduced in 2005. Despite criticism of the scheme's effectiveness and susceptibility to windfall profits and fraud, industries now know there will be a long-term price on atmospheric carbon emissions. The scheme encouraged private investments in abatement technology and upgrading equipment. Europeans have shown a willingness to share the cost of environmental action. Indeed, 64 percent of EU15 residents believe that protecting the environment should be a priority, even at the



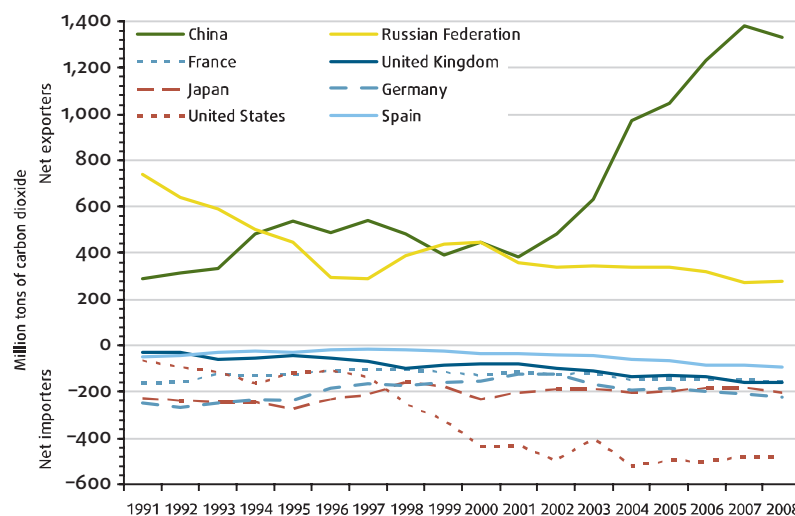
expense of job loss and slower economic growth, compared with 58 percent in the rest of the world (World Values Survey 2005–2008).<sup>7</sup> Environmental policies can win increased popular support by spreading financial benefits. Many Danish wind turbines are owned by local cooperatives, preempting “not-in-my-backyard” opposition. And feed-in tariffs for renewable electricity generation have been turning home-based solar systems into investment opportunities.

Europe’s progress in reducing local air pollution and the climate impacts of production is substantial, but its gains in shrinking the environmental footprint of consumption are more limited. Lower industrial pollution is due at least in part to major structural economic shifts and trade expansion. As traditional, energy- and emission-intensive economic activities (such as iron and steel manufacturing) became uncompetitive in higher-wage European countries, they moved to other parts of the world, especially Asia. The EU15’s total steel output has stagnated since 1980, when Europe moved into more specialized and cleaner steel production. By contrast, India’s and the Republic of Korea’s output increased some 600 percent, China’s by almost 1,600 percent.<sup>8</sup> Europe’s environmental dividend reduced local pollution from dirty industries and generally decreased use of local resources, a contrast with the increase in other regions.

**Figure S2.4: Western imports, Eastern emissions**

(net emission transfers, 1991–2008)

Source: Peters and others 2011.



Sometimes polluting industries quite literally moved to developing countries. In the late 1990s, Chinese companies purchased dozens of German industrial plants and dismantled, shipped, and rebuilt them in China. A Dortmund steel mill, for example, became a 250,000-ton three-dimensional puzzle (Kahn and Landler 2007). Air quality improved in Germany, but the shift increased air pollution in China (Chen, Hong, and Kan 2004).<sup>9</sup> Many Asian products are made for European markets, leading to rising emissions embedded in imports. Between 1990 and 2008, the United Kingdom’s net imports of carbon dioxide emissions increased from 29 million tons to 159 million tons (figure S2.4). Overall, when considering only carbon dioxide emitted in rich (Kyoto Annex B)





countries, there has been a 3-percent drop. By contrast, consumption-related emissions in those countries increased 11 percent (Peters and others 2011).<sup>10</sup> China alone has more than tripled its exports of emissions since 2000.

Europe has made progress in greening its production and has led the world in formalizing and implementing regional emission-reduction policies. But more action is needed. Marginal abatement costs will increase as cheaper clean-up solutions are implemented first, and tightening environmental regulations will become politically more difficult, especially at a time of economic uncertainty. Beyond its borders, Europe needs to green its consumption. One approach is to help other countries reduce the environmental impacts of their production while accelerating resource use. The European Union, already providing technical assistance for pollution and emission control, recycling, and other environmental priorities through bilateral and multilateral efforts (including through the World Bank), could do more by supporting European exports of environmental technology and more efficient capital goods to developing-country producers, through export credit guarantees, for example. Measures that encourage green foreign direct investment would help develop domestic environmental technology firms.

A more coercive approach would be to extend the reach of European emission policies to other countries through border tax adjustments (Umweltbundesamt 2009). This would level the playing field for domestic companies, and foreign firms exporting to Europe would then have the same incentives to reduce emissions as do domestic producers. The debate about the inclusion of foreign air carriers in the European Emission Trading Scheme in 2012 shows that this approach is controversial, but it might encourage domestic carbon restrictions so that revenues stay in the exporting country. The European Commission and several European countries contributed to the World Bank-led Partnership for Market Readiness, which helps countries set up carbon markets. The first round of countries includes China, Turkey, and Ukraine.

## Green growth

Moving toward a European economy that puts a price on environmental goods and services involves a substantial structural shift. Further reducing local pollution and preventing global environmental problems from severely affecting current and future generations require massive transformations in energy, transport, and housing. Some observers have called for an energy industrial revolution.<sup>11</sup> But change of this magnitude is not unprecedented. Both the information technology revolution and the invention of the steam engine triggered upheaval far greater than what one might expect from a green-growth transformation (Fankhauser, Sehlleier, and Stern 2008). An energy industrial revolution will impose costs on some businesses but benefit others. How these costs and benefits are distributed will determine whether green growth will be a broadly accepted economic model in the EU27 and beyond.

Tighter environmental standards will be costly, at least in the short to medium term. Unilaterally internalizing the cost of environmental degradation will render European firms less competitive than firms not subject to strict pollution controls. The money that consumers and firms spend on pollution charges or

energy will not be available to spend or invest elsewhere (though these costs can be partly neutralized through appropriate revenue recycling). Predicting these costs of green policies is difficult. The costs of a proposed carbon cap-and-trade system in the United States, for instance, would range from \$69 to \$808 per household by 2020 (Winchester and others 2010). A study for the European Commission estimated firm-level costs of environmental compliance at 0.25–2 percent of production value (Vercaemst and others 2007). In Poland, the average cost to implement a comprehensive greenhouse gas abatement package is about 1 percent of GDP over 20 years, after which net benefits accrue (World Bank 2011). These costs, though significant, are not enough to explain the exodus of energy-intensive and polluting industries out of Western Europe. High labor costs and other production factors have likely played a larger role. Energy prices are already high, and most EU15 countries moved out of energy- and emission-intensive industries some time ago, such as the United Kingdom, with its 1980s decline in the coal and steel industry. The impact will be larger in Eastern Europe, where economies have not yet completed structural shifts and where national environmental policies are more lenient.

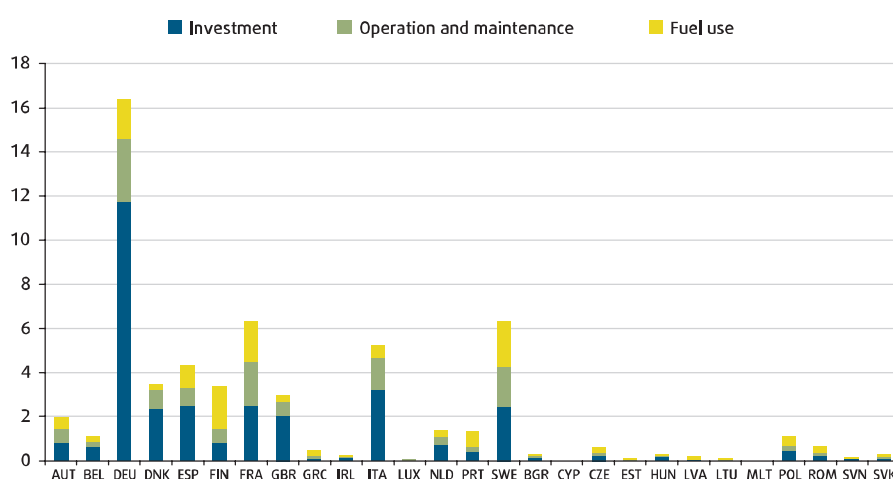
Environmental action comes with costs, but so too does inaction.<sup>12</sup> And sometimes doubted decisions become obvious in retrospect. The automobile industry and many consumers initially rejected catalytic converters as too expensive. But the averted costs of respiratory illnesses and other benefits from reduced urban smog have been significant. With increased production and technical progress, a catalytic converter today is a tiny fraction of the cost of a car. Proponents of stricter environmental standards argue that green policies have sizable growth effects. Vehicle pollution abatement has generated new business opportunities—for example, the global catalytic converter industry is worth \$20 billion today. And because green technologies are less mature, they require more innovation and research and development, which generate high-value jobs. At the lower end, investments in energy efficiency and cleaner energy generate jobs in installation, operation, and maintenance that cannot be outsourced.

The job gains in green industries are not small, though they are as difficult to determine as the costs of environmental regulation. By the late 2000s, the wind energy sector was thought to have generated some 100,000 jobs in Germany, 42,000 in Spain, and 22,000 in Denmark, and for the solar photovoltaic (PV) sector, some 70,000 jobs in Germany and 26,000 in Spain (REN21 2011). European firms are highly competitive in such areas as pollution-abatement technology and solid waste management, and job gains in these sectors are significant as well. Experience shows that policies matter. An ecological tax reform is credited with helping Germany reduce emissions and increase employment. The reform raised the cost of energy, triggering large efficiency gains. The increased revenue was used to reduce nonwage labor costs, which helped create 250,000 jobs (Rayment and others 2009, Iwulska 2011).

Economic gains have been concentrated in a few countries, mostly in the EU15. These countries have had government support, large home markets for green products, and the capacity to take advantage of green growth opportunities (figure S2.5). Denmark, France, Germany, Spain, and the United Kingdom, each accounting for between €5 billion and €15 billion in clean energy technology



sales in 2008, were far ahead of Poland (the leader in Eastern Europe), which had less than €300 million (van der Berg and van der Slot 2009). Figure S2.5 shows a similar pattern in value added from renewable power technologies. The market leaders ensured domestic demand through, among other steps, feed-in tariffs for clean energy and supported technology development. In 2009, Germany alone spent about €64 million on publicly funded research and development for solar PV technology, complementing €163 million in private research (Wissing 2009).<sup>13</sup> Employment and economic opportunities also exist in other EU countries. With carbon trading, one would expect abatement investments to flow to EU12 countries, where energy and emission intensities



**Figure S2.5: Germany, France, Sweden, and Italy have helped business by encouraging renewable energy**

(total gross value added induced by renewable energy deployment in 2005, by expenditure category, billion euros)

Source: Ragwitz and others 2009.

remain higher than in the EU15. But the resulting jobs will likely be smaller in number and lower in skill and value added. Examples include manufacturing and assembling green products, upgrading building energy efficiency, and producing biofuel. High-value-added activities, green intellectual property, and earnings from green exports will likely remain concentrated in today's leading green economies.

All EU countries must adhere to the same environmental standards and carbon policy. While all EU countries bear the costs of green growth policies, not all have the structural endowments to take advantage of the opportunities these policies generate. An analogy to the eurozone is illustrative. Countries adopted a common currency without first resolving structural differences. The countries shared the benefits of adopting the euro, such as low interest rates and reduced trade friction. They also faced the constraints imposed by a single currency, but with different structural and economic capabilities to adjust to the loss of monetary flexibility. Over the last several decades, EU interventions (such as the structural funds) have tried to reduce these differences—but with limited success.

A single carbon price has similar advantages and drawbacks. The effectiveness of the European green-growth model—especially in Southern and Eastern Europe—will depend on policy instruments that help countries cope with the

burdens and share the benefits of the transformation to a cleaner economy. Besides external support (through carbon finance, for instance), green growth requires political commitment by countries that, rather than embrace new opportunities, often cling to sunset industries and fossil fuel-based energy systems. Europe missed many of the efficiency gains of the infotech revolution. It will have to be smarter to prosper in the green technology revolution.

## Global green growth

Europe is serious about greening its economy. Strong policies opened economic opportunities that European firms like Gamesa were quick to exploit. But in an open economy, the incentives that benefit domestic producers also benefit foreign producers who export to the European market. This increases competition for European firms and implies a leak of taxpayer-funded subsidies and other support. If the goal is to tackle global environmental challenges, however, these leaks will be beneficial even as they make it more difficult for Europe's green enterprises to compete.

By far the biggest barrier to a green transformation is cost. Environmentally friendly technologies are often more expensive than conventional alternatives. For example, electricity from coal-fired power stations costs about \$0.06 per kilowatt hour (kWh), while the price of wind energy ranges between \$0.08 and \$0.14 per kWh. Solar photovoltaic power (PV) costs more than \$0.20 per kWh (REN21 2011). Even where life-cycle costs are lower—as with the new generation of energy-efficient lighting—high initial costs deter consumers. Reducing costs requires research and development, innovation, and economies of scale. With every doubling of production, wind energy is expected to become 15–20 percent cheaper, and solar PV prices to drop 25 percent (Neij 2008). Regulation, taxes and subsidies, and public investments that reduce the price of clean technologies (or increase the cost of dirtier ones) trigger private investment and lead to increased scale. These interventions are justified because they compensate for nonpriced costs incurred by conventional technologies, such as the health effects of air pollution, the loss of such environmental services as natural water filtration, and the damages from a warmer, wetter, more variable climate.<sup>14</sup> The opportunity to get a foothold in emerging markets for green goods also motivates many countries.

Through EU directives and national policies, European countries have made credible commitments to support clean growth. These commitments should encourage investors to risk funding new products that are not profitable according to current market prices. Generous subsidies and tariff guarantees have been effective, helping European leaders emerge in many green technology areas. By the late 2000s, environmental technologies accounted for almost 10 percent of GDP in Germany, and German firms held global market shares of 6–30 percent in key green markets (BMU 2009).<sup>15</sup>

Public incentives have worked for European companies, but with open trade they are also attractive to foreign firms. U.S. companies, such as General Electric and smaller high-tech firms, quickly established distribution systems in Europe. As some green technologies move from research labs to mass production, Europe's comparative advantage vanishes and low-cost producers enter the



market. Solar PV panels are an example. Generous feed-in tariffs in Germany, Spain, and other European countries initially benefited domestic firms, even causing a bubble in solar company stocks. This attractive market triggered large investments in production capacity in China. Between 2006 and 2010, China's PV production increased twentyfold, from 400 megawatts to 8,000. During this time, the export share of panels in China never dropped below 94 percent, because the high price and low local subsidies meant that there was almost no domestic market.<sup>16</sup> In wind energy, which is more cost-competitive with conventional sources, Chinese firms have also increased production. Most of the demand so far is domestic, as China deploys the largest installed wind capacity in the world. But that will change as producers increase capacity and eye new markets. European firms, such as Gamesa, should expect more competition.

Europe should welcome these developments. Competition and rising capacity have substantially reduced the prices of some green products. China's solar expansion coincided with a price drop of more than 40 percent,<sup>17</sup> making it cheaper for Europe to reach its "20-20-20" targets (a 20 percent cut in greenhouse gas emissions by 2020, a 20 percent increase in the share of renewable energy, and a 20 percent cut in energy consumption) and creating room for cuts in subsidies. By indirectly contributing to faster price declines, European policies benefit green investments in the rest of the world, accelerating greener industrialization in developing and emerging nations.

The EU27 accounts for just 13 percent of global emissions (International Energy Agency 2010). This share will drop as the populations and economies of other regions grow faster than Europe's. To limit global warming and reduce other global environmental threats, Europe must spread technology and know-how to places where environmental pressures will be most severe. Sharing technology with other regions will also reduce the emissions embedded in European imports. Even if much of the resulting economic activity takes place elsewhere, Europe is positioned to capture a large share of what some expect to be a €3.1 trillion market for green technology by 2020 according to a study by Roland Berger Strategy Consultants in 2007.<sup>18</sup> This will include exports of advanced green-tech products to China, which will require environmental technology investments estimated at 12 percent of GDP. Chinese solar panels, for instance, are produced with machines made in Europe.

Rather than compete on price, Europe should accept that manufacturing and assembly of basic green technology will move to countries with lower factor costs—including perhaps the EU12 and eastern partnership countries. Europe should promote innovative, high-tech companies that create green products and services that are less price-sensitive and less easily reproduced elsewhere. Europe needs "Green Apples"—the green-tech equivalents of an innovative info-tech company. Apple Inc. profits from innovation and design, not from manufacturing. Similarly, European green technology firms should focus on developing and retaining intellectual property and on specialized manufacturing, engineering, and related high-value-added activities. This focus will require support for applied research in Europe that makes the region attractive for non-European companies. Suzlon, a large Indian wind turbine manufacturer, maintains six of its eight research centers in Europe because of Europe's accumulated know-how.

## Needed: will, ingenuity, and efficiency

Europe is already the leader in the transition to a greener economy. But environmental impacts, especially greenhouse gas emissions, are still too high per capita to reach global targets. And the picture is even grayer when considering the complete consumption footprint. In recent years, European policies have moved global climate goals forward. But the world's second- and third-largest economies might soon match Europe's green ambitions.

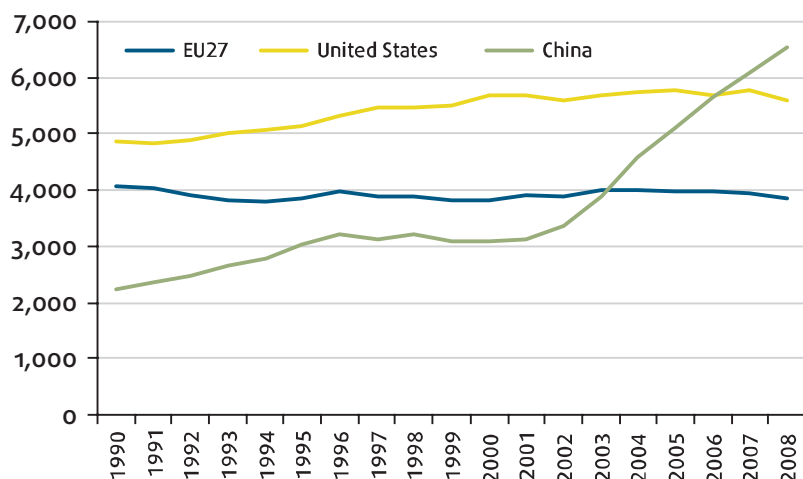
The United States has one of the largest environmental footprints. But it also has the most effective academic research capacity—and huge innovation potential. Much of basic climate-change science and many technical innovations—such as solar, wind, and battery technology—originated in U.S. labs. The United States is strong not only in technical innovation but also in financial and policy innovation. Venture capital funds in the United States channel vast resources to promising firms, including those in green technology. While Europe is strong in process innovation and technological improvement, U.S.-style risk-taking is more likely to lead to the breakthrough technical innovations that many believe are necessary to solve the climate problem.

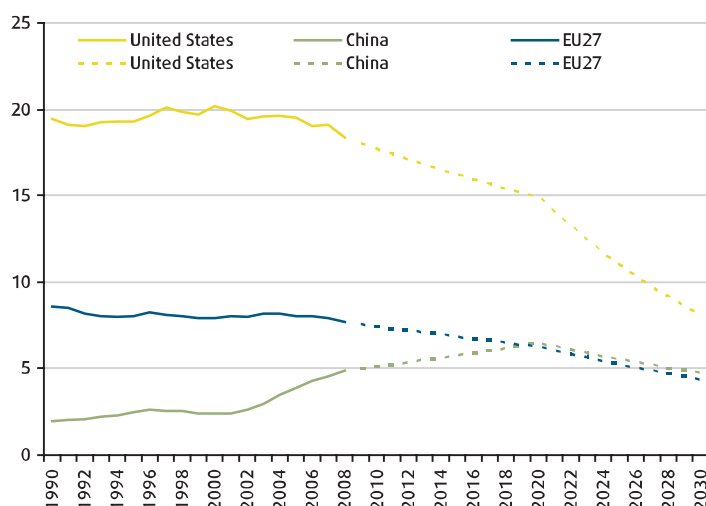
Federal climate action in the United States has been inadequate, but state and local policies show American potential. California's air pollution standards have affected car manufacturing globally, and the state's energy policy began decoupling power consumption from growth in the 1970s (Iwulska 2011). Concerns about acid rain in New England spurred the development of a sulfur dioxide allowance trading system, which showed the feasibility of market-based instruments for pollution control. Ten eastern states joined the Regional Greenhouse Gas Initiative, a cap-and-trade mechanism to reduce carbon dioxide emissions from the power sector. Twenty-three states and many local jurisdictions have set quantitative targets to reduce their greenhouse gas emissions, and more than thirty states have adopted renewable energy portfolio standards for utilities (Pew Center on Global Climate Change 2011).

**Figure S2.6: China now emits the most carbon dioxide**

(total carbon dioxide emissions from energy use in the three largest global economies, million tons of carbon dioxide)

Source: International Energy Agency 2010b.





**Figure S2.7: But China's per capita carbon dioxide emissions may not significantly grow beyond the European Union's**

(per capita carbon dioxide emissions from energy use in the three largest global economies, tons of carbon dioxide per capita)

Note: Solid lines show observed per capita emissions, and dotted lines show a per capita emission scenario based on 450 ppm with ambitious mitigation.

Source: World Bank staff calculations based on International Energy Agency (2010) and UN (2011).

The capacity for policy experimentation and implementation at the state and local levels can lead to new, effective, and socially acceptable approaches to environmental management. When successful, innovation spreads quickly and regulatory diversity helps lift standards elsewhere. The "California effect" works even without strong federal action (Vogel 2000). But in the long term, state action cannot substitute for national policies.

China, the world's largest emitter of greenhouse gases, faces severe problems from air and water pollution. But to further reduce poverty, China's economy must continue growing—even if double-digit growth rates will become harder to achieve. At current emissions per unit of GDP, China's economic growth implies that by 2030 the country would account for the entire global emission allowance—30–35 billion tons of carbon dioxide equivalent—that is consistent with the target of keeping Earth's temperature from rising 2°C higher than preindustrial levels (Stern 2010). China has started tackling this enormous challenge. Aware of its own susceptibility to climate change, the country has embarked on an ambitious domestic greening program. The twelfth Five-Year Plan calls for a 15–17 percent reduction in energy and carbon dioxide intensity by 2015, expansion of wind farms, new solar capacity of more than 5 gigawatts, construction of a smart grid to integrate a larger share of renewables, an emissions cap-and-trade system, and a tax on coal.

China already contributes to global greening by lowering the cost of existing environmental technology, from light bulbs to solar water heaters to wind turbines. All seven strategic industries in the Five-Year Plan move the country from low-end manufacturing to a less resource-intensive economy. And three are explicitly green: new energy, new-materials and new-energy cars, and energy saving and environment protection. China's huge market for green products will also reduce the price gap between clean and conventional energy and technology. Its goal is to become the world leader in green products like solar panels and electric cars, whose markets must grow if global emission targets are to be reached. China's environmental impacts will continue to rise. But with strong commitments and better technologies, it could reverse the rapid



growth of emissions (figures S2.6 and S2.7) and reach higher incomes at lower levels of per capita pollution and atmospheric emissions than many of today's industrialized countries.

Europe can help the global environment by continuing to pursue a greener growth model. The region's continuing green growth will improve the quality of life for its current and future citizens, contribute to global sustainability, and offer economic opportunities for European firms. Europe will incur short-term costs, although the implications of failing to deal with long-term global environmental threats are less severe for Europe than other regions. Europe has already dealt with most local pollution and will be less severely affected by global climate change than many other regions.<sup>19</sup> European leadership on environmental action is, therefore, even more remarkable. But despite Europe's leadership, solving the toughest global environmental problems will require all three major economies to accelerate the transition to greener growth and nudge the world forward. Indeed, global green growth requires European political will, American innovation, and Asian efficiency.

Uwe Deichmann contributed this spotlight.

## Notes

- 1 Based on Lewis and Wiser (2007), Bradsher (2010), Gamesa annual reports, and market share information from Make Consulting and Emerging Markets Energy Research.
- 2 There are numerous definitions of "green growth" (OECD 2011) or "green economy" (UNEP 2011). This spotlight uses the term "greening" in a broader sense of reducing the environmental impacts of human activity; it uses "green growth" in a narrower sense of recognizing a shift to greater environmental sustainability as an opportunity for growth—through innovation and development of new products and markets. Both terms refer to traditional environmental problems (like water pollution or excessive resource use) as well as climate change.
- 3 Consistent cost estimates for wind power are hard to find. This figure assumes the widely accepted learning rate of 20 percent reduction with a doubling of capacity.
- 4 Refer to the European Commission's website on environment policies for a list of directives, available at [ec.europa.eu/environment/policy\\_en.htm](http://ec.europa.eu/environment/policy_en.htm).
- 5 Beltratti, Chichilnisky, and Heal (1995) note that this is "the highest indefinitely maintainable level of instantaneous utility, in a framework where environmental goods are valued in their own rights, i.e., are a source of utility, and are used as inputs to the productive process" (p. 151).
- 6 Part of that decrease was due to industrial restructuring and inefficient socialist-era industries closing.
- 7 In the EU12, just 50 percent agree.
- 8 World Bank staff calculations based on data from the World Steel Association ([www.worldsteel.org](http://www.worldsteel.org)).
- 9 There appear to be no estimates of displaced industries' contributions to China's local air pollution. But it is likely significant through increased energy demand (much of it from coal) and direct emissions from industrial processes. More recently, China has reduced urban air pollution substantially, including through the World Bank-supported China Air Pollution Management Project.
- 10 Aggregate estimates for EU15 or EU27 are unavailable, because the data set does not allow netting out intra-European trade-induced emissions. Annex B countries are high- and middle-income countries subject to emissions reductions in the Kyoto Protocol, including Russia and Ukraine. See [http://unfccc.int/kyoto\\_protocol/items/3145.php](http://unfccc.int/kyoto_protocol/items/3145.php) for a list.
- 11 For example, Nicholas Stern (presentation at the High-Level Dialogue on Low Emissions Development Policy Implementation, July 13, 2011, World Bank, Washington, DC. Available at [climatechange.worldbank.org/content/climate-change-thinkers-converge-high-level-dialogue-low-emission-development](http://climatechange.worldbank.org/content/climate-change-thinkers-converge-high-level-dialogue-low-emission-development)).
- 12 See the extensive literature on the health burden of environmental pollution and the emerging literature on climate change adaptation costs (for instance, World Bank 2010a).
- 13 The private sector figure is for 2008. Globally, spending on clean energy research and development is considered far too low to support the kinds of technological breakthroughs needed to achieve climate goals (World Bank 2010b).
- 14 See, for instance, Gillingham, Newell, and Palmer (2009) for a discussion of market failures in energy efficiency that justify government intervention.
- 15 These markets include energy efficiency, sustainable water, sustainable transport, energy generation, waste management and recycling, and natural resources and efficiency of materials use.
- 16 International Energy Agency 2010c.
- 17 Price data are available on the website of Solarbuzz, an NPD Group Company, at [solarbuzz.com/facts-and-figures/retail-price-environment/module-prices](http://solarbuzz.com/facts-and-figures/retail-price-environment/module-prices).
- 18 Presentation is available at [www.rolandberger.com/media/pdf/rb\\_press/RB\\_Wirtschaftsfaktor\\_Umweltschutz\\_20071127.pdf](http://www.rolandberger.com/media/pdf/rb_press/RB_Wirtschaftsfaktor_Umweltschutz_20071127.pdf).
- 19 For evidence of Europe's generally lower climate change risk compared with those of other regions, see Buys and others (2009) and the Climate Change Vulnerability Index released by Maplecroft, available at [maplecroft.com/about/news/ccvi.html](http://maplecroft.com/about/news/ccvi.html).



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# Chapter 8

## Golden Growth

In September 1961, an American professor named Edmund Phelps published a paper that proposed a simple rule for a nation's wealth to grow and provide the highest standard of living for its citizens, present and future.<sup>1</sup> Phelps called it "The Golden Rule" of economic growth. At around the same time, Carl Christian von Weizsäcker, a young German economist, submitted a doctoral dissertation proposing the same tenet.<sup>2</sup> The golden rule essentially specified how much people had to work, save and invest today so that future generations were at least as well off as they were. The goal was to maximize consumption, but in a way that was economically sustainable. The rule implied that today's generation should consume just enough—no more, no less—that their children would neither pity nor resent them. Phelps' paper cited the work of three economists—from Great Britain, the US, and Australia—but the arguments built also on the insights of, among others, a Dutchman, a Frenchman, and a Hungarian.<sup>3</sup>

Fifty years later, the golden rule is still "the most basic proposition of optimal growth theory," likely because it is simple enough for people to understand and appealing enough for policymakers to try to implement (Howitt 2007). The rule depends on many things, some that people and policymakers can choose or change more easily than others. It specifies how much goods and services people should consume given how hard they work. It depends on the size of future populations and is influenced by the pace of technological progress. And—though Phelps' paper did not specify this—it is contingent on how much the country could sell and lend to others, and how much it could buy and borrow from them.

- How can Europe make the single market more efficient?
- How can Europe maintain the momentum for regional economic integration?
- What is needed to maintain Europe's global leadership?



Phelps wrote:

*"In deciding which growth path is best from its standpoint, a generation will look only at the amount of consumption which each path offers it. ... Under conditions of natural growth, consumption along all these paths grows at the identical rate,  $g$ , so that these time paths of consumption cannot cross. Therefore, with resources limited, there must exist some uniformly highest, feasible consumption path. This dominant consumption path offers more consumption at every point in its history than any other natural-growth consumption path. All generations in such a history will naturally prefer this path, whence its corresponding investment ratio, to any lower consumption path. A rigorous demonstration is straightforward" (1961, p. 640).*

Incorrect choices meant that the growth path would not be at its optimum, and policymakers could improve the lot of current and future generations by influencing these choices. When consumption was above the optimal level and investment below that guaranteeing optimal consumption in the future, a tax on consumption to fund public investment or catalyze private innovation might help. Financing excessive consumption through foreign borrowing, by contrast, would hurt. If today's consumption came at the cost of tomorrow's environment, a tax on carbon emissions could help ensure a better future. The rule has implications for debates about broader economic welfare, not just economic growth narrowly defined.

### Box 8.1: The structural prerequisites of a successful monetary union

The eurozone has lower aggregate fiscal deficits and public debt as a share of GDP than the United States or Japan: as a whole, its current account is near balance. The eurozone's problems are rooted not in aggregate imbalances, but in imbalances among member states.

This report discussed returns to and responsibilities for greater integration in Europe. The policy implications speak directly to the structural prerequisites of successful monetary integration. Chapter 4 revealed how countries in the south failed to keep pace with productivity growth in the rest of Europe after monetary union, in part because of poor business regulation. Whether or not they entered the eurozone at an overvalued rate, their competitiveness problems have since been aggravated by poor policies. Prospective future euro members in the east should take note and fit their business environment for the euro.

Chapter 6 showed that labor mobility is lowest and restrictions on hiring and firing are highest among the same Southern European economies that suffer most from a lack of competitiveness. Economic theory implies that countries with inflexible labor markets will struggle in a monetary union when faced

with external shocks. The consequences of the 2008–09 crisis in the eurozone are now playing out as economists might have predicted. Labor market reforms are thus an important prerequisite for successful euro adoption.

But this report shows that adjustment is possible. Chapter 7 indicated how countries can reduce excessive public debt without compromising the quality of public services. Adjustment is tough, and even the toughest adjustment will not suffice in Greece without an orderly restructuring of public debt. But countries such as Finland, New Zealand, Singapore, and Sweden show that a leaner government contributes to long-term competitiveness.

Europe's current debate over the fiscal union's merits and risks masks the fact that Europe's single market—more than fiscal transfers—is responsible for the convergence in living standards between Europe's richer north and its poorer south, and more recently, between the west and the east. Whatever the solution European leaders arrive at, this feature of the European economic model should not be diluted or distorted.

Crises of confidence in governments' ability to meet debt obligations are not new. What

makes them special in Europe is that as eurozone members, countries cannot print money to meet domestic obligations. The common currency helped these countries during the global financial crisis of 2009; it may be hurting them in the sovereign debt crisis that followed in its wake. The fuzzy boundaries between solvency and liquidity complicate matters, as do concerns about moral hazard if deficit countries are bailed out.

A break-up of the eurozone would be devastating for Europe as well as the world economy (for a summary discussion see Belke 2011). Countries with solvency problems should restructure their debts and close remaining public deficits through fiscal transfers conditioned on structural reforms. Governments have to be ready to intervene to recapitalize some banks, though the experience of Ireland discussed in chapter 3 should deter them from socializing all the losses. Sweden's experience, discussed later in this chapter, shows how to do this better.

Most solutions imply a loss of sovereignty for creditor and debtor countries in Europe. The findings in this book suggest that the benefits of European integration make this a price worth paying.

Phelps and researchers after him have focused on an economy in “steady state,” a term that describes a condition that is neither a crisis nor a bubble. Few countries are in steady state these days. But the problem addressed by this research is as important today as it was in 1961, in the developing world as in the industrialized. And perhaps nowhere are the choices of people and policymakers more important for the economic growth and welfare of future generations than in Europe today.

Appropriately, policymakers are now focused on the crisis in the eurozone. This report does not devote much space to possible remedies, except to point to the structural prerequisites of monetary integration (box 8.1). Europe faces structural challenges that today seem less urgent but may prove more difficult than those that a common currency created: falling populations; faltering productivity, especially in services; unsustainable social spending; and—in some places—a fraying work ethic. When the euro is stabilized, policymakers will ask questions posed by Phelps’ “growthmen”: what must Europe do to grow sustainably again? What changes must be made to the European economic model so that it returns to the golden rules of growth?

This report applies these principles, which economists have developed over the last 50 years, to assess how to make European growth “golden.” The remedies are possible for a part of the world that is intrepid and inclusive. The recent experiences of countries that have succeeded in addressing these problems—in Europe and around the world—offer insights into these remedies. As part of the work commissioned for this report, 32 case studies were compiled, spanning 16 policy areas identified as important for European growth (table 8.1). For each of these policy areas—which range from managing financial inflows from abroad to providing social services at home—the case studies summarize the experience of

**Table 8.1: Benchmark countries for selected policies**

	Policy area	Selected countries	
		Europe	World
1	Restructuring private debt	Sweden	Korea, Rep.
2	Managing financial foreign direct investment	(EU) Poland	(Non-EU) Croatia
3	Crisis-proofing financial integration	Czech Republic	Canada
4	Increasing value-added	Slovak Republic	Singapore
5	Job creation	Ireland	New Zealand
6	Export generation	Germany	Korea, Rep.
7	R&D policy	Switzerland	United States
8	Tertiary education	United Kingdom	United States
9	Management quality	Sweden	United States
10	Internal mobility	Ireland	United States
11	Labor legislation	Denmark	United States
12	Immigration policies	Sweden; United Kingdom	Canada; United States
13	Social security	Iceland	Japan
14	Social service delivery	Finland	Singapore
15	Reducing public debt	Turkey	New Zealand
16	Green growth policies	Germany	California (US)

Source: Iwulski (2011), available at [www.worldbank.org/goldengrowth](http://www.worldbank.org/goldengrowth)

a pair of countries, one in Europe and one outside. Europeans should learn from one another, because some countries show how the European economic model can work well. Europeans should also learn from the Americans and Asians, whose governments have been facing similar tests and trials.

## More Europe

Not all 45 countries covered by this report are in the European Union, but they share the aspirations summarized in the European Union's growth strategy, Europe 2020: economic development that is smart, sustainable, and inclusive. In seeking all three at once, European aspirations seem higher than those in other parts of the world. Europe's way of life—and its growth ambitions—seem to put a higher premium on combining economic dynamism with environmental sustainability and social cohesion. Some countries in Europe show that achieving these objectives is possible. Europe 2020 is a realistic vision.

To make this vision a reality, Europe's growth model needs to be adjusted, not abandoned. This is the central argument of this report for three main reasons:

- First, Europe has many attractive features that should be preserved. The economic model facilitated economic convergence, which helped 200 million Europeans escape the "middle-income trap" in the two waves of southern and eastern enlargement. Nearly another 100 million in southeastern Europe and Turkey could follow over the coming decade, and perhaps another 75 million in the eastern partnership countries afterward. Vigorous trade and financial flows, and growing exchanges of services and labor—all facilitated by pan-European institutions and infrastructure—enabled this convergence.
- Second, Europe's most innovative economies show that economic dynamism need not be the price for more equal societies with attendant sizable governments. Finland and Sweden show that large governments can be run efficiently. Denmark, Germany, and the Netherlands demonstrate that labor markets offering more security than those in the United States or East Asia need not be inflexible. Ireland and the United Kingdom show that Anglo-Saxon attitudes toward education and enterprise are compatible with the European social market economy. These examples might be exceptional, and for many European countries with weaker institutions, reducing the size of government could be easier than making it more efficient. But European companies compete successfully with their less regulated American or Asian peers, benefiting from the advantages of European integration. And as spotlight two highlights, Europe leads the world in green technologies, thanks to political will and regulatory foresight.
- Third, changes in the European growth model must lead to more Europe rather than less. Strengthening the Single Market for Services would boost Europe's growth, helping also to surmount barriers to world class innovation clusters in Europe, particularly in industries such as ICT, biotechnology, and health equipment and services. A continuing push toward deeper European integration would extend European finance, the benefits of trade, and the credibility of European regulations to emerging markets in the neighborhood. It would spur structural reform in both Europe's economic core and its

periphery, as it will be ever clearer that integration's benefits will accrue disproportionately to countries that make their people and enterprises better suited for a Greater Europe.<sup>4</sup> As European societies accept and act on the reality of aging populations and demographic decline, Europe's appeal as a caring society will make it more competitive in the global market for talent.

The 45 countries covered by this report have—to differing degrees—three assets: the European Union's single market, momentum for regional integration, and Europe's considerable global economic influence. Europe should play to its strengths by investing in these assets and reaping the returns. Growth will be the natural outcome of measures to do the following:

- Deepen the single market, perhaps the European Union's biggest achievement and its most valuable institution but one which, like the euro, "is unfinished business" (Almunia 2008).
- Expand regional economic integration, a goal with a consensus unprecedented in European history and unequaled in the world today.
- Strengthen Europe's global economic leadership. A region that generates a third of the world's annual output does not have to relinquish this position.

This chapter concludes the report, pulling together the lessons from earlier chapters by matching policy priorities in each principal activity—trade, finance, enterprise, innovation, work, and government—to these three objectives. Chapter 1 shows how these activities are organized uniquely in Europe. To analyze intra-Europe differences in these components of the growth model, chapters 2 through 7 separate them somewhat artificially. Because they are interrelated, however, this chapter recognizes these relations, and collates policy priorities.

This chapter makes explicit what is needed to address the three tasks Europe has to get done: get the most of the service economy; close the two productivity gaps that have opened between the EU15 and the United States, and within the EU15 between the north and the south; and adjust to demographic changes and an aging society. This chapter identifies what needs to be done, using the experience of successful countries in Europe and elsewhere to suggest how these changes can be made. Europeans want growth to be smarter, kinder, and cleaner. It is common sense that to accomplish this, Europe should build on its uncommon strengths—the single market, regional integration, and its global economic heft.

The findings in chapters 2 through 7 identify the most effective measures for reviving and sustaining European growth (table 8.2). To make the single market more efficient, they focus on the trade in services, which requires facilitating the trade in digital services and harmonizing regulations across countries, and labor mobility within the European Union. To realize the benefits of greater European integration, the European Union's existing members and its candidate and neighborhood countries have to expand production networks, attract foreign investment, and better manage financial linkages. They also need to reform public services and labor markets to stay fit for an integrated Europe. To maintain Europe's global leadership it will be necessary to attract global talent, create world class innovation systems, address public sector debt, and reform social welfare systems to make public finances sustainable.



## Making the single market more efficient

The single market is one of the European Union's biggest achievements, justifiably called its "crown jewel." Since its introduction in 1992, it has helped make Europe a trade powerhouse. As highlighted in chapter 2, of the \$10 trillion of the global goods trade, \$4.5 trillion involves Europe, more than Asia and North America combined. Europe also accounts for more than half the global trade in services. Although services account for almost three-quarters of total value added, Europe's trade in services is only around \$2.25 trillion, about half of the value of trade in goods. Chapter 2 measures European services trade against that of Canada, a unified national market with two main languages (and where, as in Europe, language barriers limit the tradability of personal and business services). It finds that the services trade could double or triple in the coming decade if barriers resulting from imperfections in the single market are removed.

### Facilitate trade in modern services

Chapter 2 shows that the potential for services trade remains most underexploited in modern services, such as finance, communication, licensing, computing and information, and other business services. While Europeans can travel freely, European doctors, architects, and designers cannot freely offer their services outside the country where they obtained their professional license. When Europeans fly across the continent, it matters little which country they purchase the ticket in; but when they telephone or use broadband Internet to communicate with other European countries, the charges for cross-border communication services differ greatly depending on who calls whom. European airspace is open and competitive; Europe's railways are not. Certain digital services such as Spotify or iTunes are not available in every EU member state.

National regulations are insufficiently harmonized across Europe, imposing barriers to services trade. The solution is mutual recognition across the single market. Service providers registered in one EU member state should be allowed to operate across all. Professional and education certificates obtained in one EU country should be recognized in others. Moreover, even when the European Union has hesitantly begun to harmonize services regulations, such as through the Service Directive, implementation has often lagged.

A good example of regulatory harmonization is the European Union's financial market directive, Markets in Financial Instruments Directive, which essentially requires all EU members to recognize banks and nonbank financial institutions licensed in one EU country, allowing the institutions to operate in their home market. But the example of financial services illustrates another policy challenge: the provision of services across borders requires closer coordination between home and host regulators. In the case of multinational banks, the European Union needs mechanisms to decide who bears the cost should they get into trouble. The efficient regulation of services across the single market thus requires European countries to relinquish sovereignty and accept collective liability. What is difficult in finance has yet to be considered in telecommunications, energy, and transport. But the benefits of strengthening the single market in all these services arguably far outweigh the loss of national regulatory authority.



Table 8.2: Europe's imperatives, instruments, and policy priorities

Instrument	Coverage	Imperative		
		Modern services	Productivity growth	Demographic trends
Deepen the single market	EU27	<ul style="list-style-type: none"> <li>Facilitate trade in digital services</li> <li>Increase internal labor mobility</li> </ul>		
Widen regional economic integration	Europe 45	<ul style="list-style-type: none"> <li>Crisis-proof financial flows in Europe</li> </ul>	<ul style="list-style-type: none"> <li>Facilitate production networks</li> <li>Align business regulation with a common market</li> <li>Improve public service delivery</li> </ul>	
Strengthen global economic leadership	Global 70	<ul style="list-style-type: none"> <li>Address private debt overhang</li> </ul>	<ul style="list-style-type: none"> <li>Create world class innovation systems</li> <li>Expand private funding of tertiary education</li> <li>Reform (external) immigration policies</li> </ul>	<ul style="list-style-type: none"> <li>Reassess employment-protection laws</li> <li>Reform social security</li> <li>Reduce fiscal deficits and public debt</li> </ul>

The barriers created by inadequate harmonization of national regulations, which restrict services trade and modern business services, matter already and will bind economic growth even more in the future. According to van Ark, O'Mahony, and Timmer (2008), about two-thirds of Europe's productivity gap relative to the United States can be accounted for by the productivity gap in services. Chapter 2 demonstrates the positive link between the increasing size and sophistication of services trade and economic growth. But many services will remain nontraded, so the emphasis should be on creating the conditions for productivity growth in service sectors. Chapter 4 outlines what needs to be done to unfetter enterprise. And chapter 5 traces Europe's lack of young, highly innovative firms in innovation-intensive sectors (such as ICT, health care, and biotechnology) to market fragmentation and the limited ability of innovators to benefit from the single market's economies of scale. Some estimates put the benefits of completing the single market for digital services alone at 4 percent of the European Union's GDP—or about €500 billion every year.

### Increase labor mobility

Labor mobility relates closely to trade in services. Many services require the movement of natural persons, while greater trade in services involves movements of workers within the European Union. While Europeans are half as mobile as Americans, they are not instinctively averse to moving—some such as the Irish are among the most mobile in the world (box 8.2). The young and better educated are more likely to move, and the share of European citizens residing in a country different from the one where they were born has increased by more than 40 percent since 2001.<sup>5</sup> More can be done.

Language and cultural differences in Europe contribute to natural barriers to greater labor mobility. But there are also policy-induced barriers, most important in the housing market and in social benefits. Most of the old EU member states restrict the movement of workers from new member states, though these restrictions are being gradually relaxed. The recognition of professional certificates is not complete, and some professions still require national licenses. Housing markets in many European countries can be

### Box 8.2: Internal mobility: Ireland and the United States

#### Ireland

The Irish are the most mobile of all Europeans. Internally Dublin is the preferred destination; regionally the United Kingdom; and globally the United States, where more than 10 percent of people claim Irish ancestry. The reasons the Irish are mobile span culture, geography, and labor laws. First, the Irish have reacted to big developments by moving, and their cultural proximity to the United Kingdom and the United States has made them prone to leaving when times are tough. Second, Irish labor laws make it easy for enterprises to hire and fire workers: indices of economic freedom rate Ireland the freest economy in Europe and the fifth freest in the world. Third, the national development strategy—including the use of cohesion funds—has promoted concentration around Dublin and made workers mobile by

investing in their skills. Fourth, Ireland has kept barriers to immigration low. It did not impose quotas on workers from new member states. And the quantity and quality of immigration is high—in 2008 nearly half of all immigrants had tertiary education. The mobility of the Irish will help them deal better with the economic crisis.

#### United States

Labor mobility is much higher in the United States than in other developed countries. Over the past decade, three times as many Americans moved to find jobs and better lives than Europeans. On average, an American moves 11 times during his or her life. The reasons span culture and policy. The country's culture was built through immigration. Americans consider mobility as an essential ingredient to the pursuit of a better life. It also

reflects policy, as housing and labor market regulations make housing turnover easier than in other countries, allowing workers and employers flexibility. This mobility has direct and indirect costs: young Americans often live far from their families, and workers enjoy fewer protections than those in other developed countries. But they also benefit from the ability to negotiate wages, change employers quickly, and start businesses. Countries seeking to create jobs, nudge people back to work, increase earnings and economic growth, and make their economic structures more flexible should look at how the U.S. policy environment has supported labor mobility.

Source: Iwulska (2011), available at [www.worldbank.org/goldengrowth](http://www.worldbank.org/goldengrowth)

inefficient, making moving expensive. Zoning restrictions limit the supply of new housing, and the significant protection offered to long-term renters in many European countries segments rental markets, penalizing mobility. The transaction costs of buying or selling a house can be high, while property taxes tend to be low, to the benefit of existing owners.

In addition, despite measures to ensure the portability of social benefits, including pensions and unemployment insurance across the European Union, it is limited in practice because of cumbersome implementation mechanisms, reducing mobility. And generous unemployment benefits in some European countries may discourage workers from seeking jobs in others. Collective bargaining agreements that limit territorial wage differentiation mute signals from the labor market.

Reducing policy-based barriers to mobility is challenging: many Europeans worry that greater mobility will increase competition for scarce jobs. Such fears are misguided. Labor mobility may create new jobs—evidence does not support the idea that there is a fixed amount of labor to be shared among incumbents and newcomers. While greater mobility will make jobs more contestable—potentially creating pressures for those insufficiently skilled to benefit from new economic opportunities—more mobility will largely lead to more and better jobs. Given that Europe's workforce is declining, employers and workers should welcome this. Europeans are generally ready to move; European leaders need to build on this to foster a new social consensus around a more mobile Europe.

## Expanding regional economic integration

The story of European trade and financial integration is remarkable. This report celebrates the achievements of economic integration, productivity growth, and increasing global competitiveness among Europe's newest member states in the east. At the same time, chapter 4 notes how the European Union's old members

have not benefited equally from enlargement. Europe's southern economies in particular have failed to make their companies fit for a larger Europe due to poor business regulation. Easy finance masked these shortcomings for a while, but the crisis exposed the risks of a three-speed Europe. European integration needs to be crisis-proofed.

## Crisis-proof financial flows in Europe

A unique feature of European integration is the large volume of financial flows from parent banks in Western Europe to subsidiaries in Central and Eastern Europe—a phenomenon we called “financial FDI.”<sup>6</sup> As chapter 3 shows, financial integration is an enviable opportunity for Europe, but with tail risks. Countries that benefit from this opportunity adopt robust macroprudential regulations to moderate the credit booms that large foreign capital inflows induce. The policy arsenal includes capital and liquidity requirements, well-calibrated risk weights, and constraints on lending growth or forex lending. Regulations can also enhance credit quality by tightening eligibility criteria or loan-to-value and debt-service-to-income ratios. But chapter 3 also highlights the limits of such policies in an integrated financial market, and recommends advancing supranational coordination: supervising financial institutions operating across borders, managing liquidity risks during crises, and setting appropriate prudential regulations tailored to country-specific risks.

Poland, among the European Union, and Croatia, among non-EU countries, show the benefits of a well-managed financial foreign direct investment (FDI). As the result of integration into the international and regional economy, Croatia and Poland experienced large inflows of financial FDI. Poland shows how good regulations and sound macroeconomic management can work with informal ways of keeping currency mismatches in bank lending manageable. Croatia shows the pros and cons of a more rules-based macroprudential regime (box 8.3).

### Box 8.3: Managing financial foreign direct investment: Poland and Croatia

#### Poland

As with any type of capital inflow, governments must balance encouraging financial foreign direct investment and managing macroprudential risks. After joining the European Union in 2004, Poland succeeded in striking this balance. Several factors helped. First, good macroeconomic performance: output has grown for 20 consecutive years, and growth has averaged more than 4 percent since 1991. Inflation was brought down gradually and kept low for more than a decade. Second, Poland's prudential banking sector regulations were relatively sound: capital adequacy trigger ratios are higher than the Basel Accord minimum, and banks must comply with binding liquidity standards. Moreover, Poland was among the region's first to regulate foreign currency lending through Recommendation S in 2006. Third, an informal

yet effective approach to regulation by the central bank: much of the macroprudential regime, such as Recommendation S, was enforced through moral suasion, without automatic punishment mechanisms for noncompliance. This informal approach may have worked because of Poland's generally sound macroeconomic policies.

#### Croatia

The foreign ownership of banks jumped from 7 percent in 1998 to 90 percent in 2002, remaining around this level since. Credit grew, especially for households. Between 2000 and 2008 household loans grew at an annual average of 23 percent. But with rules-based macroprudential measures, Croatia managed the boom and subsequent crisis of 2008 relatively well. Between 2008 and 2010 banks enjoyed the highest average bank

regulatory capital to risk-weighted assets in the region. The ratio of nonperforming loans to total loans is around 7 percent. What lies behind this performance? Croatia successfully implemented rules-based macroprudential policies. The exchange rate regime largely ruled out the use of monetary policy. Large structural budget deficits reduced the potential for fiscal policy. Croatia's formal prudential policy framework may have made up for weaknesses in macroeconomic management. This approach is not without drawbacks. It is difficult to limit credit expansion effectively and tailor policies to different sectors without creating distortions in the market. Restrictions on bank credit, for example, hampered the expansion of small banks.

Source: Iwulska (2011), available at [www.worldbank.org/goldengrowth](http://www.worldbank.org/goldengrowth)

Recent developments cast a shadow over the success of financial FDI in Eastern Europe. In shoring up their balance sheets to deal with losses in Southern Europe, some western banks may decide to deleverage sharply or even leave Eastern Europe. Coordination between home and host bank regulators thus remains important. Under the “Vienna Initiative” in 2008–09, a combination of liquidity support from the European Central Bank, moral suasion by regulators, equity and subordinated debt injections, and stabilization facilities by international financial institutions encouraged western banks to stay. Similar efforts may be needed in the future. But the crisis in the eurozone also points to the need for greater supranational financial regulation.

Supranational regulation would not absolve national governments from their responsibility to crisis-proof their economies and protect them from the risks of excessive credit growth. The Czech Republic and Canada built on good macroeconomic management to benefit from financial integration, without suffering from its excesses (box 8.4).

### Facilitate production networks and FDI

Chapter 4 shows how success in attracting FDI is correlated with the variation in productivity growth rates across EU12 countries. FDI has been good for Europe’s advanced countries too. Eastern European subsidiaries help their Western European parents remain profitable. Productivity and growth among firms with an international presence were significantly higher in all of the EU15’s old members. In France, average labor productivity among international firms was \$149,000 against \$70,000 for firms without an international presence, and productivity growth was four times faster. The creation of production networks between east and west following the fall of the Berlin Wall has been a boon to both sides, with Germany, Austria, Sweden, Finland, and their eastern neighbors in the Baltics and among the Visegrad countries (Poland, Hungary, the Czech Republic, the Slovak Republic, and Slovenia) as the biggest winners.

The policies required to attract FDI are well known: efficient regulation and transparent, predictable, and enforceable rules, complemented by public investments in infrastructure and human capital. Yet, many of Europe’s neighbors to the east seem unsure of FDI’s benefits, keen instead to promote their own international champions. Ukrainians, Russians, and Kazakhstanis often point to the lack of domestic business groups of international scale in the new member states as a disadvantage, touting the benefits of home-grown world champions. Evidence suggests otherwise: Europe’s eastern neighbors remain wedded to a commodity-based pattern of comparative advantage. In 1991, Ukraine and Poland started from comparable relative productivity. In 2009, after 20 years of transition, Ukraine’s average productivity in purchasing power parity terms was a third of Poland’s.

### Regulate enterprises for a greater European economy

Eastern Europe’s success in attracting FDI and catching up with productivity in the European Union is striking. Similarly striking is the failure of Southern Europe’s enterprises to keep pace with productivity growth in the north and center. Chapter 4 documents the resulting “three-speed union.” The wheels of

Europe's convergence machine ground to a halt in the south at the same time that they turned smoothly in the east. The failure of Greek, Italian, Portuguese, and Spanish firms to benefit from the latest phase of European integration makes their economies uncompetitive, while the possibility of correcting this deficit through devaluation is closed off within the eurozone. Making their companies fit for an enlarged Europe is a priority in the south—not just for their own economies but for the eurozone's economic health.

What is holding southern firms back? Chapter 4 offers two explanations. First, Southern Europe lacks firms of a sufficient size to effectively compete and benefit from European integration. Second, burdensome business regulations keep southern firms small by discouraging investment and growing the shadow economy. Competition from the shadow economy can drag potential value-added leaders down, perpetuating the low productivity equilibrium. This has not prevented job creation in the south. But too many workers in the EU15's south are employed in small enterprises with low average productivity. An average gross output per worker of around \$40,000, including gross profit and depreciation, is not sufficient to attract a college graduate, so many young skilled workers stay away.

The recipe to address the south's productivity gap is straightforward: better regulation and more internationalization. Rigid employment legislation, cumbersome tax systems, and burdensome product market regulations all make Southern Europe uncompetitive. The last decade has seen a large number of countries make significant strides in improving their business climate. Among the European countries that have made the most impressive progress is the Slovak Republic (box 8.5). Countries looking to create value-added leaders might also look to Singapore's experience for designing efficient and effective business regulation.

#### Box 8.4: Crisis-proofing finance: the Czech Republic and Canada

##### Czech Republic

Most believe that financial integration with the west made banking systems in emerging Europe more vulnerable to external shocks. Yet, banks in some countries such as the Czech Republic did better than others during the recent global economic crisis. In 2009, Czech banks recorded sound profits: return on equity amounted to 26 percent, and the return of assets stood at 1.5 percent. This resilience reflected timely policy actions, a sound regulatory system, and prudent banking practices. First, the financial sector benefited from a consolidation program that the central bank initiated in the mid-1990s, closing many small banks. Second, the process of financial sector prudential oversight was also consolidated. Since 2005, the Czech central bank has had the authority to oversee all segments of insurance markets and

commercial and investment banking. Third, the banking sector has a strong retail deposit base and benefited from prudent lending practices—nonperforming loans were lower in the Czech Republic than in other Central and Eastern European economies. No country is crisis-proof, but Czech financial sector practices and policies have been a source of stability during the financial crisis.

##### Canada

Canada's banking sector survived the 2008–09 crisis without a taxpayer-financed bailout, and its banks remained stable and well capitalized. What did Canada do right? First, heading into the crisis, the structure of bank funding was favorable, as banks relied much more on depository funding than wholesale funding. Second, the country has one of the most restrictive capital adequacy standards in the world in risk-weighting, allowable capital

deductions, and definitions of permissible regulatory capital. Third, the structure of the banking system has traditionally made the sector more stable. Heavy regulation and tight restrictions on entry led to a highly concentrated banking system dominated by five large competitors. While this system made the sector less competitive, it also made the sector easier to regulate, limiting the size of the shadow banking sector. Supervisors always face a tradeoff between competitiveness and stability—the “regulator's dilemma.” The performance of the economy before the crisis—annual GDP growth rates ranged between 2 and 4 percent during 1999–2008—and of the banking sector during the crisis suggests that Canada has struck the right balance.

Source: Iwulska (2011), available at [www.worldbank.org/goldengrowth](http://www.worldbank.org/goldengrowth)

## Improve the quality of public services

Many countries in the western Balkans or the eastern neighborhood face the unenviable combination of large and highly inefficient public sectors. The same is true to a different degree in Europe's south and among some core EU member states. Improved public services are key ingredients in the policy mix to make Europe's periphery fit for competition in an integrated market. More efficient public services are also critical for fiscal consolidation and creating fiscal space for public investments. A vast repository of European and global experiences shows how to improve the quality of public services. This report highlights three key lessons.

First, adjusting structures and staffing levels to demographic developments in education and health services can offer a considerable scope for cost savings. For instance, adjusting the number of schools and educational staff to demographic developments could save between 1.1 percent of GDP in the EU12 and 0.7 percent in the south. Resistance from staff, parents, and patients can be overcome if savings are partly reinvested in quality improvements.

Second, improvements in education and health sector outcomes often result from selected public investments, greater autonomy for service providers (in some cases allowing competition between public and private sector providers, even with full public funding), and improved accountability through transparent performance criteria and public monitoring of performance. But country experiences have varied considerably. In Singapore, for instance, quality education outcomes were achieved in a centralized system with close quality monitoring and performance-

### Box 8.5: Value-added leaders: the Slovak Republic and Singapore

#### Slovak Republic

The Slovak Republic is the European value-added leader, increasing value added by 2.8 percent annually between 1995 and 2009. At independence in 1993, Slovak manufacturing was oriented toward heavy industry, but it was able to quickly diversify. First, productivity growth was possible due to employees moving from farms to high-growth manufacturing and services. Second, exporting enterprises in medium- and high-tech manufacturing industries were able to add value through new solutions: Slovak companies produced the second-highest number of export discoveries in chemicals, and third-highest in animal products and raw materials in the region. Third, perhaps the biggest part of the story has been FDI, which grew from negligible amounts in the late 1990s to more than 10 percent of GDP by 2010. Good policies encouraged this investment through a stable macroeconomic environment, targeted tax incentives, and a good business climate—which scored 41st in the World Bank's Doing Business in 2011, including top marks for new business

registration. Fourth, unit labor cost growth has been more moderate in the Slovak Republic than other Central and Eastern European economies: in 2006, the minimum monthly wage in the Slovak Republic was €181, lower than €223 in Poland, €230 in Hungary, and €280 in the Czech Republic. With its flexible factor markets and supportive policy environment, the Slovak Republic may remain a European leader in value added for some years to come.

#### Singapore

Singapore is a world leader in international trade and investment. A poor country in the early 1970s, it now has the 12th-highest GDP per capita in the world (\$43,324 in current dollars in 2010). Manufacturing's share in GDP rose from 14 percent in 1965 to 24 percent by 1978. In the 1990s and 2000s, manufacturing moved toward high-value-added sectors, and services became more predominant. This change has been the result of a development policy combining a free-market approach with state intervention. Singapore was able to

attract multinational corporations, promoting investment and knowledge transfers as a result of stable macroeconomic conditions, efficient infrastructure services, and a supportive business environment. The country is a research and development center, topping the World Bank's Doing Business rankings in 2010 and 2011. The state invests heavily in education and R&D. In 2007, nearly a quarter of the labor force had a tertiary education. The National University of Singapore was 34th in the Times Higher Education World University 2010 ranking, and Singapore scores in the top three in the TIMSS assessment measuring students' performance in mathematics and science. The Economic Development Board focuses on attracting foreign investment and cooperates with other agencies such as human resources for specific industries. Heavy state intervention can sometimes cause inefficiencies. But Singapore's combination of institutions, infrastructure, and interventions has rapidly augmented its value added.

Source: Iwulska (2011), available at [www.worldbank.org/goldengrowth](http://www.worldbank.org/goldengrowth)

### Box 8.6: Public service delivery: Finland and Singapore

#### Finland

Finns are well educated, but spend less on education than most other Organisation for Economic Co-operation and Development (OECD) countries. They live healthy lives, on average five years longer than the typical European. In 2010, *Newsweek* named Finland the best country to live in. How does Finland deliver high-quality social services at reasonable cost? The government uses a “citizens as customers” approach that minimizes layers of bureaucracy between users and public decisionmakers. The education system is decentralized, with municipal funding and schools that are responsible for daily management. Students are encouraged to engage in self-assessments and take charge of their learning schedules. Teachers are free to plan their classes and choose textbooks. There are no national tests,

so teachers are responsible for measuring the results. Health care services are lean and decentralized, with municipal governments responsible for their delivery. Since 1990, the government has introduced several measures, such as user charges, to limit public spending on health care. And since 2006, “citizen’s offices” have improved communications between society and government.

#### Singapore

Singapore delivers high-quality public services at low cost. Government involvement in education and health care produced world-leading systems at public spending well below other high-income economies. Spending on education is less than 3 percent of GDP and health care spending is below 2 percent. The centralized education system produces top outcomes: Singapore scores in the top three in the TIMSS assessment measuring student

performance in mathematics and science, and in 2009 was ranked 6th in the OECD PISA test to assess reading, math, and science (OECD 2010). The government creates strong incentives for performing well in national tests, and plays a direct role in hiring world class teachers. Singapore also has one of the most inclusive and efficient health care systems in the world. The system ensures universal coverage in a cost-effective way through compulsory savings and price caps, with mostly private sector provision. Life expectancy is 81.4 years, and child mortality is one of the lowest among the OECD countries, at just 2.2 deaths per 1,000 live births. Singapore’s efficient and effective systems show that it is possible to have high-quality social services without straining the treasury.

Source: Iwulski (2011), available at [www.worldbank.org/goldengrowth](http://www.worldbank.org/goldengrowth)

based incentives for teachers and schools (box 8.6). Finland, by contrast, has little centralized quality control, emphasizing community-based accountability and investing in raising the professional recognition and qualification of teachers. In health care, successful quality improvements have typically involved a move toward public contracting with private health care providers, with output-based performance targets and user charges to encourage responsible patient behavior. Health systems are only starting to adjust to the challenges of aging. Europe faces the challenge and opportunity for genuine global leadership in this field.

Third, the quality of public services is generally a function of public sector governance. Lack of trust in the state and a culture of administrative corruption hamper public sector performance in the east and south. Social trust is difficult to create, though in countries such as Estonia aggressive deregulation, administrative simplification, and the use of ICT to facilitate access to administrative services have greatly improved perceptions and performance of the government. The general lesson for countries not endowed with traditions of civic-mindedness and social trust is that government should either be run well or kept small.<sup>7</sup>

## Strengthening Europe’s global leadership

In 2010, Germany lost the export world champion title to China. Yet, for a country with a population 13 times smaller than China’s, and 4 times smaller than the United States’, topping the world export table for much of the past decade is a remarkable achievement. It epitomizes Europe’s success as a trade powerhouse. Other countries in Europe such as Austria, Luxembourg, Switzerland, and four Visegrad countries (the Czech Republic, Hungary, Poland, and the Slovak Republic) also do well in exporting. But many European countries have struggled to grow global leaders, and are pressured by their economic ties with dynamic neighbors.



This struggle is most starkly reflected in the imbalances within the eurozone. Europe's laggards need to learn from its export leaders. Europe's prosperity, not reduced competitiveness of its world champions, will require its laggards to become more competitive.

Global export leaders such as Germany and the Republic of Korea have used a common set of ingredients. These include increasing the economy's ability to continually shift toward higher value-added activities and foster trade integration with neighboring countries so as to move fewer skill- and capital-intensive activities offshore. Stable finance (or in Korea's case, rapid private debt resolution) and responsible business and employment regulation have helped. And, in both countries, the profits generated were reinvested in R&D (Iwulska 2011). The need to keep an eye on the long term and adapt to rapidly changing global markets may be the most important lesson for aspiring export champions.

### Reassess employment protection legislation

Labor market reform is among the toughest tasks facing such countries as Greece, Italy, Portugal, and Spain. The high cost of hiring and firing makes their economies inflexible, less able to react to shocks. It keeps people not in the labor force out of work, including the young, reducing aggregate productivity and fomenting social protest. Eastern European policymakers should take note. On employment legislation, many countries in the east lag far behind the EU15's two decades of labor market reform. Lower unemployment, greater worker productivity, and higher labor force participation among the young all lead to more flexible employment legislation, as the experiences of Denmark, Germany, the Netherlands, and others demonstrate. Ideally, these outcomes should be combined with reductions in the tax wedge between gross and net earnings, well-designed unemployment benefits, and active labor market programs.

#### Box 8.7: Labor legislation: Denmark and the United States

##### Denmark

Every year, about 20 percent of Danes lose their jobs. But they don't lose their income. Unemployment benefits replace close to two-thirds of their earnings, and the government helps them find work. The arrangement seems to work well. Between 1995 and 2008, unemployment averaged 4.9 percent, compared with 8.5 percent in the rest of the EU15. How does Denmark have both flexibility and security? First, a tradition of productive industrial relations: in the Danish system, labor and trade unions, not the government, pay unemployment benefits. Second, sensible adaptation: the arrangements were reformed in the 1990s after decades of high unemployment. Policies cut job protection, raised unemployment benefit coverage, and strengthened job search assistance and training. Unemployment fell from 10 percent in 1993 to 3.3 percent in 2008, and long-term

unemployment fell from a third of the total to a tenth. Third, generous public spending: Denmark spent 4.5 percent of GDP on labor market programs in 2008, a good year. The Danes have "flexicurity" because of their history, and they can afford it because of participation rates of more than 80 percent. Others who want both flexibility and security should be mindful of this.

##### United States

Between 1995 and 2010, average unemployment in the United States was 5 percent, about half the eurozone's average of 9.4 percent. Labor participation rates are higher in the United States, anchored by a society that values work, flexibility, and competition. Employees can be hired or fired fairly easily—employment protection in the United States is the lowest in the Organisation for Economic Co-operation and Development

(OECD). Labor taxes are low: the tax wedge on labor of 30 percent is among the lowest in the advanced world. Unemployment benefits are lower than in most European countries while net replacement rates for the long-term unemployed are the second-lowest in the OECD. What are the pros and cons? On the whole, the system succeeds in delivering jobs and productivity growth. Firms and workers have more freedom to negotiate contracts that suit their needs. States and municipalities can add programs that their voters want and their local economies can afford. Countries seeking to promote productive employment would do well to look to the United States for ideas. But the absence of a universal health care system in the United States means that most Americans need a job if they want good health care.

Source: Iwulska (2011), available at [www.worldbank.org/goldengrowth](http://www.worldbank.org/goldengrowth)



Denmark's "flexicurity" model combines relatively low employment protection with considerable spending on active labor market policies and generous unemployment benefits, achieving a coveted combination of generous social security for workers with flexible labor markets and low unemployment (box 8.7). But these expensive policies rely on the capacity of labor offices to place the unemployed rapidly into sustainable new employment—a tough task during a prolonged economic downturn. The United States has a more traditional model of high labor force participation, achieved through lower employment protection, flexible labor markets, and limited unemployment insurance benefits. Countries in Eastern and Southern Europe will need to decide whether to opt for the expensive but less socially disruptive Danish system or the rougher efficiency of American labor markets. At the moment many have neither.

### Address the private debt overhang quickly

While public sector debt is the focus of attention, a private debt overhang might drag down European growth. Chapter 3 shows that Eastern Europe's enterprises and households—which absorbed a big rise in credit in the decade leading up to the 2008–09 crisis—generally are not overleveraged. This is not necessarily true of their counterparts in Southern Europe. And while banks in emerging Europe seem reasonably capitalized and have built adequate reserves against the increase in nonperforming loans, renewed economic uncertainty is cause for concern. A crisis of confidence would strain banking sector balance sheets, potentially causing a flight of deposits from some countries. What should governments do if this happens?

Ireland, which nationalized its banking system and took on all private sector liabilities, tells a cautionary tale. Sweden and the Republic of Korea are better examples (box 8.8). Both quickly recapitalized financial institutions, limited taxpayer liabilities by sharing losses with the private sector, and put corporate debt restructuring frameworks in place to facilitate a rapid workout of nonperforming loans. The synchronized nature of the current instability may require more coordinated approaches to bank recapitalization, particularly for sovereign debt restructuring in the eurozone.

### Create world class innovation systems

Germany's success in exporting cars and machine tools to all corners of the world should not distract from the fact that new industries such as ICT, biotech, and health and medical services are likely to play a key role in Europe's growth prospects and international competitiveness. As chapter 5 argues, Europe does not do well in these high-growth, innovation-intensive industries, especially when compared with the United States, the global leader.

Several factors determine the quality of a country's innovation system. They include world class universities, developed venture capital markets, public procurement policies, and regulations that stimulate innovation and maintain strong competition. Denmark, Finland, Sweden, Switzerland, and—to less extent—Germany have copied these features and built innovation systems that compete with the world's best (box 8.9).

### Box 8.8: Reducing private debt: Sweden and the Republic of Korea

#### Sweden

Sweden illustrates how to reduce private sector debt after a crisis. After the crisis in the early 1990s, the government not only revived the economy but also restored the health of household balance sheets. The ratio of debt to disposable income of Swedish households fell from 130 percent in 1989 to 90 percent in 1996. Interest payments were halved from 10 percent of disposable income in 1990 to 5 percent in 1997. The government kept the costs of the bailout low. By 1997, the total bill amounted to only 2 percent of GDP, due to a comprehensive program that was tailored to different classes of financial institutions and realistic about financial sector losses. First, the government quickly recognized these losses. Transparency and true valuations were conditions for government support. Because banks were forced to write down losses, markets received accurate information. The government guaranteed their liabilities or took an ownership stake in the bank. By 1992, the Swedish authorities owned nearly a quarter of bank assets. Second, the government adopted an approach that was sensitive to distinctions among classes of financial institutions. Government assistance was available to not

only Swedish banks but also foreign-owned subsidiaries in the country. And the support's structure and amounts were tailored to the necessities of particular banks or institutions. A special body—the Bank Support Authority—was set up in 1993 to assess the magnitude of the troubled loans, as well as each bank's earning potential in the long run. The actions of the Swedish government show the potential for public policy to address the fallout of a financial crisis, if implemented quickly with an honest recognition of financial sector losses.

#### Republic of Korea

The Republic of Korea's policies after the 1997–98 crisis show how quick and comprehensive intervention can reduce private sector insolvency and restart growth. Korea's corporate and financial sectors were heavily indebted when the East Asian financial crisis hit. A rapid-debt-reduction program brought the overhang under control. In manufacturing, the debt-to-equity ratio shifted from 396 percent in 1997 to 211 percent in 2000. The share of nonperforming loans fell from more than 8 percent in 1999 to just below 2 percent in 2002. What can other countries learn? First, the policy response was comprehensive. All corporations, large and small, were

included in the government's plan to restore solvency. Under government pressure, the country's largest conglomerates negotiated debt workout programs with the banks. Government intervention led to the rollover of 90 percent of small and medium enterprise loans between July and November 1998, the worst months of the crisis. Nonperforming loans fell in part due to the government's program to recapitalize healthier banks and merge or liquidate insolvent institutions. Second, new statutes allowed banks to go bust. The Korean Asset Management Corporation was created to handle bad loans and prevent “zombie banks.” Third, the size of the government's response was proportionate to the crisis: financial sector support amounted to 13 percent of GDP between 1998 and 1999. Fourth, monetary policy managed deflation risks while participation in an International Monetary Fund program and the introduction of central bank independence in 1998 sent strong signals to the markets. Timeliness, broad scope, targeting, and scale of response are all important in dealing with a private debt overhang.

Source: Iwulska (2011), available at [www.worldbank.org/goldengrowth](http://www.worldbank.org/goldengrowth)

Three basic lessons: first, governments should ensure that the table is properly set; no amount of incentives and targeted policies can compensate for a poor business climate or inadequate infrastructure. Second, public support should work through the market, stimulating private investment, not aim to substitute for market finance when profits are paltry. Finland's matching grant scheme for early innovators, for instance, catalyzed private venture capital funding, and Israel built a venture capital industry with initial injections of public funds and foreign investment. Third, public policy can encourage linkages between innovators and businesses, and help scientists expand their international collaboration—particularly in Eastern Europe, where national R&D institutions need to be thoroughly reformed.

Yet, innovation in Europe's frontrunners is held back by scale; Turku is not Tokyo and Zurich is not San Francisco. European markets for ICT, pharmaceuticals, and health services are not sufficiently integrated. Achieving global leadership in innovation will require more than world class national innovation systems. It will require a Europe-wide approach to create the necessary scale to match America's and Asia's dynamic innovation clusters. A good example of what holds Europe back is the lack of a single European patent, because EU member states cannot agree on the language requirements.<sup>8</sup> An encouraging example is the pooling of public funding for excellence in scientific research at the European Research Council, with a budget of around €1 billion a year.

## Expand private funding of tertiary education

As the tasks performed by Europe's emerging economies grow more sophisticated, and the competition from middle-income countries in Asia intensifies, workforce education becomes ever more important. Europe lags Japan and North America in the share of the workforce with tertiary education, and within Europe, the east and south lag the center and north, both in the quantity and quality of higher education.

Most European countries see higher education as a task for the state. Private funding is limited, private universities are the exception, and links between business and university-based research are weaker than in the United States. Europe's tertiary education policies are designed to ensure equal access to higher education and to keep research free from corporate agendas. Yet, the approach must be questioned. High fees have not discouraged young Americans from seeking a higher education; wages for graduates are much higher than for those who leave school, offering a good rate of return on investment for a university degree. And it is not just Americans who are encouraged: U.S. universities have many more international students than most universities in Europe. Switzerland and the United Kingdom are the notable exceptions (box 8.10).

## Rethink immigration policies

In Europe, immigration policy is often seen as a humanitarian intervention. Many immigrants are refugees from countries with oppressive political regimes or civil wars, and Europeans—mindful of their own history of war and displacement—accept immigration as a moral duty. Family reunions are also an important part of European immigration. Many Europeans, however, would oppose more immigration for economic reasons: workers moving to Europe in search of higher wages, and employers inviting immigrants to fill positions with few local applicants for the wages offered.

### Box 8.9: R&D policy: Switzerland and the United States

#### Switzerland

Switzerland is Europe's leader in innovation. In 2007, it obtained the highest number of patents per capita among industrialized countries, roughly three times the Organisation for Economic Co-operation and Development (OECD) average. According to the Global Benchmark Report 2011, Switzerland is the most competitive country in the world, ahead of Canada, Australia, the United States, and Sweden (Confederation of Danish Industry 2011). The reasons? First, Switzerland started early. Its emphasis on research and innovation has a long history. The first two institutions funding university-based research were established in or soon after 1943. Second, there are strong public-private links in the funding and conduct of research, and Switzerland has more private spending. Swiss

companies spend twice as much on R&D as the EU27 average (Switzerland spends 2.2 percent of GDP; EU27, 1.1 percent of GDP). Third, Switzerland has some outstanding universities: with a population of just 8 million, it has four universities in the top 100 of the Times Higher Education World University 2010 ranking. In part due to its R&D policies, Switzerland may be Europe's most innovative country.

#### United States

Half of the 50 most innovative companies in the world, as ranked by *Business Week* in 2010, are American. The country dominates the most R&D-intensive sectors. For example, it creates a third of the value added in the global information and communications technology industry. How does the United States do so well? First, sizable public spending: gross

expenditure on R&D was almost 3 percent of GDP in 2008, above the OECD average. Second, this spending is linked well to a broad tertiary education base: the United States accounted for a third of the total OECD population with higher education. Its universities can reap the commercial payoff of R&D, even when it is federally funded. Third, federal funding is not the sole driver of R&D and innovation: private firms spend a lot. The partnerships of venture capitalists and entrepreneurs in places like Silicon Valley have driven new innovations, changing business and expanding the technology frontier. Fourth, product market competition, labor market flexibility, and substantial management talent increase the payoff to R&D spending.

Source: Iwulska (2011), available at [www.worldbank.org/goldengrowth](http://www.worldbank.org/goldengrowth)

### Box 8.10: Tertiary education: the United Kingdom and the United States

#### United Kingdom

British universities are the best in Europe, with two or three regularly among the top 10 in the world. After the United States, the United Kingdom has the second-largest number of foreign students. Expenditures are around 6 percent of GDP, the Organisation for Economic Co-operation and Development average. How has the United Kingdom gotten exceptional results with an ordinary budget? It has done a better job than its neighbors in combining a rich European heritage with modern know-how. First, spending per student is higher in the United Kingdom than most European countries. Second, universities charge high tuition fees by European standards, supported by student loans. Third, universities in the United Kingdom enjoy more independence from government. This creates greater

competition for funding and talent and more innovative curricula. The United Kingdom still faces challenges in getting the tuition cap right, supporting part-time students, and ensuring that schools are producing needed skills. But it has shown that it is possible to meld the tradition of great European universities with current needs and a modern approach.

#### United States

American universities successfully address two important issues: a growing demand for tertiary education, and limited capacity and public funding. A diversity of academic opportunities helps target different educational needs, while abundant funding and favorable governance allow top universities to attract world scholars, students,

and companies, channeling knowledge into ideas, innovations, and business solutions. Moreover, universities enjoy autonomy and diversity in funding, which is important in setting standards. U.S. universities dominate the international league tables, taking the top 5 positions—and 7 of the top 10—in the latest Times Higher Education World University ranking. Moreover, U.S. universities attract 20 percent of all international students. Given the role of top universities in building human capital for public and private sectors, and as direct and indirect contributors to innovation, other countries should look at how the United States regulates and finances its higher education systems.

Source: Iwulski (2011), available at [www.worldbank.org/goldengrowth](http://www.worldbank.org/goldengrowth)

As chapter 6 argues, this attitude toward immigration puts Europe at a competitive disadvantage with immigration-friendly countries in North America and Oceania. Immigrants are needed to compensate for the decline in Europe's labor force, even with efforts to increase labor force participation and promote greater internal mobility. Europe should devise a more "economic" immigration policy. This should not imply that humanitarian motives for Europe's immigration policy are wrong. Instead, Europe should look at immigration as a gain rather than a gift. Ireland, Sweden, and the United Kingdom have immigration policies that reflect good practices in other parts of the world, such as Canada and the United States (box 8.11).

What are the ingredients? Nondiscriminatory labor markets attract the best and brightest. Language training for adults, access to education for immigrant children, and the prospect of acquiring citizenship all facilitate integration into society. "Points" systems can filter immigrants with required skills, and immigrants with job offers can be granted additional points. Opening universities to talented foreign students often attracts and retains a skilled labor force. A more conscious and proactive immigration policy could help Europe maximize economic gains while keeping social tensions low.

### Reform social security

Europe's social security systems (public pensions, unemployment insurance, and social welfare) largely account for the bigger size of its governments. The pension system accounts for the bulk of social security spending. Keeping pension spending under control remains the most important task—not only for fiscal consolidation, but also to prevent payroll taxes from rising and making European enterprises uncompetitive in world markets. As chapter 7 demonstrates, pension reform has begun in parts of Europe. Pressed by markets, governments have increased the retirement age, abolished early retirement schemes, and encouraged private savings for old age and infirmity.

Iceland appears to have achieved these objectives, maintaining a high level of old-age security (as reflected in generous replacement rates) at reasonable cost to the government. Japan's experience should also provide encouragement: the fastest-aging economy in the world spends around 10 percent of GDP on its public pension system, less than France, Germany, or Greece (box 8.12). The average public spending on pensions is essentially the same as in Europe (\$16,000 in 2000 prices). The main difference: the Japanese work longer, up to almost age 70 for men and more than 67 for women.

Chapter 7 advocates the principle that social security spending should exceed 10 percent of GDP only in exceptional circumstances (such as those in Japan). Over the medium term, savings of around 1 percentage point of GDP must be found in Europe's north, around 2 points in the center, and around 3 in the south. Serbia and Ukraine, with pension spending in excess of 15 percent of GDP, have more radical reform needs.

## Reduce deficits and public debts

Fiscal austerity has become the battle cry of European leaders as they try to restore confidence in the eurozone. For much of Europe, it is necessary. As chapter 7 demonstrates, fiscal discipline is not just needed to reassure nervous investors—it is required to restore long-term growth. During the 2008–09 crisis, there was a coordinated push by governments in the industrialized countries to adopt fiscal stimulus packages to stem the decline in aggregate demand and pull western economies out of recession. A more differentiated approach might have been more suitable then; it is definitely needed now. Large government is associated with slower growth in Europe. Even in the short term, expansionary government spending will not restore growth.

But politically, achieving a lasting fiscal consolidation is not easy. A crisis such as that currently gripping the eurozone is an opportunity to muster the political energies to push through such a consolidation. Constitutional debt ceilings and “golden rule” provisions limiting new borrowing to the amount of public

### Box 8.11: Immigration policies: Sweden and Canada (and the United Kingdom and the United States)

#### Sweden (and the United Kingdom)

Immigration plays a big role in both countries: in 2008, the foreign-born were 14 percent of Sweden's population and 11 percent of the United Kingdom's. Both have fairly liberal policies toward migrants from the new EU members, but they have different ways of assimilating foreigners. Sweden allows foreigners access to almost all benefits available to natives, setting clear rules on how to obtain citizenship. The United Kingdom's appeal does not come from its migration policy. The country attracts highly skilled newcomers for a range of reasons: cultural diversity, low language barriers, metropolitan centers such as London, and the presence of

multinational companies. European countries need models to learn from in managing immigration. Sweden and the United Kingdom offer contrasting examples, but both have aspects that deserve study, adaptation, and even emulation.

#### Canada (and the United States)

As global magnets for talent, the United States and Canada are exceptional, for somewhat different reasons. The U.S. economy is powered by immigration, and more than a million people immigrate there every year. Canada also has one of the highest shares of immigrants: one of five residents is foreign-born. The quality of immigration is high in

both countries. But immigration policy differs in many ways. The United States attracts migrants through its size, its tradition as a country of immigrants, and its contestable labor markets and job opportunities. Of all the immigrants coming to the United States, more than a quarter have tertiary education. But the lack of a comprehensive policy can lead to undocumented migration and weak public institutions for integrating immigrants. Canada has a more comprehensive set of policies based on a “points” system to both meet labor market needs and reunite families.

Source: Iwulska (2011), available at [www.worldbank.org/goldengrowth](http://www.worldbank.org/goldengrowth)

### Box 8.12: Social security: Iceland and Japan

#### Iceland

Iceland may show a way forward for countries trying to meet social security promises while holding public spending in check. Its system delivers one of the highest replacement rates in the world—close to 97 percent for the average worker—at a low public cost of less than 2 percent of GDP, compared with the Organisation for Economic Co-operation and Development (OECD) average of more than 7 percent. It helps that, for a developed country, Iceland has a relatively young population with a high fertility rate. But there are other reasons. First, the system has had a pensionable age of 67 years for both men and women for several decades. Tax and other policy incentives encourage workers to stay in the labor force beyond the legal minimum, and the country has one of the world's highest elderly participation rates.

Second, benefits are means-tested. Third, a mandatory occupational pension scheme must deliver more than 50 percent of replacement wages for workers meeting minimum tenure requirements. The pension system contributed to the development of Iceland's financial sector and has already recouped most of the losses experienced during the country's recent economic collapse.

#### Japan

Japan has the oldest population in the world. The ratio of Japanese ages 65 and older to the working-age population is 35 percent, compared with 25 percent for the EU15 and 20 percent for the United States. What is Japan doing, and what can aging countries learn? First, an aging society is a big fiscal burden, but it can be looked after by adjusting the system. Public pension spending in Japan is 10 percent of GDP, nearly 3 percentage points

higher than the OECD average. But Japan still spends less than younger countries: for example, the ratios are higher in France (13 percent), Greece (12 percent), and Germany (11 percent). The pension system has been adjusted several times: in 2004, for example, the government cut benefits for new retirees by 0.9 percent a year. Second, people have to work longer. Japan's system punishes early retirement with lower benefits, and encourages later retirement with the lowest implicit tax on working beyond retirement age. Third, the elderly can be protected by making public pensions progressive, with lower replacement ratios for high-income retirees. Japan may need to do even more: female work participation could be much higher and Japan may need more immigrants.

Source: Iwulska (2011), available at [www.worldbank.org/goldengrowth](http://www.worldbank.org/goldengrowth)

investment can provide focal points for consolidation efforts. The European Union's macro-surveillance framework provides for an annual reduction of public debt by one-twentieth of the difference between current debt and the Maastricht criterion of 60 percent of GDP. Using a 60 percent of GDP debt ceiling for the EU15 and a 40 percent ceiling for the EU12, the candidate countries, and the eastern partnership, chapter 7 calculates the required improvement in the primary balance to range between 3 percent of GDP (for the eastern partnership countries) and almost 8 percent of GDP (for the southern EU member states).

For inspiration in matters of fiscal adjustment, European leaders might turn to Turkey—a country with repeated fiscal and external imbalances resulting in bouts of inflation and exchange rate instability. Since 2001, however, Turkey has stabilized public finance, rapidly reduced public debt, and enjoyed fast (if volatile) economic growth. The 2008–09 crisis left the country much less vulnerable than previous episodes. Turkey's approach to fiscal stabilization and its economic reforms to boost competitiveness may have lessons for Southern Europe (box 8.13). New Zealand, where a crisis precipitated a reform of public finances and social service delivery, is another example.

## Growth's golden rules

To conclude this chapter on the subject it began with, one can ask whether there are there any "golden rules" to guide policymakers to ensure the maximum consumption for Europe's current generation, while keeping future generations' prospects bright. The discussions around greater fiscal prudence, and the proliferation of constitutional brakes on public debt, suggest that governments in Europe are searching for a new set of rules. A set of golden rules for growth might look something like the following:

### Box 8.13: Reducing public debt: Turkey and New Zealand

#### Turkey

Turkey halved the ratio of public debt to GDP from almost 80 percent in 2001 to less than 40 percent before the global crisis of 2009. Several factors helped. First, global prosperity, reforms at home, and accession talks with the European Union spurred growth. Second, through greater fiscal discipline, Turkey generated primary fiscal surpluses between 2002 and 2005. Third, it granted more independence to the central bank and implemented better monetary policies, increasing the confidence of global markets in the lira. Fourth, it better managed public debt, leading to longer maturity periods and lower interest rates. And fifth, it prudently

used privatization proceeds to repay sovereign debt. It takes a lot to reduce public debt, but Turkey shows it can be done. Its neighbors in Southern Europe might learn by studying its debt management practices, monetary policies, and reform and privatization program during the 2000s.

#### New Zealand

Since the early 1990s, New Zealand has halved its public debt—from around 60 percent of GDP to 30 percent in 2010. The country led in fiscal prudence: it was second in Stanford University's Sovereign Fiscal Responsibility Index rankings in 2010. What did it do? First, deep reforms in state finances helped return it to primary fiscal surpluses in 1994, after

two decades of deficits. The fiscal reforms were comprehensive: the government set up a management framework for a sustainable fiscal policy—using, for example, financial reporting standards similar to private sector accounting rules. Second, New Zealand used privatization proceeds of NZ\$14 billion in 1988–96 well, and made operations ranging from air traffic control to postal services competitive through deregulation. Third, these steps were part of a broader reform program that included reducing inflation from more than 8 percent in 1986–91 to 2 percent in 1992–97.

Source: Iwulski (2011), available at [www.worldbank.org/goldengrowth](http://www.worldbank.org/goldengrowth)

- Extend the benefits of freer trade to those outside the European Union. Enlargement has made Europe stronger, and Europe should continue to extend economic integration toward the east. Trade is the most important part of Europe's convergence machine, and the single market is the European Union's "crown jewel." The European Union should strengthen the single market, and speed up the extension of its benefits to its neighbors.
- Borrow from abroad only for investment. Where foreign finance has been used for private investment, it has fueled productivity growth and convergence in Europe. But countries relying on finance mainly to boost consumption have added less to productivity, becoming more vulnerable. Rules for countercyclical fiscal policy and macroprudential regulations follow.
- Give enterprises the freedom to start up, grow, and shut down. Efficient regulation of enterprise should trust but verify, make compliance easy but punish violation, and concentrate regulatory resources where risks are highest. Regulation in Europe should promote competition by making entry and exit easier for enterprises, and should reduce the costs of running or growing a business.
- Public funds should catalyze private innovation, not substitute for it. Effective innovation policy sets the table for innovators to thrive. It supports inventors, mobilizes finance, understands the importance of economic agglomeration, and brings choice and business resources into universities.
- Labor laws should treat insiders and outsiders more equally. Regulations should not treat those who seek jobs and those who have jobs differently. Seeing labor as a fixed lump to be divided among workers leads to poor rules. Contestable labor markets, greater mobility within Europe, and talent attracted from outside will help Europe create jobs, make workers more productive, and help offset the demographic decline.
- Public debt should mainly finance public investment. With high debt and modest expected growth rates in Europe, government spending should now be based on the premise that future generations are not likely to be a lot wealthier. Taxation



should finance social security, public services, and the government wage bill. Efficiency considerations—not equity—should drive borrowing.

With policies that reflect these rules, Europe can restore the lustre of its economic model. It can secure the welfare of the 500 million people who live in the European Union today. The European convergence machine can bring another 100 million people in Europe's candidate and potential candidate countries to high-income status—and accelerate improvement in the living standards of 75 million people in the eastern partnership.

There are many reasons to believe that Europeans will make these changes. The main reason for optimism is that many countries in Europe have already made changes, and others are making them. The sovereign debt crisis has obscured the fact that Europe has done quite well over the past two decades. As this book demonstrates, Europe excels at managing trade and most aspects of private finance. It has done reasonably well in regulating enterprise and promoting innovation, though with big differences across countries. Its weaknesses lie mainly in how it has organized work and government. But even in these aspects, some countries in Europe have rebuilt their institutions and can serve as models for others.

A report card on Europe's performance for the last two decades would be a solid "B." Over the next two decades, with strengthened economic structures, better social policies, and efficient government, an "A" is not out of reach.

#### Answers to questions on page 433

- Greater labor mobility and more uniform national regulations for modern business services are making the single market more efficient.
- Sustaining economic integration requires making the single market efficient, crisis-proofing financial flows, and facilitating production networks through improved public services in emerging Europe.
- To remain a global economic leader, Europe has to sustain regional integration, reduce public debt, reform social security, revamp employment protection laws, and institute policies to attract talent from around the world.





## Notes

- 1 Phelps, Edmund. "The Golden Rule of Accumulation: A Fable for Growthmen." *The American Economic Review*, Vol. 51, No. 4. (Sep., 1961), pp. 638-643.
- 2 von Weizsäcker, Carl Christian. 1962. *Wachstum, Zins und optimale Investitionsquote*, Tübingen (Mohr-Siebeck), 96 pages.
- 3 They were Tjalling Koopmans, Maurice Allais, Christian von Weizsäcker, and John von Neumann.
- 4 In an excellent account of the euro's origins and prognosis, Marsh (2009, p. 194) cites an excerpt from a 1996 speech by former Bundesbank president Hans Tietmeyer: "In a monetary union, countries have to tackle and solve their economic problems and challenges in a similar way and with similar speed. If the countries decide fundamentally different answers, then great problems will arise. Countries which implement the right solutions soon become more competitive against those which react wrongly or late." What is true of monetary union is also true for broader economic union. It is also sensible for those expected to join the eurozone to get a head start on reforms needed to make their economic structures more flexible.
- 5 Labor mobility also improves the flexibility of labor markets and is associated with lower unemployment (chapter 6). By allowing workers to move to where jobs are and their skills are in highest demand, it increases aggregate productivity. Chapter 5 hypothesizes that despite progress over the last two decades, Europe's labor markets are still too fragmented to allow leading innovation clusters such as Silicon Valley or Tokyo to emerge. Labor mobility would also help all European countries deal with their demographic challenges, by getting more of Europe's young people and workers in structurally weak regions into work.
- 6 Strictly, the flows from parents to subsidiaries include various forms of financing, and not all can be classified as FDI. There clearly is, however, a close relationship between the large equity stakes western banks took in Eastern Europe and their willingness to have large debt exposures to their subsidiaries in order to finance rapid expansion of their business. Many have acquired valuable franchises that are unlikely to be wound down. But some have come in late, or moved too aggressively into risky business areas, and may be forced to recognize losses and exit due to the need to shore up balance sheets back home.
- 7 World Bank (2012) discusses Georgia, where a legacy of poor public sector performance has begun to be overcome through radical simplification and deregulation, allowing the state to focus on essential tasks, pay public servants better, and reduce administrative corruption.
- 8 This is persuasively argued in the Report of the Polish Presidency of the Council of the European Union on rekindling economic growth in Europe (Ministry of Foreign Affairs of Poland 2011).

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# Selected Indicators

TABLE A1. BASIC INDICATORS

TABLE A2. TRADE

TABLE A3. FINANCE

TABLE A4. ENTERPRISE

TABLE A5. INNOVATION

TABLE A6. LABOR

TABLE A7. GOVERNMENT

SOURCES AND DEFINITIONS



Table A1. Basic indicators

	GNI, per capita, US\$ 2010	GDP		
		Per capita, PPP, international \$ 2010	PPP, international \$, billions 2010	Real, per capita, growth, percent 2000-10
EU15				
Austria	47,060	40,005	335	1.3
Belgium	45,910	37,600	409	1.0
Denmark	59,050	39,489	219	0.6
Finland	47,720	36,651	197	1.9
France	42,390	33,820	2,194	0.7
Germany	43,110	37,260	3,044	1.2
Greece	26,940	27,805	315	2.0
Ireland	41,000	41,188	185	1.6
Italy	35,150	31,555	1,909	0.0
Luxembourg	77,160	86,899	44	1.8
Netherlands	49,050	42,255	702	1.2
Portugal	21,880	25,610	273	0.6
Spain	31,750	32,070	1,478	1.0
Sweden	50,110	39,029	366	1.8
United Kingdom	38,370	35,904	2,234	1.1
European Free Trade Association				
Iceland	32,710	34,895	11	1.2
Liechtenstein	137,070 <sup>a</sup>	—	—	1.0 <sup>b</sup>
Norway	84,290	56,692	277	0.9
Switzerland	71,530	46,581	365	1.0
EU12				
Bulgaria	6,270	13,780	104	5.1
Cyprus	29,430	31,092	34	1.4
Czech Republic	17,890	25,283	266	3.1
Estonia	14,460	20,615	28	5.0
Hungary	12,850	20,029	200	2.4
Latvia	11,620	16,312	37	4.9
Lithuania	11,390	18,184	60	5.1
Malta	19,270	26,640	11	1.5
Poland	12,440	19,783	755	4.1
Romania	7,840	14,287	306	4.7
Slovak Republic	16,830	23,423	127	4.5
Slovenia	23,860	27,063	56	2.6
EU candidate countries				
Albania	3,960	8,817	28	5.0
Bosnia and Herzegovina	4,770	8,590	32	3.8
Croatia	13,870	19,516	86	3.1
Kosovo	3,290	—	—	5.7
Macedonia, FYR	4,570	11,159	23	2.4
Montenegro	6,750	13,016	8	3.7
Serbia	5,630	11,281	82	4.2
Turkey	9,890	15,321	1,115	2.8

Population						CO <sub>2</sub> emissions, metric tons per capita 2008
Total, thousands 2010	Working age, percent 2010	Old age, percent 2010	Total, thousands 2050	Working age, percent 2050	Old age, percent 2050	
8,214	67.6	18.1	7,521	56.4	30.1	8.1
10,423	66.2	17.8	9,883	58.1	27.7	9.8
5,516	65.5	16.6	5,575	60.3	24.6	8.4
5,255	66.6	17.2	4,820	58.2	27.3	10.6
64,768	64.9	16.5	69,768	58.9	25.5	5.9
81,644	66.0	20.6	71,542	56.3	30.1	9.6
10,750	66.4	19.4	10,036	54.8	32.1	8.7
4,623	67.7	11.3	6,334	59.9	23.3	9.9
60,749	66.1	20.1	61,416	55.6	31.0	7.4
498	66.8	14.8	721	62.8	20.6	21.5
16,783	67.7	15.2	17,334	59.3	26.0	10.6
10,736	66.0	17.8	9,933	56.2	30.6	5.3
46,506	68.1	16.9	52,491	55.2	31.2	7.2
9,074	65.2	19.3	9,085	59.5	25.7	5.3
62,348	66.3	16.3	71,154	60.8	23.6	8.5
309	67.1	12.4	351	60.0	24.2	7.0
35	69.2	14.5	36	57.5	28.5	—
4,676	66.2	15.6	4,966	59.9	25.0	10.5
7,623	68.0	16.6	7,296	57.4	29.0	5.3
7,149	68.3	17.9	4,651	53.9	33.8	6.6
1,103	73.3	10.2	1,392	61.5	25.8	7.9
10,202	70.7	15.9	8,540	54.7	33.1	11.2
1,291	67.4	17.6	862	53.7	32.2	13.6
9,992	68.3	16.7	8,490	56.7	29.9	5.4
2,218	69.6	17.0	1,544	55.9	31.2	3.3
3,545	69.7	16.3	2,788	55.7	32.0	4.5
407	69.0	15.1	396	57.2	29.7	6.2
38,464	71.7	13.5	32,085	55.4	31.7	8.3
21,959	70.3	14.8	18,060	56.1	31.3	4.4
5,470	71.7	12.6	4,944	56.7	30.0	6.9
2,003	69.9	16.6	1,597	53.6	34.0	8.5
2,987	67.3	10.3	2,824	62.8	24.0	1.3
4,622	70.9	14.9	3,892	54.4	33.8	8.3
4,487	67.8	16.9	3,864	57.0	29.6	5.3
1,815	65.9	6.6	2,223	66.3	17.0	—
2,072	69.7	11.5	1,991	59.8	26.2	5.8
667	70.7	13.5	578	54.1	32.4	3.1
7,345	68.1	16.6	5,869	58.0	29.0	6.8
77,804	66.9	6.2	100,955	63.9	19.3	4.0

	GNI, per capita, US\$ 2010	GDP		
		Per capita, PPP, international \$ 2010	PPP, international \$, billions 2010	Real, per capita, growth, percent 2000-10
Eastern partnership countries				
Armenia	3,200	5,463	17	8.1
Azerbaijan	5,330	9,943	90	13.6
Belarus	5,950	13,928	132	7.8
Georgia	2,690	5,073	23	5.9
Moldova	1,810	3,110	11	5.1
Ukraine	3,000	6,721	308	5.4
North America and Oceania				
Australia	43,590 <sup>a</sup>	39,407 <sup>a</sup>	865 <sup>a</sup>	1.7 <sup>b</sup>
Canada	43,270	38,989	1,330	1.2
New Zealand	28,770 <sup>a</sup>	29,531	129	1.2 <sup>b</sup>
United States	47,390	47,199	14,587	0.9
East Asia				
China	4,270	7,599	10,170	9.6
Indonesia	2,500	4,325	1,037	4.0
Japan	41,850	33,753	4,302	0.9
Korea, Rep.	19,890	29,004	1,418	4.1
Malaysia	7,760	14,731	418	3.0
Philippines	2,060	3,969	370	2.8
Singapore	40,070	57,936	294	3.7
Taiwan, China	19,280	35,800	828	3.6
Thailand	4,150	8,554	591	3.4
Vietnam	1,160	3,205	279	6.0
Latin America				
Argentina	8,620	16,012	647	3.1
Brazil	9,390	11,210	2,185	2.5
Chile	10,120	15,732	269	2.7
Colombia	5,510	9,462	438	2.5
Mexico	8,890	14,498	1,644	0.9
Peru	4,700	9,538	277	4.2
Uruguay	10,590	14,384	48	2.6
Venezuela, RB	11,590	12,233	353	1.7
Africa				
Algeria	4,450	8,384	297	2.0
Egypt, Arab Rep.	2,420	6,180	501	3.0
Morocco	2,850	4,712	151	3.5
South Africa	6,090	10,570	528	2.1
Tunisia	4,160	9,550	101	3.5
Other				
India	1,330	3,582	4,195	5.8
Russian Federation	9,900	19,840	2,812	5.7

a. 2009.

b. 2000-09.

— = not available.

Population						CO <sub>2</sub> emissions, metric tons per capita 2008
Total, thousands 2010	Working age, percent 2010	Old age, percent 2010	Total, thousands 2050	Working age, percent 2050	Old age, percent 2050	
2,967	71.8	10.3	2,943	61.2	25.2	1.8
8,304	70.0	6.6	9,955	65.1	18.1	5.4
9,613	71.6	14.2	7,739	57.8	29.6	6.5
4,601	68.0	16.2	3,785	58.0	28.8	1.2
4,317	73.7	10.6	3,635	58.6	28.3	1.3
45,416	70.7	15.5	33,574	57.9	29.3	7.0
21,516	67.8	13.7	29,013	61.7	22.5	18.6
33,760	68.6	15.5	41,136	58.9	26.3	16.3
4,252	66.5	13.0	5,199	60.8	23.0	7.8
310,233	66.9	13.0	439,010	60.6	20.2	17.9
1,330,141	73.4	8.6	1,303,723	59.5	26.8	5.3
242,968	66.2	6.1	313,021	64.4	18.2	1.7
126,804	64.1	22.6	93,674	52.1	37.0	9.5
48,636	72.7	11.1	43,369	53.9	35.9	10.5
28,275	65.3	4.8	42,929	63.3	16.0	7.6
99,900	60.9	4.2	171,964	64.8	11.7	0.9
5,140	78.0	7.2	8,610	64.3	23.9	6.7
23,025	73.0	10.8	20,161	55.0	34.6	11.2
66,336	70.8	9.0	69,611	59.3	26.0	4.2
89,571	68.8	5.5	111,174	63.7	20.7	1.5
41,343	63.6	10.9	53,511	62.9	18.9	4.8
201,103	66.9	6.6	260,692	62.8	19.3	2.1
16,746	67.9	9.3	19,387	62.0	22.6	4.4
44,205	66.8	6.0	56,228	64.4	19.1	1.5
112,469	64.9	6.4	147,908	62.1	19.0	4.3
28,948	64.7	6.2	36,944	65.1	17.1	1.4
3,301	63.8	13.6	3,495	62.8	21.6	2.5
27,223	64.7	5.3	40,256	64.6	15.3	6.1
34,586	70.1	5.1	44,163	62.8	21.8	3.2
80,472	62.8	4.4	137,873	64.3	13.1	2.7
31,627	65.7	6.0	42,026	62.3	18.6	1.5
49,109	65.9	5.5	49,401	66.8	11.4	8.9
10,525	69.2	7.4	12,180	59.3	24.3	2.4
1,173,108	64.6	5.3	1,656,554	65.5	14.7	1.5
139,390	71.7	13.3	109,187	59.0	26.4	12.0

Table A2. Trade

	Exports, percentage of GDP				
	Goods			Services	
	Consumption 2009–10 <sup>a</sup>	Intermediate 2009–10 <sup>a</sup>	Capital 2009–10 <sup>a</sup>	Traditional 2010	Modern 2010
EU15					
Austria	7.1	20.0	6.9	8.8	5.6
Belgium	22.4	44.8	7.2	8.1	9.9
Denmark	9.8	11.8	5.1	9.3 <sup>d</sup>	5.5 <sup>d</sup>
Finland	2.0	15.7	6.7	3.0	8.6
France	5.1	8.8	3.8	3.5	2.1
Germany	6.0	16.9	7.6	3.2	3.9
Greece	2.7	2.8	0.4	11.1	1.2
Ireland	20.4	27.3	5.0	4.3	43.2
Italy	6.2	9.7	3.8	2.6	2.1
Luxembourg	3.6	17.6	2.4	17.0	105.3
Netherlands	11.9	18.7	7.9	5.3	6.5
Portugal	6.7	9.9	1.7	7.5	2.5
Spain	4.9	7.6	1.7	5.6	3.1
Sweden	5.9	15.7	5.6	4.7	9.5
United Kingdom	4.0	8.1	2.3	3.1	7.4
European Free Trade Association					
Iceland	15.0	19.4	1.4	13.9	5.7
Liechtenstein	—	—	—	—	—
Norway	2.7	24.8	1.5	5.1	4.5
Switzerland	13.6	17.5	5.3	3.9	11.7
EU12					
Bulgaria	10.3	22.7	3.1	11.0	3.5
Cyprus	2.9	2.1	0.5	18.0	16.7
Czech Republic	9.8	34.3	13.1	6.7	4.5
Estonia	11.9	29.0	7.9	15.5	7.1
Hungary	14.7	31.6	17.4	8.3	6.4
Latvia	9.4	20.9	2.9	10.6	4.6
Lithuania	15.2	21.2	5.2	9.7	1.4
Malta	5.6	18.0	1.8	34.3	12.9
Poland	10.1	13.9	3.9	4.2	2.7
Romania	6.3	15.7	4.4	2.7	2.5
Slovak Republic	17.7	32.8	8.8	4.9	1.8
Slovenia	12.8	25.7	4.6	9.2	3.6
EU candidate countries					
Albania	4.5	8.2	0.2	16.4	2.2
Bosnia and Herzegovina	6.3	18.6	0.9	6.3	1.4
Croatia	4.6	8.7	3.9	15.4	2.8
Kosovo	—	—	—	7.5	3.3
Macedonia, FYR	11.6	7.0	0.6	5.8	4.1
Montenegro	—	—	—	22.0	2.7
Serbia	6.6	15.8	1.5	5.1	4.0
Turkey	5.2	6.6	1.6	4.3	0.3



Imports, percentage of GDP				
Goods			Services	
Consumption 2009-10 <sup>a</sup>	Intermediate 2009-10 <sup>a</sup>	Capital 2009-10 <sup>a</sup>	Traditional 2010	Modern 2010
8.8	20.6	5.3	6.3	3.4
18.8	45.8	7.3	8.8	8.1
8.2	11.0	4.4	8.9 <sup>d</sup>	4.8 <sup>d</sup>
5.2	15.5	3.7	4.4	6.7
5.7	11.6	3.3	3.1	2.0
5.9	16.6	4.5	4.5	3.4
6.1	9.6	3.2	4.7	1.8
8.2	11.6	4.6	4.8	47.6
4.8	13.8	2.4	2.6	2.7
8.2	14.6	4.4	12.6	55.3
9.6	19.2	6.3	5.3	5.6
8.2	17.0	3.4	3.9	2.3
5.6	12.0	2.3	3.0	3.2
6.9	16.1	4.5	4.9	5.4
6.6	10.7	3.2	3.7	3.6
7.3	15.3	3.8	9.5	7.8
—	—	—	—	—
4.3	8.1	3.7	6.3	3.9
10.5	14.8	4.7	3.8	3.8
9.6	31.1	5.8	5.7	3.7
11.7	10.3	4.4	10.8	2.7
10.4	38.7	9.7	4.7	4.7
13.4	27.9	7.4	8.7	5.3
8.9	37.8	8.2	5.7	6.4
12.6	19.3	4.9	5.8	3.4
13.1	39.0	6.4	6.2	1.3
15.6	19.5	7.4	10.2	20.6
6.5	18.6	5.5	3.4	2.8
6.5	22.2	5.3	3.2	2.5
13.1	47.9	9.2	5.1	2.7
11.2	29.2	6.0	4.8	4.2
11.4	18.2	3.8	14.7	2.3
14.4	29.4	5.1	2.6	0.8
8.3	17.2	4.4	2.5	3.1
—	—	—	7.0	4.0
11.1	22.1	6.2	4.8	4.0
—	—	—	5.4	4.2
6.4	21.8	4.2	5.7	3.3
2.3	14.2	3.9	1.8	0.6

	Exports, percentage of GDP				
	Goods			Services	
	Consumption 2009-10 <sup>a</sup>	Intermediate 2009-10 <sup>a</sup>	Capital 2009-10 <sup>a</sup>	Traditional 2010	Modern 2010
<b>Eastern partnership countries</b>					
Armenia	2.0	8.4	0.2	6.3	1.7
Azerbaijan	0.9	35.5	0.4	2.7	0.9
Belarus	8.4	17.8	5.8	6.6	1.6
Georgia	2.9	8.0	0.7	11.8	1.2
Moldova	15.8	9.4	1.3	7.2	4.0
Ukraine	5.7	26.2	3.4	8.8	3.3
<b>North America and Oceania</b>					
Australia	1.6	13.5	0.5	3.2 <sup>c</sup>	1.0 <sup>c</sup>
Canada	2.4	15.6	2.0	1.9	2.4
New Zealand	11.5	8.2	1.2	4.9	1.2
United States	1.1	4.4	1.5	1.4	2.1
<b>East Asia</b>					
China	7.4	9.6	7.8	1.6	1.3
Indonesia	3.3	17.3	1.3	1.4	0.8
Japan	0.6	7.1	3.3	1.2	1.4
Korea, Rep.	1.9	20.0	14.3	6.0	2.1
Malaysia	10.4	56.4	11.3	11.3 <sup>b</sup>	3.6 <sup>b</sup>
Philippines	3.1	17.2	6.6	2.3	4.7
Singapore	11.5	84.9	18.7	21.6	28.7
Taiwan, China	—	—	—	—	—
Thailand	13.7	30.1	11.9	8.2	2.4
Vietnam	30.6	23.8	4.9	—	—
<b>Latin America</b>					
Argentina	3.1	12.1	1.2	2.0	1.5
Brazil	1.4	6.7	0.8	0.5	0.9
Chile	6.3	25.1	0.4	4.0	1.2
Colombia	2.0	10.4	0.2	1.2	0.3
Mexico	5.6	12.8	6.6	1.3	0.2
Peru	2.7	18.6	0.1	2.0	0.4
Uruguay	8.1	8.5	0.2	4.8	1.3
Venezuela, RB	0.0	11.6	0.1	0.4	0.1
<b>Africa</b>					
Algeria	0.2	30.2	0.0	0.9 <sup>b</sup>	1.1 <sup>b</sup>
Egypt, Arab Rep.	3.3	7.2	0.1	9.7 <sup>b</sup>	1.6 <sup>b</sup>
Morocco	6.6	9.9	0.4	8.6	3.1
South Africa	2.0	14.8	1.7	3.0	0.8
Tunisia	13.1	16.4	1.9	10.5	1.8
<b>Other</b>					
India	3.9	6.1	1.1	1.8	6.2
Russian Federation	0.5	18.3	0.5	1.8	1.2

a. Data for the most recent available year. b. 2009. c. 2008. d. 2004. — = not available.

Imports, percentage of GDP				
Goods			Services	
Consumption 2009-10 <sup>a</sup>	Intermediate 2009-10 <sup>a</sup>	Capital 2009-10 <sup>a</sup>	Traditional 2010	Modern 2010
9.6	18.8	5.5	9.2	1.3
2.1	6.2	2.7	3.5	3.3
6.9	42.7	7.7	4.0	1.2
13.0	15.7	5.2	6.6	1.9
19.2	23.2	7.6	9.9	2.6
8.4	26.5	4.7	5.7	2.9
3.4	6.0	3.1	3.3 <sup>c</sup>	1.2 <sup>c</sup>
5.1	12.1	4.5	3.4	2.4
5.4	8.9	3.6	4.2	2.0
3.0	6.1	2.2	1.1	1.4
0.7	17.1	4.0	2.1	1.2
1.2	11.3	3.8	2.2	1.4
2.5	7.9	1.3	1.5	1.3
2.8	28.1	5.2	4.9	4.3
5.1	47.8	10.4	9.2 <sup>b</sup>	5.0 <sup>b</sup>
3.4	22.2	2.6	4.5	1.4
11.5	77.0	17.6	20.7	22.5
—	—	—	—	—
4.0	42.9	7.8	8.9	5.4
5.9	43.6	14.4	—	—
1.8	7.8	3.0	2.4	1.3
0.8	5.1	1.5	1.4	1.5
4.0	11.4	5.0	4.2	1.4
2.1	6.5	3.5	1.7	1.1
3.2	16.7	4.8	1.0	1.1
2.7	10.5	4.2	2.5	1.3
4.0	11.2	3.8	2.6	0.8
3.2	5.6	2.7	2.3	1.2
3.6	14.2	6.3	4.6 <sup>b</sup>	3.4 <sup>b</sup>
3.5	14.7	3.2	4.5 <sup>b</sup>	2.2 <sup>b</sup>
3.6	20.9	5.1	3.7	1.8
3.1	10.6	4.2	3.6	1.5
5.3	26.3	7.0	5.8	1.4
0.9	16.0	2.6	3.8	3.7
4.4	5.3	3.5	3.0	1.8

Table A3. Finance

	Private sector credit by domestic banks, percentage of GDP 2010	Cross-border banking flows, percentage of GDP 2010	Loan-to-deposit ratio, percent 2010	Foreign bank assets, percentage of total banking assets 2009	Foreign assets plus liabilities, percentage of GDP 2007
<b>EU15</b>					
Austria	122.3	7.3	141.4	20	583.0
Belgium	95.4	16.8	108.5	50	1,016.8
Denmark	218.3	16.2	404.5	20	462.0
Finland	94.3	8.8	158.3	65	479.9
France	114.5	10.0	163.0	6	581.1
Germany	107.0	11.4	114.0	12	412.3
Greece	114.3	10.6	152.5	14	277.1
Ireland	215.0	128.8	222.8	56	2,573.1
Italy	122.5	2.2	170.9	6	281.6
Luxembourg	179.3	366.8	57.1	95	24,380.3
Netherlands	199.3	32.7	163.3	2	972.6
Portugal	190.8	7.6	166.2	15	485.3
Spain	211.2	6.9	147.5	2	360.1
Sweden	135.8	13.6	246.7	0	512.1
United Kingdom	204.0	34.1	115.2	15	932.6
<b>European Free Trade Association</b>					
Iceland	107.4	20.3	175.8	—	1,160.3
Liechtenstein	—	—	—	—	—
Norway	87.0 <sup>b</sup>	7.9	176.7 <sup>b</sup>	16	462.5
Switzerland	176.0	27.1	125.6	5	1,357.1
<b>EU12</b>					
Bulgaria	74.2	19.5	131.2	79	240.9
Cyprus	283.5	120.9	119.3	19	838.1
Czech Republic	55.0	8.5	112.1	86	179.5
Estonia	97.2	10.4	176.6	99	298.7
Hungary	68.8	15.2	189.5	64	387.1
Latvia	96.0	12.1	236.7	66	248.7
Lithuania	65.2	5.4	166.3	92	158.7
Malta	131.3	114.6	109.8	—	1,275.3
Poland	52.7	6.4	137.6	68	128.7
Romania	40.3	12.3	157.7	85	112.7
Slovak Republic	48.1	9.3	124.5	88	157.9
Slovenia	92.9	21.2	182.3	25	240.1
<b>EU candidate countries</b>					
Albania	37.8	4.6	98.5	93	81.1
Bosnia and Herzegovina	56.8	6.5	127.3	93	133.0
Croatia	70.1	31.6	137.1	91	209.7
Kosovo	34.2	—	85.6	—	—
Macedonia, FYR	45.3	4.6	99.0	70	138.0
Montenegro	68.6	19.0	151.9	87	—
Serbia	50.5	12.2	147.0	75	161.9
Turkey	43.9	9.7	139.1	14	100.8

Net debt, percentage of GDP 2007	Current account balance, percentage of GDP 2010	Capital flows, net, percentage of GDP			
		Total 2010	FDI 2010	Portfolio 2010	Other 2010
-14.6	3.2	-3.5	-2.3	1.4	-2.6
10.0	1.2	-0.8	-16.8	9.5	6.5
-37.7	5.0	2.4	-1.5	-0.3	4.1
3.1	3.1	-2.6	-1.9	-4.4	3.7
-10.7	-2.1	0.1	-3.3	8.3	-4.8
14.0	5.3	-4.1	-1.7	-5.0	2.7
-71.9	-10.4	9.5	0.3	-9.1	18.2
193.9	-0.7	9.0	5.3	61.5	-57.8
-36.9	-3.5	5.8	-0.7	2.5	4.1
3,008.4	7.7	—	—	—	—
-15.9	7.1	-6.7	-3.7	-3.6	0.6
-68.6	-9.9	9.7	4.4	-5.6	10.8
-66.7	-4.5	4.4	0.1	3.3	1.0
-33.7	6.5	-7.4	-2.0	1.3	-6.8
-36.0	-2.5	2.4	-0.7	3.6	-0.5
-241.9	-8.0	27.5	9.0	2.4	16.1
—	—	—	—	—	—
22.5	12.9	-9.7	0.3	-4.7	-5.3
109.6	14.2	10.7	-4.3	-3.3	18.3
1.2	-0.8	-1.1	3.4	-1.7	-2.8
34.6	-7.0	6.8	3.5	-5.0	8.3
14.2	-2.4	4.9	2.6	4.2	-1.9
-32.7	3.6	-13.2	6.2	-2.0	-17.4
-40.9	1.6	0.8	-0.4	0.5	0.7
-46.1	3.6	6.2	1.4	-0.8	5.6
-27.3	1.8	-2.6	1.4	5.1	-9.2
76.2	-0.6	-0.9	7.0	-18.5	10.6
-15.7	-3.3	8.7	1.1	5.8	1.8
-11.2	-4.2	7.5	2.0	0.5	4.9
-3.5	-3.4	2.7	1.8	0.8	0.2
-15.0	-1.2	1.1	1.4	5.1	-5.4
14.6	-10.1	11.0	6.8	0.0	4.2
0.7	-6.0	6.0	1.2	0.0	4.9
-29.5	-1.9	-3.7	2.7	2.5	-8.9
—	-17.3	—	—	—	—
-3.3	-2.8	3.2	3.2	-0.9	1.0
—	-25.6	21.5	17.9	0.3	3.3
-14.5	-7.1	3.6	2.9	0.2	0.4
-17.0	-6.5	7.7	1.0	2.2	4.6

	Private sector credit by domestic banks, percentage of GDP 2010	Cross-border banking flows, percentage of GDP 2010	Loan-to-deposit ratio, percent 2010	Foreign bank assets, percentage of total banking assets 2009	Foreign assets plus liabilities, percentage of GDP 2007
<b>Eastern partnership countries</b>					
Armenia	25.7	1.5	179.1	79	84.0
Azerbaijan	18.1	4.1	188.7	3	88.7
Belarus	42.7	1.9	227.9	18	54.9
Georgia	32.4	2.1	148.1	64	122.2
Moldova	33.3	1.9	109.4	49	152.2
Ukraine	61.7	4.5	198.0	56	140.8
<b>North America and Oceania</b>					
Australia	125.4	4.9	142.3	2	258.1
Canada	128.3 <sup>a</sup>	4.6	143.9 <sup>a</sup>	5	219.7
New Zealand	146.7	4.5	169.1	79	233.2
United States	56.9	9.0	120.6	18	278.7
<b>East Asia</b>					
China	131.1	1.1	85.8	1	112.7
Indonesia	26.0	3.6	97.1	32	86.8
Japan	102.0	2.6	104.1	0	193.9
Korea, Rep.	100.3	2.5	147.0	19	135.3
Malaysia	114.8	4.7	107.7	18	222.1
Philippines	24.9	5.0	91.3	1	132.2
Singapore	102.1	17.6	103.7	2	1,038.9
Taiwan, China	—	2.9	—	—	336.8
Thailand	97.0	3.3	119.4	6	141.8
Vietnam	125.0	6.7	125.1	2	129.8
<b>Latin America</b>					
Argentina	14.2	2.5	116.9	28	147.6
Brazil	52.3	3.2	151.7	21	102.7
Chile	72.7	10.5	140.8	34	199.8
Colombia	35.2	2.2	212.3	9	81.7
Mexico	18.7	5.6	152.3	75	83.7
Peru	24.6	5.5	87.5	50	123.9
Uruguay	22.3	9.1	68.4	55	174.5
Venezuela, RB	18.7	1.7	88.1	17	115.4
<b>Africa</b>					
Algeria	15.3	0.7	85.0	14	104.1
Egypt, Arab Rep.	33.1	3.8	98.8	23	122.5
Morocco	82.3	4.9	119.5	34	134.3
South Africa	72.6	2.9	149.6	22	174.6
Tunisia	65.4	4.3	130.2	25	169.9
<b>Other</b>					
India	49.0	4.1	105.3	5	85.4
Russian Federation	42.9	4.0	121.8	12	179.3

a. 2008.

b. 2006.

— = not available.

Net debt, percentage of GDP 2007	Current account balance, percentage of GDP 2010	Capital flows, net, percentage of GDP			
		Total 2010	FDI 2010	Portfolio 2010	Other 2010
4.2	-13.7	11.0	8.1	0.0	3.0
8.2	27.7	-24.8	0.1	-0.1	-24.8
-8.2	-15.5	12.9	2.3	2.2	8.4
-15.7	-9.8	10.0	4.3	2.4	3.4
-19.4	-10.9	11.9	2.9	0.1	8.9
4.6	-1.9	6.7	4.2	3.1	-0.6
-52.2	-2.6	2.6	0.4	5.4	-3.2
-19.4	-3.1	3.4	-1.0	6.4	-2.0
-59.7	-2.2	2.4	0.1	2.3	0.1
-39.4	-3.2	1.6	-1.0	4.5	-1.9
52.3	5.2	2.8	2.2	0.2	0.4
-17.0	0.9	3.7	1.4	2.2	0.2
55.8	3.6	-2.6	-1.1	-2.8	1.3
3.4	2.8	0.2	-1.9	3.8	-1.7
53.1	11.8	-2.9	-2.0	5.9	-6.8
-5.6	4.5	4.3	0.6	2.1	1.5
150.4	22.2	-3.0	8.5	-9.8	-1.6
109.0	9.4	-0.3	-2.0	-4.8	6.5
32.3	4.6	4.9	0.4	2.7	1.8
8.8	-3.8	13.0	5.9	2.3	4.8
19.2	0.9	-0.1	1.3	2.4	-3.7
1.2	-2.3	4.7	1.8	2.8	0.2
7.5	1.9	-2.9	3.1	-3.9	-2.1
0.1	-3.1	4.2	0.9	1.0	2.3
-0.6	-0.5	3.5	0.5	3.6	-0.6
0.2	-1.5	8.4	4.7	1.9	1.8
10.1	0.5	-1.2	3.2	-3.1	-1.4
46.9	4.9	-5.2	-0.1	1.1	-6.2
86.3	9.4	1.5	1.5	0.0	0.0
36.2	-2.0	6.0	2.6	3.4	-0.1
24.0	-4.2	4.2	0.2	0.0	3.9
4.5	-2.8	3.1	0.3	3.0	-0.3
-28.1	-4.8	4.0	3.1	-0.1	0.9
7.5	-3.2	4.9	1.5	2.2	1.2
20.9	4.9	-1.5	-0.2	0.0	-1.3





Services			Doing Business, index 0-100			
Level		CAGR percent	Total 2011	Start-up 2011	Operations 2011	Institutions 2011
1995	2009					
64.9	71.0	0.6	77.1	86.9	83.2	75.6
77.2	81.5	0.4	80.9	87.6	83.4	79.4
71.3	76.2	0.5	91.3	97.5	96.9	75.1
60.0	64.2	0.5	82.2	96.9	84.3	74.2
79.2	81.4	0.2	73.7	80.7	81.7	73.7
67.5	70.3	0.3	74.0	82.6	81.1	75.8
50.6	61.4	1.4	55.8	71.1	69.1	50.4
71.3	80.4	0.9	89.2	92.0	90.2	90.6
80.6	73.7	-0.6	64.4	82.6	75.1	48.2
160.2	188.7	1.2	64.3	76.8	74.7	63.4
64.3	71.9	0.8	76.6	91.6	81.2	71.0
36.4	41.3	0.9	71.2	91.7	76.3	64.4
63.1	56.0	-0.9	66.2	83.7	72.6	63.4
62.7	69.4	0.7	82.9	94.9	88.3	72.5
58.0	71.1	1.5	90.2	90.7	91.9	91.9
60.9	81.2 <sup>a</sup>	2.2	79.2	95.7	77.7	79.6
—	—	—	—	—	—	—
72.1	86.1	1.3	82.6	98.9	83.3	76.3
82.0	91.2	0.8	76.7	86.5	86.4	66.6
7.5 <sup>k</sup>	9.8	2.1	68.9	79.8	74.4	71.4
33.8	36.1 <sup>a</sup>	0.5	68.9	83.5	78.3	58.0
20.8	27.1 <sup>a</sup>	2.0	70.3	81.9	78.9	69.0
12.0	24.3 <sup>a</sup>	5.6	74.9	86.2	82.8	71.1
19.7	26.2 <sup>a</sup>	2.2	68.6	84.5	74.7	65.6
9.8	16.5	3.8	75.2	86.6	77.3	83.6
10.4	17.6	3.8	73.6	88.6	77.7	74.3
26.9 <sup>j</sup>	30.0	0.9	—	—	—	—
17.5	23.2	2.0	68.2	77.1	75.3	71.1
14.0	18.8	2.1	61.6	78.2	64.0	77.2
21.5	22.6	0.4	67.3	85.7	71.5	69.4
33.1	42.5 <sup>a</sup>	1.9	65.7	88.2	69.6	59.1
8.5	13.4 <sup>d</sup>	4.7	58.5	79.2	59.2	74.3
6.1 <sup>g</sup>	6.9	1.6	55.4	72.3	66.3	59.0
19.8 <sup>k</sup>	26.6	2.3	57.4	77.7	64.6	60.6
—	—	—	56.1	78.0	66.9	45.6
10.8 <sup>f</sup>	11.0 <sup>a</sup>	0.3	76.7	87.0	81.1	75.6
11.3 <sup>b</sup>	14.0 <sup>b</sup>	3.1	70.8	81.4	78.9	65.1
8.1 <sup>e</sup>	11.8 <sup>a</sup>	9.9	61.3	76.8	68.4	67.5
23.4	25.5	0.6	61.2	78.1	69.9	63.6

	Labor productivity, constant 2005 US\$, thousands					
	Total			Industry		
	Level		CAGR percent	Level		CAGR percent
	1995	2009		1995	2009	
Eastern partnership countries						
Armenia	1.5	6.3	10.6	2.0	10.1	12.2
Azerbaijan	2.8	8.7 <sup>a</sup>	9.2	5.2	32.7 <sup>a</sup>	15.2
Belarus	3.1	7.8	6.9	2.7	10.2	9.9
Georgia	2.9 <sup>i</sup>	6.6 <sup>b</sup>	9.5	4.5 <sup>i</sup>	9.4 <sup>b</sup>	8.5
Moldova	1.6 <sup>k</sup>	2.7 <sup>a</sup>	4.4	1.8 <sup>k</sup>	1.4 <sup>a</sup>	-2.4
Ukraine	5.5	4.7 <sup>a</sup>	-1.2	2.6	6.1 <sup>a</sup>	6.8
North America and Oceania						
Australia	52.9	64.1 <sup>a</sup>	1.5	67.6	78.7 <sup>a</sup>	1.2
Canada	58.5	66.2 <sup>c</sup>	1.1	88.3	94.6 <sup>c</sup>	0.6
New Zealand	45.9	50.7 <sup>c</sup>	0.9	47.8	53.1 <sup>c</sup>	1.0
United States	68.8	84.6 <sup>a</sup>	1.6	66.8	90.7 <sup>a</sup>	2.4
East Asia						
China	2.3	6.1 <sup>a</sup>	7.8	2.6	7.3 <sup>a</sup>	8.3
Indonesia	4.2	4.7	0.8	6.9	7.9	1.0
Japan	65.7	76.3 <sup>a</sup>	1.2	59.6	80.2 <sup>a</sup>	2.3
Korea, Rep.	26.3	38.1 <sup>a</sup>	2.9	24.5	55.9 <sup>a</sup>	6.6
Malaysia	11.8	15.3	1.9	16.8	23.6	2.4
Philippines	4.1	4.7	0.9	6.3	7.8	1.5
Singapore	41.6	58.1	2.4	44.5	80.2	4.3
Taiwan, China	34.0 <sup>g</sup>	39.7 <sup>a</sup>	2.2	21.7 <sup>g</sup>	29.0 <sup>a</sup>	4.2
Thailand	7.7	7.8	0.1	8.4	11.3	2.1
Vietnam	2.0 <sup>k</sup>	2.0 <sup>b</sup>	0.1	2.4 <sup>k</sup>	2.5 <sup>b</sup>	0.3
Latin America						
Argentina	10.6	11.1	0.3	15.0	17.9	1.3
Brazil	10.6	10.6	0.0	13.6	11.3	-1.3
Chile	17.1	20.0	1.1	25.6	31.0	1.4
Colombia	8.5	11.0	1.9	11.6	15.4	2.0
Mexico	21.9	21.5	-0.1	27.0	26.3	-0.2
Peru	5.4	7.7 <sup>a</sup>	2.7	7.4	12.6 <sup>a</sup>	4.1
Uruguay	10.9	11.5 <sup>b</sup>	0.4	10.6	14.6 <sup>b</sup>	2.7
Venezuela, RB	18.5	13.4 <sup>d</sup>	-3.2	43.8	34.6 <sup>d</sup>	-2.3
Africa						
Algeria	10.9 <sup>g</sup>	10.1 <sup>e</sup>	-2.5	23.7 <sup>g</sup>	20.5 <sup>e</sup>	-4.7
Egypt, Arab Rep.	4.2	5.7 <sup>a</sup>	2.4	5.6	7.3 <sup>a</sup>	2.1
Morocco	4.0	8.5 <sup>a</sup>	5.9	3.7	7.5 <sup>a</sup>	5.6
South Africa	16.9 <sup>h</sup>	18.5	1.0	20.0 <sup>h</sup>	21.5	0.8
Tunisia	10.8 <sup>d</sup>	12.1	2.8	8.8 <sup>d</sup>	9.8	2.5
Other						
India	2.8 <sup>h</sup>	3.5 <sup>d</sup>	4.2	2.5 <sup>h</sup>	2.8 <sup>d</sup>	2.0
Russian Federation	7.6	11.8	3.3	7.3	13.2	4.3

a. 2008.

b. 2007.

c. 2006.

d. 2005.

e. 2004.

f. 2002.

g. 2001.

h. 2000.

i. 1998.

j. 1997.

k. 1996.

— = not available.

Services			Doing Business, index 0-100			
Level		CAGR percent	Total 2011	Start-up 2011	Operations 2011	Institutions 2011
1995	2009					
1.2	4.7	10.2	66.9	90.2	70.4	58.9
1.6	2.5 <sup>a</sup>	3.5	55.4	83.9	50.9	72.1
3.3	6.3	4.7	57.7	82.8	60.4	67.6
2.5 <sup>i</sup>	5.8 <sup>b</sup>	9.7	82.2	89.8	87.2	79.5
1.5 <sup>k</sup>	3.2 <sup>a</sup>	6.4	57.0	81.9	57.6	71.5
11.3	4.2 <sup>a</sup>	-7.3	44.6	63.1	49.4	72.1
48.2	59.9 <sup>a</sup>	1.7	85.8	94.1	88.3	80.6
49.7	58.0 <sup>c</sup>	1.4	89.4	97.4	90.1	79.2
45.1	49.9 <sup>c</sup>	0.9	92.4	100.0	88.7	96.5
69.4	83.0 <sup>a</sup>	1.4	90.7	93.2	92.3	90.4
2.1	5.2 <sup>a</sup>	7.3	59.7	74.0	69.7	67.0
2.9	3.3	0.8	51.8	67.4	72.3	44.4
69.1	74.7 <sup>a</sup>	0.6	82.8	89.7	86.9	80.6
27.4	31.5 <sup>a</sup>	1.1	82.6	89.8	87.4	79.1
8.3	11.5	2.3	80.7	84.8	82.3	92.9
3.3	3.8	1.1	49.4	58.1	71.9	48.3
40.3	51.8	1.8	100.0	98.9	100.0	100.0
42.2 <sup>g</sup>	46.7 <sup>a</sup>	1.4	70.1	94.3	74.2	58.0
7.2	6.0	-1.3	76.4	81.1	86.7	73.4
1.7 <sup>k</sup>	1.6 <sup>b</sup>	-0.5	60.0	73.7	72.2	65.7
9.0	9.0	0.0	55.9	69.9	67.0	61.7
9.5	10.4	0.6	38.4	60.1	48.7	51.4
13.3	16.1	1.4	68.4	77.2	79.4	68.9
7.0	9.5	2.2	71.6	88.3	75.2	62.2
19.8	19.6	-0.1	69.4	82.9	75.1	68.9
4.7	6.3 <sup>a</sup>	2.2	67.3	82.1	73.4	71.4
11.1	10.5 <sup>b</sup>	-0.4	58.7	79.7	65.1	57.2
9.0	6.9 <sup>d</sup>	-2.6	10.1	54.5	19.9	37.3
5.2 <sup>g</sup>	5.0 <sup>e</sup>	-1.4	48.0	69.6	60.0	47.8
3.5	4.8 <sup>a</sup>	2.6	56.7	74.5	69.7	51.8
4.2	9.0 <sup>a</sup>	6.0	58.5	77.3	68.7	55.6
15.6 <sup>h</sup>	17.4	1.2	65.3	79.8	62.8	87.8
12.1 <sup>d</sup>	13.6	2.9	66.9	82.3	77.4	59.4
3.0 <sup>h</sup>	4.0 <sup>d</sup>	5.7	50.0	67.7	63.7	50.1
7.7	11.2	2.7	49.1	81.3	48.9	61.7

Table A5. Innovation

	Enrollment in doctorate level, per 1,000 population ages 25–34 2005–10 <sup>a</sup>	Tertiary education attainment, percentage of population ages 30–34		R&D expenditure, percentage of GDP	
		IIASA/VID 2010	IUS	Public 2005–10 <sup>a</sup>	Business 2005–10 <sup>a</sup>
EU15					
Austria	18.2	20.5	23.5	0.8	1.9
Belgium	9.7	42.0	42.0	0.6	1.3
Denmark	10.7	32.9	48.1	1.0	2.0
Finland	31.6	47.2	45.9	1.1	2.7
France	8.8	39.4	43.3	0.8	1.4
Germany	—	29.1	29.4	0.9	1.9
Greece	13.5	28.3	26.5	0.4	0.2
Ireland	9.1	44.1	49.0	0.6	1.2
Italy	4.9	16.8	19.0	0.6	0.7
Luxembourg	—	25.5	46.6	0.4	1.2
Netherlands	3.8	29.1	40.5	1.0	0.9
Portugal	9.5	30.0	21.1	0.7	0.8
Spain	10.3	15.4	39.4	0.7	0.7
Sweden	18.4	29.3	43.9	1.1	2.6
United Kingdom	10.3	35.1	41.5	0.7	1.1
European Free Trade Association					
Iceland	6.4	—	41.8	1.1	1.4
Liechtenstein	7.1	—	—	—	—
Norway	12.2	38.1	47.0	0.9	0.9
Switzerland	19.4	—	43.5	0.7	2.2
EU12					
Bulgaria	3.7	27.9	27.9	0.4	0.2
Cyprus	2.3	24.7	44.7	0.3	0.1
Czech Republic	15.3	16.1	17.5	0.6	0.9
Estonia	13.2	22.0	35.9	0.8	0.6
Hungary	4.5	18.7	23.9	0.5	0.7
Latvia	6.4	23.1	30.1	0.3	0.2
Lithuania	5.7	21.4	40.6	0.6	0.2
Malta	1.2	21.1	21.1	0.2	0.3
Poland	5.1	23.4	32.8	0.5	0.2
Romania	7.7	14.2	16.8	0.3	0.2
Slovak Republic	11.3	17.1	17.6	0.3	0.2
Slovenia	6.6	24.9	31.6	0.7	1.2
EU candidate countries					
Albania	—	—	—	0.2	—
Bosnia and Herzegovina	—	—	—	0.0	—
Croatia	4.9	15.0	20.5	0.5	0.3
Kosovo	—	—	—	—	—
Macedonia, FYR	0.7	14.7	14.3	0.2	0.1
Montenegro	—	—	—	1.1	0.1
Serbia	2.8	—	19.2	0.8	0.1
Turkey	2.7	12.5	14.7	0.5	0.3

Patent applications, per billions of GDP		Medium- and high-tech product exports, percentage of goods exports 2009-10 <sup>a</sup>	Knowledge-intensive services exports, percentage of services exports 2008-10 <sup>a</sup>	Royalties and license fees from abroad, percentage of GDP 2008-10 <sup>a</sup>	Public tertiary education spending, percentage of GDP 2005-10 <sup>a</sup>
PPP\$ 2005-09 <sup>a</sup>	PP\$€ IUS				
7.9	5.0	52.4	46.3	0.17	1.1
2.1	3.7	48.1	63.4	0.46	1.2
7.9	8.0	37.8	—	0.74	1.6
10.3	10.0	45.6	46.6	0.98	1.6
7.5	3.9	58.6	19.8	0.40	1.1
20.0	7.7	63.2	61.3	0.43	0.9
2.2	0.4	28.6	9.2	0.02	1.4
5.4	2.6	49.3	80.5	1.10	1.1
5.0	2.1	50.4	43.8	0.18	0.7
2.0	1.2	31.6	71.9	0.87	—
4.2	6.4	40.5	58.7	0.67	1.1
1.5	0.5	36.6	38.7	0.02	0.8
2.6	1.3	49.2	41.1	0.06	1.0
7.8	11.0	51.0	27.1	1.35	1.4
10.3	3.5	50.6	66.5	0.64	0.4
7.4	3.0	12.2	19.1	0.00	1.2
—	—	—	—	—	0.2
18.7	3.1	14.2	69.8	0.12	1.2
5.9	9.1	63.6	54.7	2.46	1.2
2.5	0.4	25.7	40.7	0.07	0.8
0.5	0.5	40.0	48.9	0.04	0.9
3.3	1.0	62.1	56.8	0.06	0.9
3.6	2.0	34.5	53.7	0.10	1.0
3.9	1.5	68.0	40.2	0.80	0.9
4.4	0.7	28.4	62.3	0.05	0.9
1.9	0.3	31.8	54.2	0.00	0.9
2.8	1.3	71.3	29.9	0.36	0.4
4.3	0.3	52.4	58.2	0.05	0.9
3.6	0.1	50.7	66.4	0.29	1.1
1.9	0.5	62.3	51.1	0.05	0.6
6.8	2.6	56.9	43.7	0.14	0.9
—	—	11.6	21.7	0.01	—
2.2	—	17.1	34.0	0.09	—
3.6	0.9	45.1	18.9	0.05	0.8
—	—	—	26.6	0.02	—
19.7	0.1	13.3	53.3	0.08	0.5 <sup>c</sup>
105.8	—	—	18.1	0.08	—
4.3	—	26.1	57.1	0.10	—
2.7	0.7	38.6	26.8	0.00	0.7 <sup>b</sup>

	Enrollment in doctorate level, per 1,000 population ages 25–34 2005–10 <sup>a</sup>	Tertiary education attainment, percentage of population ages 30–34		R&D expenditure, percentage of GDP	
		IIASA/VID 2010	IUS	Public 2005–10 <sup>a</sup>	Business 2005–10 <sup>a</sup>
Eastern partnership countries					
Armenia	2.8	27.4	—	0.3	—
Azerbaijan	1.3	—	—	0.2	0.1
Belarus	2.9	—	—	0.2	0.3
Georgia	2.5	—	—	0.2	—
Moldova	2.5	—	—	0.5	0.1
Ukraine	5.0	22.6	—	0.4	0.5
North America and Oceania					
Australia	14.5	33.9	—	0.9	1.4
Canada	8.1	50.2	—	0.9	1.1
New Zealand	13.4	31.3	—	0.7	0.5
United States	11.0	32.9	54.4	0.7	2.0
East Asia					
China	8.7	9.3	9.0	0.4	1.1
Indonesia	1.9	11.7	—	0.0	—
Japan	4.5	52.7	56.7	0.7	2.7
Korea, Rep.	6.6	48.3	—	0.8	2.5
Malaysia	3.2	22.2	—	0.1	0.5
Philippines	0.5	29.6	—	0.0	0.1
Singapore	6.9	50.9	—	0.7	1.9
Taiwan, China	—	—	—	—	—
Thailand	2.1	24.5	—	0.1	0.1
Vietnam	3.5	7.0	—	0.2 <sup>c</sup>	0.0 <sup>c</sup>
Latin America					
Argentina	2.0	18.9	—	0.4	0.1
Brazil	1.7	10.6	11.9	0.5 <sup>b</sup>	0.4 <sup>b</sup>
Chile	1.5	35.1	—	0.3 <sup>b</sup>	0.3 <sup>b</sup>
Colombia	0.2	21.0	—	0.1	0.0
Mexico	1.0	18.0	—	0.2	0.2
Peru	—	16.9	—	0.1 <sup>b</sup>	0.0 <sup>b</sup>
Uruguay	0.4	9.2	—	0.5	0.1
Venezuela, RB	1.4	—	—	—	—
Africa					
Algeria	8.3	—	—	—	—
Egypt, Arab Rep.	—	21.8	—	—	—
Morocco	6.6	12.0	—	0.5	0.1
South Africa	—	13.9	—	0.4	0.5
Tunisia	17.3	—	—	0.9	0.2
Other					
India	—	10.8	9.0	0.5	0.3
Russian Federation	7.1	30.2	70.2	0.5	0.8

a. Data for the most recent available year. b. 2004. c. 2002. — = not available.

Patent applications, per billions of GDP		Medium- and high-tech product exports, percentage of goods exports 2009-10 <sup>a</sup>	Knowledge-intensive services exports, percentage of services exports 2008-10 <sup>a</sup>	Royalties and license fees from abroad, percentage of GDP 2008-10 <sup>a</sup>	Public tertiary education spending, percentage of GDP 2005-10 <sup>a</sup>
PPP\$ 2005-09 <sup>a</sup>	PPS€ IUS				
7.8	—	16.8	38.7	0.00	0.3
3.0	—	2.0	47.4	0.00	0.2
14.1	—	34.6	80.2	0.02	0.7
22.4	—	45.9	41.4	0.04	0.3
13.6	—	17.8	63.5	0.08	1.4
16.6	—	39.5	53.4	0.10	1.8
33.0	—	9.4	26.1	0.07	0.7
29.4	—	36.0	50.2	0.24	1.5
50.4	—	11.9	11.8	0.13	1.1
32.5	4.3	52.3	45.9	0.72	1.0
34.7	1.1	58.1	34.3	0.01	—
6.0	—	18.0	21.6	0.01	0.3
85.4	8.3	73.8	40.3	0.49	0.5
123.6	—	73.7	58.9	0.31	0.6
13.7	—	53.2	32.9	0.14	1.6 <sup>b</sup>
10.0	—	74.4	75.7	0.00	0.3
34.6	—	62.2	36.5	0.84	1.2
—	—	—	—	—	—
12.3	—	52.5	18.0	0.05	0.8
10.9	—	16.6	—	—	—
—	—	25.0	48.6	0.04	0.9
11.8	0.4	24.7	62.9	0.02	0.7
16.2	—	4.6	59.7	0.03	0.3
5.2	—	12.6	39.4	0.02	0.8
9.2	—	63.2	17.4	0.00	0.9
2.8	—	2.7	29.4	0.00	0.4
17.5	—	9.6	33.7	0.00	0.6
—	—	1.8	37.6	0.00	1.6
3.2	—	0.1	61.0	0.00	—
4.0	—	16.1	21.8	0.00	—
7.4	—	29.8	42.0	0.00	1.0
—	—	31.4	18.9	0.02	0.6
5.2	—	33.7	34.6	0.06	1.7
10.2	0.5	25.5	79.6	0.01	0.6
14.4	0.5	9.0	59.3	0.04	0.9

Table A6. Labor

	Labor force			Unemployment, percentage of labor force 2005–09 <sup>a</sup>	Net migration, per 1,000 population 2010
	Total, thousands 2010	Change from 2010, younger, percent 2020	Change from 2010, older, percent 2020		
EU15					
Austria	4,266	-2.9	4.4	4.8	19.1
Belgium	4,739	-1.6	2.9	7.9	18.4
Denmark	2,862	-1.3	0.5	6.0	16.3
Finland	2,664	0.4	-5.6	8.2	13.5
France	28,497	-0.4	0.0	9.1	7.7
Germany	41,967	-4.7	-0.4	7.7	6.7
Greece	5,066	-17.5	9.6	9.5	13.6
Ireland	2,271	-6.3	30.0	11.7	22.3
Italy	24,864	-17.0	8.1	7.8	33.0
Luxembourg	225	12.7	12.7	5.1	84.0
Netherlands	8,899	2.5	1.7	3.4	3.0
Portugal	5,337	-16.9	11.4	9.5	14.1
Spain	22,522	-14.9	25.6	18.0	48.8
Sweden	4,835	1.7	3.8	8.3	28.3
United Kingdom	31,046	4.0	4.2	7.7	16.4
European Free Trade Association					
Iceland	192	3.0	15.4	7.2	32.8
Liechtenstein	—	—	—	—	—
Norway	2,513	4.2	9.6	3.2	35.1
Switzerland	4,197	0.9	2.2	4.1	23.4
EU12					
Bulgaria	3,494	-20.6	2.1	6.8	-6.6
Cyprus	440	9.9	13.5	5.2	40.0
Czech Republic	5,099	-18.8	12.3	6.7	22.8
Estonia	670	-9.4	-0.2	13.7	0.0
Hungary	4,227	-16.1	10.0	10.0	7.5
Latvia	1,153	-11.3	3.9	17.1	-4.5
Lithuania	1,526	-6.7	-5.0	13.7	-10.7
Malta	169	-4.3	8.8	6.9	12.1
Poland	17,146	-10.4	1.3	8.2	1.5
Romania	9,016	-19.7	7.2	6.9	-4.7
Slovak Republic	2,724	-13.6	11.5	12.1	6.8
Slovenia	1,005	-13.6	2.1	5.9	10.7
EU candidate countries					
Albania	1,411	10.4	4.0	12.7	-14.9
Bosnia and Herzegovina	1,910	-9.3	3.2	23.9	-2.7
Croatia	1,941	-9.6	-1.0	9.1	2.3
Kosovo	—	—	—	45.4	—
Macedonia, FYR	900	-6.9	6.5	32.2	1.0
Montenegro	—	—	—	30.3	-4.0
Serbia	4,294	-6.9	5.1	16.6	0.0
Turkey	25,393	1.7	28.9	14.0	-0.7



Emigration of tertiary educated, percentage of total tertiary educated 2000	Self-employment, percentage of total employment 2004-08 <sup>a</sup>	Shadow economy, percentage of official GDP 2007	Minimum wage, international \$, PPP 2006-09 <sup>a</sup>	Hiring and firing practices, index 1-7 2010
13.5	9.0	9.5	—	3.6
5.5	10.0	21.3	1,492	2.9
7.8	5.0	16.9	—	6.1
7.2	9.0	17.0	—	4.0
3.5	5.9	14.7	1,443	2.7
5.8	6.8	15.3	—	2.8
12.2	27.0	26.5	1,096	3.0
33.7	11.7	15.4	1,368	3.7
9.7	18.6	26.8	—	3.0
8.6	5.2	9.4	1,687	3.4
9.6	9.4	13.0	1,606	3.1
19.0	18.5	23.0	618	2.4
4.2	11.8	22.2	911	2.6
4.5	6.6	17.9	—	2.5
17.1	10.5	12.2	1,507	4.4
21.0	8.7	15.0	—	5.3
18.5	—	—	—	—
6.2	5.7	18.0	—	2.8
9.6	10.1	8.1	—	5.8
9.6	8.7	32.7	292	4.1
34.2	14.4	26.5	1,044	3.9
8.5	12.5	17.0	526	3.2
9.9	5.8	29.5	426	4.5
12.8	7.1	23.7	498	4.2
8.5	6.8	27.2	421	4.2
8.4	9.4	29.7	428	3.2
58.3	9.0	26.5	—	3.5
14.3	18.9	26.0	628	3.3
11.3	31.2	30.2	320	3.6
14.3	10.6	16.8	485	3.2
11.0	11.0	24.7	855	2.3
17.5	—	32.9	329	4.7
20.3	26.9	32.8	—	4.5
24.6	16.2	30.4	613	3.2
—	—	—	—	—
29.4	22.2	34.9	—	4.3
—	19.5	—	—	4.1
—	22.7	—	376	3.6
5.8	35.3	29.1	609	4.0

	Labor force			Unemployment, percentage of labor force 2005–09 <sup>a</sup>	Net migration, per 1,000 population 2010
	Total, thousands 2010	Change from 2010, younger, percent 2020	Change from 2010, older, percent 2020		
Eastern partnership countries					
Armenia	1,603	2.1	–5.8	28.6	–24.3
Azerbaijan	4,226	11.7	9.8	6.1	5.9
Belarus	4,916	–12.9	–3.6	—	–5.3
Georgia	1,987	–6.1	–2.6	16.5	–33.7
Moldova	1,409	–1.6	–11.5	6.4	–48.2
Ukraine	21,382	–14.6	–3.2	8.8	–0.9
North America and Oceania					
Australia	11,102	4.9	12.2	5.6	50.4
Canada	18,731	4.7	9.8	8.3	32.2
New Zealand	2,263	7.4	9.1	6.1	14.9
United States	157,138	6.5	8.6	9.3	16.0
East Asia					
China	776,111	–5.0	11.4	4.3	–1.4
Indonesia	110,128	2.1	32.3	7.9	–5.4
Japan	59,721	–18.3	3.5	5.0	2.1
Korea, Rep.	23,014	–10.5	15.5	3.6	–0.6
Malaysia	11,928	12.1	26.0	3.7	3.0
Philippines	38,134	14.5	33.4	7.5	–13.2
Singapore	2,543	9.3	6.6	5.9	142.2
Taiwan, China	—	—	—	5.9	—
Thailand	37,372	–4.7	14.2	1.2	7.1
Vietnam	47,204	4.1	26.2	2.4	–5.0
Latin America					
Argentina	18,337	3.8	24.5	8.6	–4.9
Brazil	98,703	3.8	28.1	8.3	–2.6
Chile	7,347	9.1	22.8	9.7	1.8
Colombia	18,630	8.6	28.3	12.0	–2.6
Mexico	47,019	0.0	38.5	5.2	–15.9
Peru	13,252	9.3	33.5	6.8	–24.9
Uruguay	1,612	3.0	13.4	7.3	–14.9
Venezuela, RB	13,101	14.5	29.1	7.6	1.4
Africa					
Algeria	14,855	1.1	44.8	11.3	–3.9
Egypt, Arab Rep.	27,634	14.2	27.7	9.4	–4.3
Morocco	11,919	7.2	26.3	10.0	–21.1
South Africa	19,358	7.6	6.9	23.8	14.0
Tunisia	3,722	0.4	28.4	14.2	–1.9
Other					
India	474,806	14.0	25.3	4.4	–2.6
Russian Federation	73,322	–11.0	–1.8	8.2	8.0

a. Data for the most recent available year. b. 2006. c. 1994. — = not available.

Emigration of tertiary educated, percentage of total tertiary educated 2000	Self-employment, percentage of total employment 2004-08 <sup>a</sup>	Shadow economy, percentage of official GDP 2007	Minimum wage, international \$, PPP 2006-09 <sup>a</sup>	Hiring and firing practices, index 1-7 2010
8.9	50.3	41.1	144	4.8
1.8	62.6	52.0	121	5.3
3.2	—	43.3	250	—
2.8	62.2	62.1	21	5.0
4.1	32.4	44.3 <sup>b</sup>	—	3.5
4.3	19.3	46.8	311	4.8
2.7	9.3	13.5	1,597	3.5
4.7	10.4	15.3	1,325	4.9
21.8	11.9	12.0	1,367	3.7
0.5	7.2	8.4	1,257	5.1
3.8	—	11.9	173	4.3
2.9	63.1	17.9	148	4.2
1.2	10.8	10.3	944	2.8
7.5	25.2	25.6	797	3.3
10.5	22.3	29.6	—	4.5
13.6	44.7	38.3	379	3.3
14.5	10.2	12.2	—	5.8
12.8	19.8	23.9	—	3.8
2.2	53.3	48.2	295	4.4
27.0	73.9	14.4	85	4.3
2.8	20.1	23.0	896	2.7
2.0	27.2	36.6	286	2.9
6.0	24.8	18.5	400	3.4
10.4	40.9	33.5	390	3.9
15.5	29.5	28.8	170	3.1
5.8	39.6	53.7	334	3.5
9.0	25.1	46.1	258	3.0
3.8	29.8	30.9	481	2.3
9.5	34.9	31.2	308	3.8
4.7	24.8	33.1	14	3.7
18.6	51.1	33.1	371	4.0
7.4	2.7	25.2	390	2.5
12.6	20.9 <sup>c</sup>	35.4	315	3.9
4.3	—	20.7	121	4.0
1.4	5.8	40.6	223	3.7

Table A7. Government

	Government revenue, percentage of GDP				
	Total 2004-09 <sup>a</sup>	Taxes 2004-09 <sup>a</sup>	Individual income tax 2004-09 <sup>a</sup>	Corporate income tax 2004-09 <sup>a</sup>	Taxes on goods and services 2004-09 <sup>a</sup>
<b>EU15</b>					
Austria	48.8	27.6	10.0	1.9	12.2
Belgium	48.2	28.4	12.1	2.5	10.5
Denmark	55.9	47.1	26.7	2.4	14.7
Finland	53.1	30.6	13.2	3.5	12.8
France	48.9	25.1	7.6	1.3	10.6
Germany	44.9	24.0	10.0	0.7	11.1
Greece	37.8	19.5	5.1	2.4	10.7
Ireland	34.3	22.0	7.8	2.5	—
Italy	46.7	29.1	11.8	2.4	11.5
Luxembourg	41.4	25.8	7.7	5.5	11.3
Netherlands	46.0	24.0	8.6	2.1	11.9
Portugal	38.7	21.7	5.7	2.9	11.2
Spain	34.7	18.7	7.0	2.3	7.2
Sweden	54.0	38.3	16.5	2.8	13.4
United Kingdom	40.3	27.8	10.4	2.8	10.1
<b>European Free Trade Association</b>					
Iceland	41.1	30.8	12.9	1.8	11.7
Liechtenstein	—	—	—	—	—
Norway	57.2	32.2	10.5	8.4	11.8
Switzerland	34.3	22.4	9.1	3.3	5.3
<b>EU12</b>					
Bulgaria	36.1	22.4	3.0	2.5	15.3
Cyprus	39.8	26.3	3.9	6.5	13.8
Czech Republic	37.4	18.2	3.5	3.5	10.8
Estonia	43.4	22.4	5.7	1.8	14.5
Hungary	46.1	26.2	7.3	2.2	15.5
Latvia	35.4	17.9	5.5	1.5	10.1
Lithuania	34.9	17.5	4.1	1.8	11.1
Malta	39.2	27.6	6.1	6.8	13.6
Poland	37.0	20.4	4.6	2.3	11.8
Romania	32.1	18.4	3.6	2.7	11.0
Slovak Republic	33.6	15.8	2.7	2.6	10.1
Slovenia	43.9	21.7	5.9	2.0	13.1
<b>EU candidate countries</b>					
Albania	26.0	19.6	2.3	1.7	13.9
Bosnia and Herzegovina	43.1	22.3	1.0	1.0	18.8
Croatia	38.2	21.9	3.1	2.8	14.8
Kosovo	29.3	—	—	—	—
Macedonia, FYR	34.9	20.5	2.2	2.1	13.4
Montenegro	42.4	—	—	—	—
Serbia	44.1	25.9	4.9	1.2	17.3
Turkey	33.9	19.3	4.0	2.0	11.6

Government expenditure, percentage of GDP				Public debt, percentage of GDP 2009
Total 2004-09 <sup>a</sup>	Health 2004-09 <sup>a</sup>	Education 2004-09 <sup>a</sup>	Social protection 2004-09 <sup>a</sup>	
52.3	8.2	5.8	21.8	69.6
54.3	8.0	6.4	19.5	96.3
58.8	8.8	8.0	25.4	41.8
55.6	7.9	6.6	23.6	43.3
56.5	8.4	6.2	23.7	79.0
48.0	6.9	4.4	21.8	74.1
53.2	5.2	3.2	20.4	127.1
48.6	8.8	5.6	16.4	65.2
51.9	7.5	4.8	20.4	116.1
42.3	5.0	5.0	18.3	14.6
51.4	6.8	6.0	18.1	60.8
48.0	7.0	6.6	17.4	83.0
45.8	6.7	5.0	16.1	53.3
55.2	7.4	7.3	23.0	42.8
51.5	8.5	6.9	18.0	68.3
51.0	8.4	8.6	11.3	88.2
—	—	2.1	—	—
47.1	7.8	6.1	18.3	55.4
33.7	1.9	5.7	13.8	54.8
36.6	3.9	4.2	13.3	15.6
45.8	3.0	7.8	9.9	58.0
44.2	6.6	4.3	13.6	35.4
45.2	5.6	7.0	15.7	7.2
50.5	5.0	5.3	18.3	78.4
42.3	3.7	6.7	13.3	32.8
44.1	6.7	6.8	16.4	29.6
42.9	5.5	5.5	14.7	67.3
44.1	5.1	5.3	16.9	50.9
37.6	3.7	4.2	10.7	23.9
41.6	7.5	4.3	12.3	35.4
49.8	7.1	7.1	17.9	35.5
32.9	2.7	3.4	8.2	59.8
50.4	6.7	—	12.5	35.9
42.5	6.6	4.6	13.7	34.5
29.9	—	4.3	3.8	—
33.2	4.6	3.5 <sup>c</sup>	10.3	23.8
48.9	6.7	—	12.9	40.7
47.9	6.7	4.6	19.2	38.2
37.6	5.1	3.1	7.2	46.1

	Government revenue, percentage of GDP				
	Total 2004-09 <sup>a</sup>	Taxes 2004-09 <sup>a</sup>	Individual income tax 2004-09 <sup>a</sup>	Corporate income tax 2004-09 <sup>a</sup>	Taxes on goods and services 2004-09 <sup>a</sup>
<b>Eastern partnership countries</b>					
Armenia	23.7	17.1	1.9	2.6	9.4
Azerbaijan	27.3	16.7	1.4	7.4	6.4
Belarus	47.2	30.1	3.1	3.5	14.7
Georgia	29.3	24.4	6.2	2.9	13.9
Moldova	39.2	21.6	2.7	0.5	16.5
Ukraine	42.1	22.4	5.0	3.7	12.6
<b>North America and Oceania</b>					
Australia	33.6	27.1	10.2	5.8	6.9
Canada	41.5	29.6	12.6	4.3	7.8
New Zealand	39.8	33.3	15.2	5.6	9.7
United States	31.2	17.5	8.1	1.7	4.3
<b>East Asia</b>					
China	26.6	18.6	1.2	3.6	11.6
Indonesia	18.4	12.3	4.2	1.0	5.9
Japan	33.0	16.3	7.3 <sup>f</sup>	n.a.	2.6
Korea, Rep.	28.9	19.7	3.9	3.3	7.0
Malaysia	26.2 <sup>d</sup>	18.8 <sup>d</sup>	—	—	—
Philippines	14.1	12.3	1.6	3.4	5.2
Singapore	18.1	13.7	6.4 <sup>f</sup>	n.a.	4.7
Taiwan, China	19.1	—	—	—	—
Thailand	20.4	16.4	2.0	5.1	8.0
Vietnam	25.1	21.5	0.5	7.7	9.7
<b>Latin America</b>					
Argentina	29.4	22.9	1.6	3.6	11.0
Brazil	35.6	22.9	2.5	4.5	13.5
Chile	22.0	17.0	5.7 <sup>f</sup>	n.a.	10.1
Colombia	30.7	16.1	4.5	0.0	8.2
Mexico	12.8 <sup>e</sup>	10.1 <sup>e</sup>	—	—	—
Peru	18.7	14.1	1.5	3.8	6.9
Uruguay	29.5	18.9	2.6	2.7	12.0
Venezuela, RB	28.3	15.5	0.3	5.8	7.0
<b>Africa</b>					
Algeria	36.3	34.3	1.8	2.7	4.7
Egypt, Arab Rep.	27.7	15.7	1.4	6.3	6.0
Morocco	35.2	25.0	3.6	6.0	10.8
South Africa	35.1	26.9	8.6	6.4	9.4
Tunisia	29.4	20.3	4.0	3.9	9.3
<b>Other</b>					
India	23.0	19.6	2.3	4.0	9.3
Russian Federation	52.4	22.7	4.3	3.4	6.7

a. Data for the most recent available year.

b. 2003.

c. 2002.

d. 2001.

e. 2000.

f. Data include corporate income tax.

— = not available.

n.a. = not applicable.

Government expenditure, percentage of GDP				Public debt, percentage of GDP 2009
Total 2004-09 <sup>a</sup>	Health 2004-09 <sup>a</sup>	Education 2004-09 <sup>a</sup>	Social protection 2004-09 <sup>a</sup>	
28.6	2.0	4.4	6.3	40.2
34.8	1.4	2.8	5.8	12.1
47.8	4.5	5.8	13.6	21.7
36.9	2.0	3.2	7.3	37.3
45.2	6.4	9.4	15.0	29.1
48.3	4.2	7.2	23.2	35.4
36.9	6.5	5.2	10.9	16.9
39.7	7.5	6.0	11.9	83.3
36.6	5.6	5.6	11.7	26.1
42.5	8.7	6.7	9.0	85.2
25.7	1.0	3.7	4.7	17.7
19.5	0.3	0.8	1.1	28.6
42.5	8.5	4.3	14.9	216.3
33.1	4.3	5.2	4.1	33.8
32.9	2.2	4.1	—	55.4
17.8	0.5	2.8	1.1	47.1
17.9	1.4	3.3	2.2	109.3
24.3	—	—	—	38.1
23.5	3.3	4.1	0.6 <sup>d</sup>	44.3
33.4	2.8	5.3	2.7	51.2
37.9	6.3	5.4	9.2	58.7
38.7	4.1	5.1	13.1	68.1
26.4	3.8	4.0	7.6 <sup>b</sup>	6.2
29.1	5.4	4.7	6.5	35.8
27.0	3.1	4.8	3.5 <sup>c</sup>	44.7
20.7	2.7	2.5	3.9	27.1
32.3	4.7	2.8	10.1	61.0
26.1	1.9	4.5	2.0	32.7
41.7	5.0	4.3	8.7 <sup>e</sup>	—
34.2	1.5	3.8	12.7	75.6
28.5	1.9	5.6	—	47.9
41.9	3.9	6.6	5.1	31.5
31.0	1.4	5.8	7.4	42.8
29.1	1.4	3.1	4.3	74.2
47.5	5.1	4.8	11.9	11.0

## Sources and definitions

Table A1. Basic indicators

Indicator	Sources	Definitions
GNI per capita, US\$	World Bank	Gross national income (GNI; formerly gross national product), per capita, expressed in current U.S. dollars. To smooth fluctuations in prices and exchange rates, the series is adjusted by the World Bank's Atlas method.
GDP, per capita, PPP, international \$	World Bank	Gross domestic product (GDP), per capita, adjusted by purchasing power parity (PPP). GDP per capita is converted to international dollars using PPP rates defined by the World Bank. The series is expressed in current international dollars.
GDP, PPP, international \$, billions	World Bank	GDP, adjusted by PPP, expressed in billions of current international dollars.
Average growth of real GDP per capita, percent	World Bank	Average annual percentage growth rate of GDP per capita in constant local currency over 2000-10.
Population, total, thousands, 2010	U.S. Census	Total number of people living in a country in 2010. The data shown are midyear (that is, July 1 of the given year) estimates. The series is expressed in thousands.
Population, working age, percent, 2010	U.S. Census	Working-age population, expressed as a percentage of total population, in 2010. The working-age population is defined as people ages 15-64.
Population, old age, percent, 2010	U.S. Census	Old-age population, as a percentage of total population, in 2010. The old-age population includes people ages 65 and older.
Population, total, thousands, 2050	U.S. Census	Total number of people living in a country in 2050, projected by the U.S. Census. The series is based on midyear estimates and expressed in thousands.
Population, working age, percent, 2050	U.S. Census	Working-age population in 2050, projected by the U.S. Census. The series is expressed as a percentage of total population.
Population, old age, percent, 2050	U.S. Census	Old-age population in 2050, projected by the U.S. Census, as a percentage of total population.
CO <sub>2</sub> emissions, metric tons per capita	World Bank	Carbon dioxide (CO <sub>2</sub> ) emissions stemming from the burning of fossil fuels and the manufacture of cement, consumption of solid, liquid, and gas fuels, and gas flaring. The amount is in metric tons, divided by population.

Table A2. Trade

Indicator	Sources	Definitions
Exports, percentage of GDP, consumption goods	United Nations (UN); International Monetary Fund (IMF)	Exports of consumption goods to the rest of the world, as a percentage of GDP. The consumption goods include products in the following classification codes of Broad Economic Categories (BEC): 112, 122, 522, 61, 62, and 63.
Exports, percentage of GDP, intermediate goods	UN; IMF	Exports of intermediate goods to the rest of the world, as a percentage of GDP. The intermediate goods include products in the following BEC classification codes: 111, 121, 21, 22, 31, 322, 42, and 53.



Indicator	Sources	Definitions
Exports, percentage of GDP, capital goods	UN; IMF	Exports of capital goods to the rest of the world, as a percentage of GDP. The capital goods contain those belonging to the following BEC classification codes: 41 and 521.
Exports, percentage of GDP, traditional services	IMF	Exports of traditional services to the rest of the world, as a percentage of GDP. The exports of traditional services consist of the sum of credits in the following categories of the fifth edition of the IMF Balance of Payments Manual (BPM5): 205, 236, 249, and 287.
Exports, percentage of GDP, modern services	IMF	Exports of modern services to the rest of the world, as a percentage of GDP. The exports of modern services contain credits of the following BPM5 codes: 245, 253, 260, 262, 266, and 268.
Imports, percentage of GDP, consumption goods	UN; IMF	Imports of consumption goods from the rest of the world, as a percentage of GDP.
Imports, percentage of GDP, intermediate goods	UN; IMF	Imports of intermediate goods from the rest of the world, as a percentage of GDP.
Imports, percentage of GDP, capital goods	UN; IMF	Imports of capital goods from the rest of the world, as a percentage of GDP.
Imports, percentage of GDP, traditional services	IMF	Imports of traditional services from the rest of the world, as a percentage of GDP. The imports of traditional services are the sum of debits in the same classification categories as in the exports (credits).
Imports, percentage of GDP, modern services	IMF	Imports of modern services from the rest of the world, as a percentage of GDP. The imports of modern services include debits of the same BPM5 items as in the exports (credits).

Table A3. Finance

Indicator	Sources	Definitions
Private sector credit by domestic banks, percentage of GDP	IMF	Domestic commercial banks' claims on private sector, as a percentage of GDP. The main series is line 22D in the International Financial Statistics (IFS) by the IMF. If necessary, the series is extrapolated by line 22S (claims on other sector). GDP is also from the IMF.
Cross-border banking flows, percentage of GDP	Bank for International Settlements (BIS); IMF	External loans of BIS reporting banks vis-a-vis the non-bank sector in respective countries, as a percentage of GDP. The series shows amounts outstanding and is taken from Table 7B of BIS Locational Banking Statistics. GDP is from the IMF.
Loan-to-deposit ratio, percent	IMF	Domestic commercial banks' credits to all sectors, divided by commercial banks' deposits. The former is a sum of IFS lines 22A to 22S, and the latter comes from IFS lines 24 and 25.
Foreign bank assets, percentage of total banking assets	Claessens and van Horen (2012)	Banking system assets held by foreign banks, as a percentage of total banking assets.
Foreign assets plus liabilities, percentage of GDP	Lane and Milesi-Ferretti (2007)	Total foreign assets and total foreign liabilities, as a percentage of GDP. It is a measure of financial integration.
Net debt, percentage of GDP	Lane and Milesi-Ferretti (2007)	Net debt is measured by a sum of international debt assets and foreign exchange reserves (excluding gold) minus international debt liabilities. The series on debt includes both portfolio debt plus other investment. GDP is also from the same source.
Current account balance, percentage of GDP	IMF	The sum of net exports of goods and services, net income, and net current transfers, as a percentage of GDP.
Capital flows, net, percentage of GDP, total	IMF	Net inflows of all types of capital, as a percentage of GDP.

Indicator	Sources	Definitions
Capital flows, net, percentage of GDP, FDI	IMF	Net inflows of foreign direct investment (FDI), as a percentage of GDP.
Capital flows, net, percentage of GDP, portfolio	IMF	Net inflows of portfolio investment, as a percentage of GDP. The series includes both public and private components.
Capital flows, net, percentage of GDP, other	IMF	Net inflows of other investment, as a percentage of GDP. The series includes both public and private components.

Table A4. Enterprise

Indicator	Sources	Definitions
Labor productivity, constant 2005 US\$, thousands, total, level, 1995	World Bank; International Labour Office (ILO 2010b); UN; country sources	Gross value added divided by employment in industry and services, expressed in thousands of constant U.S. dollars (price level as in 2005). The data refer to 1995, but if unavailable, the figures for the earliest available year after 1995 are shown. Industry and services are defined by the International Standard Industrial Classification of All Economic Activities (ISIC), Revision 3, and correspond to ISIC divisions 10–45 and 50–99, respectively. Due to the statistical reason, services also include any statistical discrepancies.
Labor productivity, constant 2005 US\$, thousands, total, level, 2009	World Bank; ILO (2010b); UN; country sources	Gross value added divided by employment in industry and services, expressed in thousands of constant U.S. dollars (price level as in 2005). The data refer to 2009, but if unavailable, the figures for the most recent available year are shown.
Labor productivity, constant 2005 US\$, thousands, total, CAGR, percent	World Bank; ILO (2010b); UN; country sources	Compound annual growth rate (CAGR) of gross value added divided by employment in industry and services. The rate of growth in labor productivity in industry and services is computed with the two constant price data defined above (1995 and 2009).
Labor productivity, constant 2005 US\$, thousands, industry, level, 1995	World Bank; ILO (2010b); UN; country sources	Gross value added divided by employment in industry, expressed in thousands of constant U.S. dollars (price level as in 2005). The data refer to 1995, but if unavailable, the figures for the earliest available year after 1995 are shown. Industry includes ISIC divisions 10–45.
Labor productivity, constant 2005 US\$, thousands, industry, level, 2009	World Bank; ILO (2010b); UN; country sources	Gross value added divided by employment in industry, expressed in thousands of constant U.S. dollars (price level as in 2005). The data refer to 2009, but if unavailable, the figures for the most recent available year are shown.
Labor productivity, constant 2005 US\$, thousands, industry, CAGR, percent	World Bank; ILO (2010b); UN; country sources	CAGR of gross value added divided by employment in industry. The rate of growth in labor productivity in industry is computed with the two constant price data defined above (1995 and 2009).
Labor productivity, constant 2005 US\$, thousands, services, level, 1995	World Bank; ILO (2010b); UN; country sources	Gross value added divided by employment in services, expressed in thousands of constant U.S. dollars (price level as in 2005). The data refer to 1995, but if unavailable, the figures for the earliest available year after 1995 are shown. Services correspond to ISIC divisions 50–99 and, due to the statistical reason, also include any statistical discrepancies.
Labor productivity, constant 2005 US\$, thousands, services, level, 2009	World Bank; ILO (2010b); UN; country sources	Gross value added divided by employment in services, expressed in thousands of constant U.S. dollars (price level as in 2005). The data refer to 2009, but if unavailable, the figures for the most recent available year are shown.
Labor productivity, constant 2005 US\$, thousands, services, CAGR, percent	World Bank; ILO (2010b); UN; country sources	CAGR of gross value added divided by employment in services. The rate of growth in labor productivity in services is computed with the two constant price data defined above (1995 and 2009).

Indicator	Sources	Definitions
<i>Doing Business</i> , index 0–100, total	World Bank	The principal component of all <i>Doing Business</i> indicators, rescaled to range from 0 to 100, showing that higher the score, the better quality of overall business environment. The principal component analysis (PCA) is exercised using all countries over 2003–11 (that is, <i>Doing Business</i> 2004 to 2012).
<i>Doing Business</i> , index 0–100, start-up	World Bank	The principal component of <i>Doing Business</i> indicators in three areas related to business entry/exit. The score is rescaled to range from 0 to 100, indicating the higher the index, the better quality of regulation. The indicators are for starting a business, closing a business, and registering property. PCA is exercised using all countries over 2003–11 (that is, <i>Doing Business</i> 2004 to 2012).
<i>Doing Business</i> , index 0–100, operations	World Bank	The principal component of <i>Doing Business</i> indicators in four areas related to business operations. The score is rescaled to range from 0 to 100 (higher, better). The indicators are for paying taxes, trading across borders, employing workers, and obtaining construction permits. PCA is exercised using all countries over 2003–11 (that is, <i>Doing Business</i> 2004 to 2012).
<i>Doing Business</i> , index 0–100, institutions	World Bank	The principal component of <i>Doing Business</i> indicators in three areas related to institutional environment. The score is rescaled to range from 0 to 100 (higher, better). The indicators are for protecting investors, getting credit, and enforcing contracts. PCA is exercised using all countries over 2003–11 (that is, <i>Doing Business</i> 2004 to 2012).

Table A5. Innovation

Indicator	Sources	Definitions
Enrollment in doctorate level, per 1,000 population ages 25–34	United Nations Educational, Scientific and Cultural Organization (UNESCO); U.S. Census	Enrollment in doctorate-level education, classified as the level 6 in the International Standard Classification of Education (ISCED), per thousands of population ages 25–34. The doctorate-level education includes both public and private institutions. The enrollment considers both male and female, and both full-time and part-time students.
Tertiary education attainment, percentage of population ages 30–34, IIASA/VID	World Bank	Percentage of population ages 30–34 with tertiary education, projected through the educational attainment model developed by the International Institute for Applied Systems Analysis (IIASA) and the Vienna Institute of Demography (VID), Austrian Academy of Sciences.
Tertiary education attainment, percentage of population ages 30–34, IUS	European Commission (2011)	The number of people ages 30–34 with some form of post-secondary education (ISCED 5 and 6), as a percentage of total population ages 30–34. For non-European countries, namely, Brazil, China, India, Japan, Russian Federation, and the United States, the age group refers to 25–64, instead of 30–34. The reference year varies by country but is 2008 or 2009, in most cases.
R&D expenditure, percentage of GDP, public	UNESCO; World Bank	All R&D expenditure, performed by government and higher education, as a percentage of GDP.
R&D expenditure, percentage of GDP, business	UNESCO; World Bank	All R&D expenditure, performed by enterprises, as a percentage of GDP.
Patent applications, per billions of GDP, PPP\$	World Bank	Patent applications filed through the Patent Cooperation Treaty (PCT) procedure or with a national patent office, by both residents and non-residents, per billions of GDP in international dollars.

Indicator	Sources	Definitions
Patent applications, per billions of GDP, PPS€	European Commission (2011)	The number of patent applications filed under the PCT, at international phase, designating the European Patent Office, divided by billions of GDP in international euros adjusted by purchasing power standard (PPS). The reference year varies by country but is 2007, in most cases.
Medium- and high-tech product exports, percentage of goods exports	UN	Exports of medium- and high-tech products to the rest of the world, as a share of total exports in goods. The medium- and high-tech products include items in the following 38 classification codes of Standard International Trade Classification (SITC), Revision 3: 266, 267, 512, 513, 525, 533, 54, 553, 554, 562, 57, 58, 591, 593, 597, 598, 629, 653, 671, 672, 679, 71, 72, 731, 733, 737, 74, 751, 752, 759, 76, 77, 78, 79, 812, 87, 88, and 891.
Knowledge-intensive services exports, percentage of services exports	IMF	Exports of knowledge-intensive services to the rest of the world, as a share of total exports in services. The knowledge-intensive services exports contain credits of the following BPM5 codes: 245, 253, 260, 263, 272, 273, 850, and 851.
Royalties and license fees from abroad, percentage of GDP	IMF	Credit part of the international transactions in royalties and license fees, as a share of GDP. The code of the series is 266 in BPM5.
Public tertiary education spending, percentage of GDP	UNESCO	Total expenditure on tertiary educational institutions and administration, from public sources, as a percentage of GDP.

Table A6. Labor

Indicator	Sources	Definitions
Labor force, total, thousands	ILO	The number of economically active population ages 15 and older, expressed in thousands. Economically active population includes both employed and unemployed people.
Labor force, change from 2010, younger, percent	ILO	Projected percentage change in the number of younger labor force ages 15–39, from 2010 to 2020.
Labor force, change from 2010, older, percent	ILO	Projected percentage change in the number of older labor force ages 40 and older, from 2010 to 2020.
Unemployment, percentage of labor force	World Bank	The number of labor force that is without work but available for and seeking employment, as a percentage of total labor force.
Net migration, per 1,000 population	World Bank	The number of immigrants minus the number of emigrants, including citizens and noncitizens, for the five-year period, expressed in thousands of population.
Emigration of tertiary educated, percentage of total tertiary educated	World Bank	Stock of emigrants ages 25 and older, residing in a country belonging to the Organisation for Economic Co-operation and Development (OECD) other than that in which they were born, with at least one year of tertiary education, as a percentage of population ages 25 and older with tertiary education.
Self-employment, percentage of total employment	ILO	Self-employed workers, as a percentage of total employment. Self-employed workers are defined as the sum of own-account workers and contributing family workers.
Shadow economy, percentage of official GDP	Schneider, Buehn, and Montenegro (2010)	Estimated shadow economy, as a percentage of official GDP.
Minimum wage, international \$, PPP	ILO (2010a)	PPP-adjusted minimum wage, in international dollars.
Hiring and firing practices, index 1–7	Schwab (2011)	The index, ranging from 1 to 7, to assess the rigidity of hiring and firing of workers. The higher the index, the more flexible practices are (1 = impeded by regulations, 7 = flexibly determined by employers).

Table A7. Government

Indicator	Sources	Definitions
Government revenue, percentage of GDP, total	IMF	General government total revenue, as a percentage of GDP. The main series is line 1 in the Government Finance Statistics (GFS) by the IMF. For Azerbaijan, Indonesia, Mexico, Uruguay, and Venezuela, RB, the numbers are for central government only.
Government revenue, percentage of GDP, taxes	IMF	General government total tax revenue, as a percentage of GDP. The main series is line 11 in GFS. For Azerbaijan, Indonesia, Mexico, Uruguay, and Venezuela, RB, the numbers are for central government only.
Government revenue, percentage of GDP, individual income tax	IMF	General government revenue from individual income tax, as a percentage of GDP. Line 1111 of the IMF GFS is used as the main series. For Azerbaijan, Indonesia, Uruguay, and Venezuela, RB, the numbers are for central government only.
Government revenue, percentage of GDP, corporate income tax	IMF	General government corporate tax revenue, as a percentage of GDP. GFS line 1112 is mainly used. For Azerbaijan, Indonesia, Uruguay, and Venezuela, RB, the numbers are for central government only.
Government revenue, percentage of GDP, taxes on goods and services	IMF	General government revenue from taxes on goods and services, as a percentage of GDP. The main series is line 114 in GFS. The taxes on goods and services include value-added taxes, sales taxes, excises, taxes on use of goods and on permission to use goods or perform activities (such as motor vehicle taxes), and so on. For Azerbaijan, Indonesia, Uruguay, and Venezuela, RB, the numbers are for central government only.
Government expenditure, percentage of GDP, total	IMF; OECD	General government total expenditure, as a percentage of GDP. Line 7 in GFS is used as the main data series. For Indonesia, the Philippines, and Venezuela, RB, the numbers are for central government only.
Government expenditure, percentage of GDP, health	IMF; World Bank; OECD	General government expenditure on health, as a percentage of GDP. The main series is line 707 in GFS. For Indonesia, the Philippines, and Venezuela, RB, the numbers are for central government only.
Government expenditure, percentage of GDP, education	IMF; World Bank; OECD	General government expenditure on education, as a percentage of GDP. The main series is line 709 in GFS. For Indonesia, the Philippines, and Venezuela, RB, the numbers are for central government only.
Government expenditure, percentage of GDP, social protection	IMF; World Bank; Weigand and Grosh (2008); OECD	General government expenditure on social protection, as a percentage of GDP. The social protection includes pensions and social assistance of various kinds. The main series is line 710 in GFS. For Indonesia, the Philippines, and Venezuela, RB, the numbers are for central government only.
Public debt, percentage of GDP	IMF	General government gross debt, as a percentage of GDP.

# Abbreviations

<b>BIS</b>	Bank for International Settlements	<b>GDP</b>	Gross Domestic Product	<b>R&amp;D</b>	Research And Development
<b>BMU</b>	German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety	<b>GFS</b>	Government Finance Statistics	<b>SME</b>	Small and Medium Enterprise
<b>BOPS</b>	Balance of Payments Statistics	<b>ICRG</b>	International Country Risk Guide	<b>TFP</b>	Total Factor Productivity
<b>CAP</b>	Common Agricultural Policy	<b>ICT</b>	Information and Communication Technology	<b>UN</b>	United Nations
<b>CO<sub>2</sub></b>	Carbon Dioxide	<b>IFS</b>	International Financial Statistics	<b>UNCTAD</b>	United Nations Conference on Trade and Development
<b>EBRD</b>	European Bank for Reconstruction and Development	<b>ILO</b>	International Labour Office	<b>UNEP</b>	United Nations Environment Programme
<b>EC</b>	European Commission	<b>IMD</b>	International Institute for Management Development	<b>UNESCO</b>	United Nations Educational, Scientific and Cultural Organization
<b>ECA</b>	Europe and Central Asia	<b>IMF</b>	International Monetary Fund	<b>WDI</b>	World Development Indicators
<b>ECB</b>	European Central Bank	<b>IPTS</b>	Institute for Prospective Technological Studies	<b>WEF</b>	World Economic Forum
<b>EFTA</b>	European Free Trade Association	<b>IT</b>	Information Technology	<b>WEO</b>	World Economic Outlook
<b>EPL</b>	Employment Protection Legislation	<b>kWh</b>	Kilowatt hour	<b>WGI</b>	Worldwide Governance Indicators
<b>EU</b>	European Union	<b>LAC</b>	Latin America and the Caribbean	<b>WHO</b>	World Health Organization
<b>FDI</b>	Foreign Direct Investment	<b>OECD</b>	Organisation for Economic Co-operation and Development	<b>WTO</b>	World Trade Organization
		<b>PPP</b>	Purchasing Power Parity		

## Key country groups (45 European Countries)

The following are the country groups into which 45 European countries, on which this report focuses, are distinguished. These categories are broad and commonly used across all the chapters. In addition, each chapter has its own groupings of countries, and how the countries are classified is defined in each chapter.

### Eastern partnership countries

Armenia, Azerbaijan, Belarus, Georgia, Moldova, and Ukraine [sometimes, shown as "E. prtn."]

### EFTA

Iceland, Liechtenstein, Norway, and Switzerland

### EU candidate countries

Albania, Bosnia and Herzegovina, Croatia, Kosovo, the former Yugoslav Republic of Macedonia, Montenegro, Serbia, and Turkey [sometimes, shown as "EU cand."]

### EU10

Countries join the EU in 2004: Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, the Slovak Republic, and Slovenia

### EU12

Countries joined the EU in 2004 or 2007: Bulgaria, Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, the Slovak Republic, and Slovenia

### EU15

Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden, and the United Kingdom

### EU27

EU15 plus EU12

## Country codes and names

The 3-letter country codes used in this report are taken from the International Organization for Standardization (ISO) 3166-1 alpha-3 codes, except for a few countries, as described by the World Bank ([data.worldbank.org/node/18](http://data.worldbank.org/node/18)). The use of the word countries to refer to economies implies no judgment by the authors and contributors about the legal or other status of a territory. The following are the codes and corresponding country names which can be found in the report.

Code	Name	Code	Name
ALB	Albania	KSV	Kosovo
DZA	Algeria	KGZ	Kyrgyz Republic
ARG	Argentina	LVA	Latvia
ARM	Armenia	LIE	Liechtenstein
AUS	Australia	LTU	Lithuania
AUT	Austria	LUX	Luxembourg
AZE	Azerbaijan	MYS	Malaysia
BLR	Belarus	MLT	Malta
BEL	Belgium	MEX	Mexico
BIH	Bosnia and Herzegovina	MCO	Monaco
BRA	Brazil	MNE	Montenegro
BGR	Bulgaria	MDA	Moldova
CAN	Canada	MAR	Morocco
CHL	Chile	NLD	Netherlands
CHN	China	NZL	New Zealand
COL	Colombia	NOR	Norway
HRV	Croatia	POL	Poland
CYP	Cyprus	PRT	Portugal
CZE	Czech Republic	ROM	Romania
DNK	Denmark	RUS	Russian Federation
EST	Estonia	SRB	Serbia
FIN	Finland	YUG	Serbia and Montenegro
FRA	France	SGP	Singapore
MKD	FYR Macedonia	SVK	Slovak Republic
GEO	Georgia	SVN	Slovenia
DEU	Germany	ZAF	South Africa
GRC	Greece	ESP	Spain
HKG	Hong Kong SAR, China	SWE	Sweden
HUN	Hungary	CHE	Switzerland
ISL	Iceland	TJK	Tajikistan
IND	India	THA	Thailand
IDN	Indonesia	TUN	Tunisia
IRL	Ireland	TUR	Turkey
ISR	Israel	TKM	Turkmenistan
ITA	Italy	UKR	Ukraine
JPN	Japan	GBR	United Kingdom
KAZ	Kazakhstan	USA	United States
KOR	Korea, Rep.	UZB	Uzbekistan