



THE BOSTON CONSULTING GROUP

*Collateral Damage*

# Back to Mesopotamia?

*The Looming Threat of Debt Restructuring*

**David Rhodes and Daniel Stelter**

September 2011

*In August, in Stop Kicking the Can Down the Road: The Price of Not Addressing the Root Causes of the Crisis, we argued as follows: “Politicians are trying to solve the problem of too much debt by playing for time. This will fail. Financial repression would have to be significant and requires close political coordination. In addition, it does not address the pressing issues of global imbalances and the adjustments required within the euro zone.... [W]e believe that the failure to act significantly increases the risk of ... an unconstrained financial and economic crisis.... Given the empty coffers of governments and their recent heavy use of monetary instruments, there is not much left to stimulate the economy. It will be very hard to stabilize economies and organize a soft landing...” We concluded: “Either the politicians need to organize a systematic debt restructuring for the Western world and/or generate inflation fast, or we run the risk of the situation spinning out of control. In which case, there will be no place to hide.”*

**W**E BELIEVE THAT SOME politicians and central banks—in spite of protestations to the contrary—have been trying to solve the crisis by creating sizable inflation, largely because the alternatives are either not attractive or not feasible:

- Austerity—essentially saving and paying back—is probably a recipe for a long, deep recession and social unrest.
- Higher growth is unachievable because of unfavorable demographic change and an inherent lack of competitiveness in some countries.
- Debt restructuring is out of reach because the banking sectors are not strong enough to absorb losses.
- Financial repression (holding interest rates below nominal GDP growth for many years) would be difficult to implement in a low-growth and low-inflation environment.

Inflation will be the preferred option—in spite of the potential for social unrest and the difficult consequences for middle-class savers should it really take hold. However, boosting inflation has not worked so far because of the pressure to deleverage and because of the low demand for new credit. Moreover, the inflation “solution,” while becoming more tempting, may come to be seen as having economic and social implications that are too unpalatable. So what might the politicians and central banks do?

Since the publication of *Stop Kicking the Can Down the Road*, a number of readers have asked us what would happen if governments persisted in playing for time. To

what measures might they have to resort? In this paper, we describe what might need to happen if the politicians muddle through for too much longer.

It is likely that wiping out the debt overhang will be at the heart of any solution. Such a course of action would not be new. In ancient Mesopotamia, debt was commonplace; individual debts were recorded on clay tablets. Periodically, upon the ascendancy of a new monarch, debts would be forgiven: in other words, the slate would be wiped clean. The challenge facing today's politicians is how clean to wipe the slates. In considering some of the potential measures likely to be required, the reader may be struck by the essential problem facing politicians: there may be only painful ways out of the crisis.

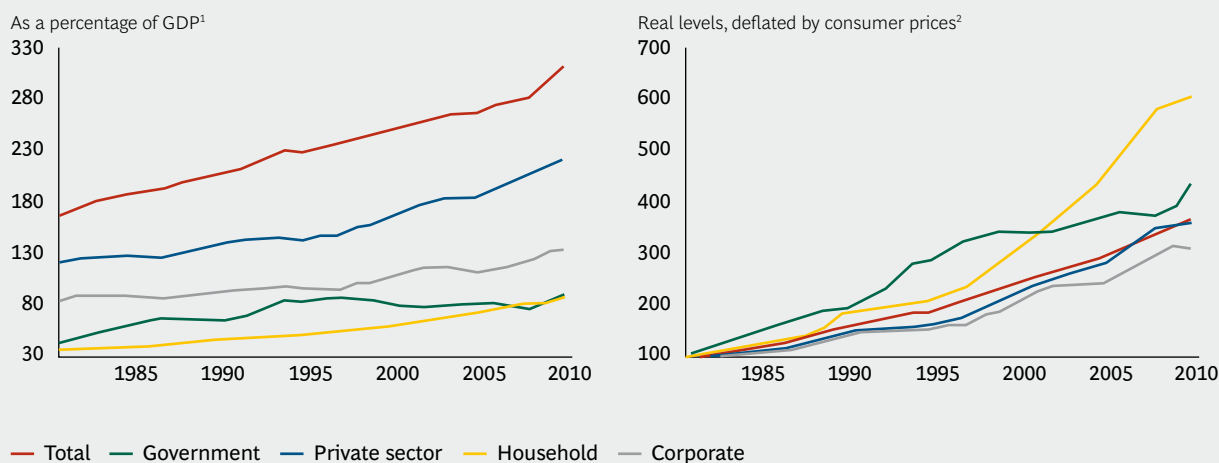
### Acknowledging Reality

Let's suppose that the politicians and central bankers acknowledge the hard facts. Agreeing on the starting situation would be a precondition for defining an effective remedy. They might begin by recognizing what many commentators have been pointing out for a long time:

- Western economies, notably the U.S. and Europe, have to address the significant debt load accumulated in the course of 25 years of credit-financed economic expansion. (See Exhibit 1.) And some must address real estate bubbles as well.
- The necessary *deleveraging* would lead to a period of low growth, which could, given historical precedent, last more than a decade and would be amplified by the aging of Western societies.

#### EXHIBIT 1 | Real Total Debt Levels Have Almost Quadrupled Since 1980

##### Nonfinancial-sector debt



Source: Stephen Cecchetti, Madhusudan Mohanty, and Fabrizio Zampolli, "The Real Effects of Debt," BIS Working Paper No. 352, September 2011.

<sup>1</sup>Simple averages for 18 OECD countries and the U.S.

<sup>2</sup>1980 = 100; simple averages for 16 OECD countries.

- This would have consequences for the emerging markets, with their export-based growth strategies. Any shift toward more consumption in these countries might not have a substantial stimulatory effect on the economies of the West.
- Efforts by governments to deal with their debt problems would lead to even lower growth and would increase the risk of social unrest. A recent study shows that as soon as expenditure cuts exceed 3 percent of GDP, the frequency of protests increases significantly.<sup>1</sup> The demonstrations that occurred in some European countries this September should therefore not have come as a surprise.
- Banks do not have enough equity to weather further write-downs—and governments are running out of ammunition to stabilize banks should a new crisis hit.
- Central banks may be seen as the last remaining institutions able to stabilize the financial markets and support economic growth. But their efforts are losing effectiveness. In spite of increasing balance sheets by up to 200 percent since the end of 2007, central banks have been unable to ignite sustainable economic growth.<sup>2</sup> On the other hand, the monetary overhang could be the basis for significant inflation.
- The longer governments postpone addressing the fundamental problems of the crisis, the deeper and more prolonged the crisis will become.

But even if all these facts were generally acknowledged, there would be no one-size-fits-all solution. Let's look first at the euro zone.

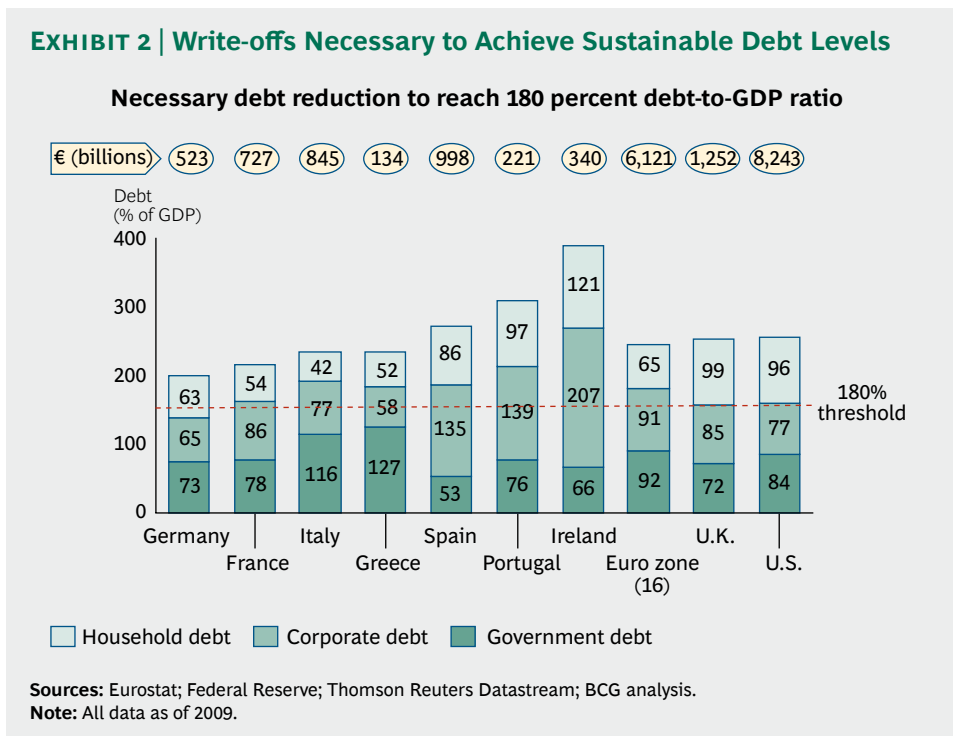
## A Program for the Euro Zone

In addition to the preceding general facts, politicians might conclude the following:

- The current crisis is not a crisis of government debt only: it extends to the private sector in many countries, notably in Portugal, Spain, and Ireland.
- The banks in the euro zone are undercapitalized and face significant losses in their bond portfolios of private and sovereign debt. Governments may be forced to step in and recapitalize them.<sup>3</sup>
- The countries of the periphery have lost competitiveness compared with the countries of northern Europe, notably Germany. A precondition for reducing their debt loads would be the ability to generate a trade surplus, which would require significant (and painful) lowering of unit labor costs.
- The single currency amplifies the problem by taking away the option of devaluation. Regaining competitiveness by lowering salaries and increasing productivity would push these countries into a severe recession, making it impossible to reduce the debt load—and simultaneously increasing the risk of social unrest.
- Reducing the debt burden and increasing competitiveness at the same time seems to be an impossible task.

**From Kicking the Can to Restructuring Euro Zone Debt.** What measures might European politicians resort to after all their efforts to play for time fail? The longer they vacillate, the more likely, perhaps, the drastic action we describe below.

If the overall debt load continues to grow faster than the economy of the euro zone, at some point the politicians might conclude that debt restructuring is inevitable. For this to be effective, they would need to restructure all debt, probably at around a maximum combined level of 180 percent per country. This number is based on the assumption that governments, nonfinancial corporations, and private households can each sustain a debt load of 60 percent of GDP, at an interest rate of 5 percent and a nominal economic growth rate of 3 percent per year. Lower interest rates and/or higher growth would help reduce the debt burden even further. Given this assumption, the total debt overhang within the euro zone amounts to €6.1 trillion. (See Exhibit 2.)



The importance of debt restructuring is underlined by a new research paper by three economists from the Bank for International Settlements (BIS) in Basel, who analyzed the development and implications of private and public debt in 18 OECD countries between 1980 and 2010.<sup>4</sup> Besides summarizing the impressive growth of debt (in real terms, the debt-to-GDP ratio nearly quadrupled during this 30-year period in these countries), they show that higher debt burdens have a negative effect on the growth rate of the economy once any one of the following criteria is met:

- Government debt is more than 80 to 100 percent of GDP (confirming similar research by Kenneth Rogoff and Carmen Reinhart).

- Nonfinancial corporate debt is more than 90 percent.
- Private household debt is more than 85 percent of GDP.

The probability of economies growing out of their debt problem is therefore limited, and the authors conclude that “the debt problems facing advanced economies are even worse than we thought.”

According to another study by the same three economists, the debt load of governments will range from 250 percent (for Italy) to about 600 percent (for Japan) by 2040.<sup>5</sup> In light of the increased financial burden imposed by aging populations, the authors see the risk of a spiral of ever-higher debt loads leading to lower growth and, in turn, to further increased debt loads. To stop this vicious cycle, they urge policy makers to “act quickly and decisively” and aim for debt levels “well below this threshold.” An overall debt level of 180 percent for the private and government sector would, in our view, provide a buffer against future shocks and the lower growth rates due to demographic change that are expected.

**Implementing the Write-off.** The European Financial Stability Facility (EFSF) would probably need to assume the lead, providing the necessary funding for haircuts and restructuring funds, and supervising the implementation. For countries like Italy, the write-off would be relatively simple to organize: cutting government-sector debt alone would achieve the target total debt load of 180 percent. This would imply a haircut for owners of Italian government bonds, leading to a loss of 47 percent.

In a similar way, excessive private-sector debt would need to be reduced. The most obvious target for debt reduction would be the mortgage market, since these loans are closely linked to the real estate market. Consumer loans would be cut by a fixed percentage. In the corporate sector—where credit problems are most acute in real estate companies—orderly restructuring would be required.

These write-offs would have to lead to a real reduction of the debt burden of the debtor, and not just to an adjustment on the creditor’s balance sheet. If governments chose this course of action, only true debt relief (and thus an end to the painful deleveraging process) could lay the foundation for a return to economic growth. To follow this path, they would need to convince themselves that the overall benefit of an economic restart outweighed the risk of moral hazard in some areas.

**Acknowledging Losses at Lenders.** Writing off more than €6 trillion would have significant implications for lenders. Just look at the numbers. Assuming a proportional distribution between banks and insurers, banks in the euro zone would have to write off 10 percent of total assets (€3 trillion out of €36.9 trillion in total assets).

Banks would need to write down their exposure to the different sectors and countries of the euro zone on the basis of the action required to reach the 60 percent target level for each category of debt. For example, a bank with exposure to the German government would have to write off 18 percent (calculated as current government debt—which is 73 percent of GDP—less the 60 percent target level

stated as a proportion of current debt), and a bank with exposure to the Portuguese corporate sector would have to write off 57 percent.

If politicians pursued this course, the losses would almost certainly exceed the equity of the banking sector—making it insolvent at an aggregate level. Banks would have managed their exposures differently, and some would not be exposed to such heavy write-downs. But for many, existing shareholders would be wiped out and the EFSF would need to recapitalize. The governments of the euro zone would, in effect, own the banking sector, and they would need to undertake an overall restructuring of the sector before reprivatization.

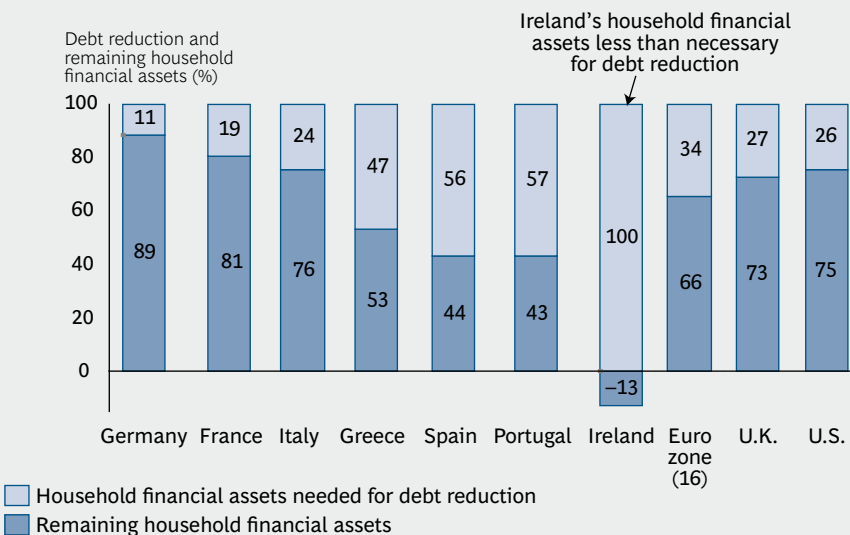
The majority of insurance company assets are managed on behalf of their customers. All losses of the insurance industry would be covered by the EFSF directly by taking them over and guaranteeing full payback.

**Funding the Restructuring.** Restructuring the debt overhang in the euro zone would require financing and would be a daunting task. In order to finance controlled restructuring, politicians could well conclude that it was necessary to tax the existing wealth of the private sector. Many politicians would see taxing financial assets as the fairest way of resolving the problem. Taxing existing financial assets would acknowledge one fact: these investments are not as valuable as their owners think, as the debtors (governments, households, and corporations) will be unable to meet their commitments. Exhibit 3 shows the one-time

### EXHIBIT 3 | One-Time Wealth Tax That Would Be Required to Cover the Costs of Debt Restructuring

Necessary debt reduction to reach 180 percent debt-to-GDP ratio

€ (billions) 523 727 845 134 998 221 340 6,121 1,252 8,243

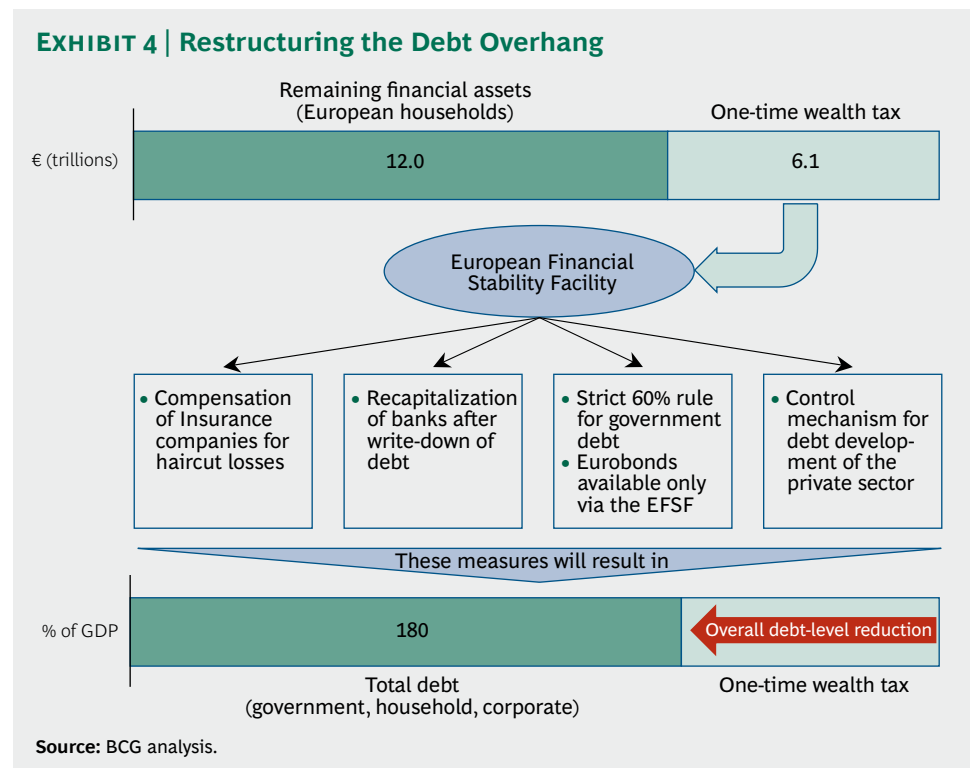


Sources: Eurostat; Federal Reserve; Thomson Reuters Datastream; BCG analysis.  
 Note: All data as of 2009.

tax on financial assets required to provide the necessary funds for an orderly restructuring.

For most countries, a haircut of 11 to 30 percent would be sufficient to cover the costs of an orderly debt restructuring. Only in Greece, Spain, and Portugal would the burden for the private sector be significantly higher; in Ireland, it would be too high because the financial assets of the Irish people are smaller than the required adjustment of debt levels. This underscores the dimension of the Irish real estate and debt bubble.

In the overall context of the future of the euro zone, politicians would need to propose a broader sharing of the burden so that taxpayers in such countries as Germany, France, and the Netherlands would contribute more than the share required to reduce their own debt load. This would be unpopular, but the banks and insurance companies in these countries would benefit. To ensure a socially acceptable sharing of the burden, politicians would no doubt decide to tax financial assets only above a certain threshold—€100,000, for example. Given that any such tax would be meant as a one-time correction of current debt levels, they would need to balance it by removing wealth taxes and capital-gains taxes. The drastic action of imposing a tax on assets would probably make it easier politically to lower income taxes in order to stimulate further growth. (See Exhibit 4.)



**Additional Fiscal Measures.** Although the tax on financial assets would reflect the hidden losses of those assets, governments would need to implement an additional tax on real estate to ensure that property owners contribute to the overall restructuring. In contrast to the one-time wealth tax, this tax would likely be on capital



gains as well as on income from real estate. (Politicians would probably argue that the measures to deal with the debt overhang reduce the downward pressure on real estate prices in markets like Spain.) To stimulate necessary additional investments, governments could create a further incentive for companies to invest in new equipment and R&D by imposing higher taxes on profits not reinvested.

**Implementing Structural Changes.** The program outlined above would not be very popular, although taxing the wealthy could well garner populist support. Moreover, the reduction of debt alone would not be sufficient to ensure the future stability of the euro zone. Any debt restructuring would need to be accompanied by some additional measures:

- A clear commitment of governments to stick to the 60 percent debt ceiling and the 3 percent maximum annual deficit going forward. There could be pressure to make such commitments part of the constitution of the member states, with EU institutions having the power to enforce compliance.
- The funding of all European government debt would be done with Eurobonds. (EU-wide Eurobonds would not be a solution today: they would only postpone the problem and reduce the pressure to adjust public deficits in the countries of the periphery.) A government could borrow only via the EFSF (or the upcoming European Stability Mechanism), thereby ensuring compliance with the 60 percent rule.
- Establishment of a mechanism to control the growth of debt in the private sector to avoid new debt bubbles in the future. This would probably be achieved with differentiated interest rates and capital requirements.
- A clear commitment by EU governments to address the pressing issue of age-related spending increases. This would require a combination of reducing benefits and raising the retirement age. Failure to act to suppress spending would inevitably mean tax increases.

These measures would help avoid a repetition of the euro zone debt crisis but would be insufficient to rebalance trade flows. Unable to devalue their own currencies, Spain, Portugal, and Greece—but also Italy and France—will have difficulty becoming competitive again. Unit labor costs are 10 to 30 percent higher than in Germany. Both a reduction in wages and high unemployment would be needed to internally devalue these costs, which would take time. Facilitating the process of adjustment would require a policy mix of higher inflation, economic coordination (allowing salaries to rise faster in Germany than in the periphery), and the establishment of a fiscal union—thereby allowing for continued transfers from the stronger to the weaker economies. Germany would need to stimulate its domestic consumer demand and discourage the current high level of savings.

What are the other possibilities? Apart from another crisis, European governments might be left facing the dissolution of the euro zone, with national currencies or smaller monetary areas being introduced. Splitting apart the euro zone is no solution to the debt crisis itself, as it would not address the debt overhang in an

orderly way but would create the risk of financial chaos with even higher costs.<sup>6</sup> However, it would be an option after a debt restructuring if closer economic coordination and a fiscal union could not be implemented. The managed-exchange-rate mechanism of the European Monetary Union, which existed until the introduction of the euro, facilitated the process of adjustment in light of different developments in unit labor costs and was quite successful.

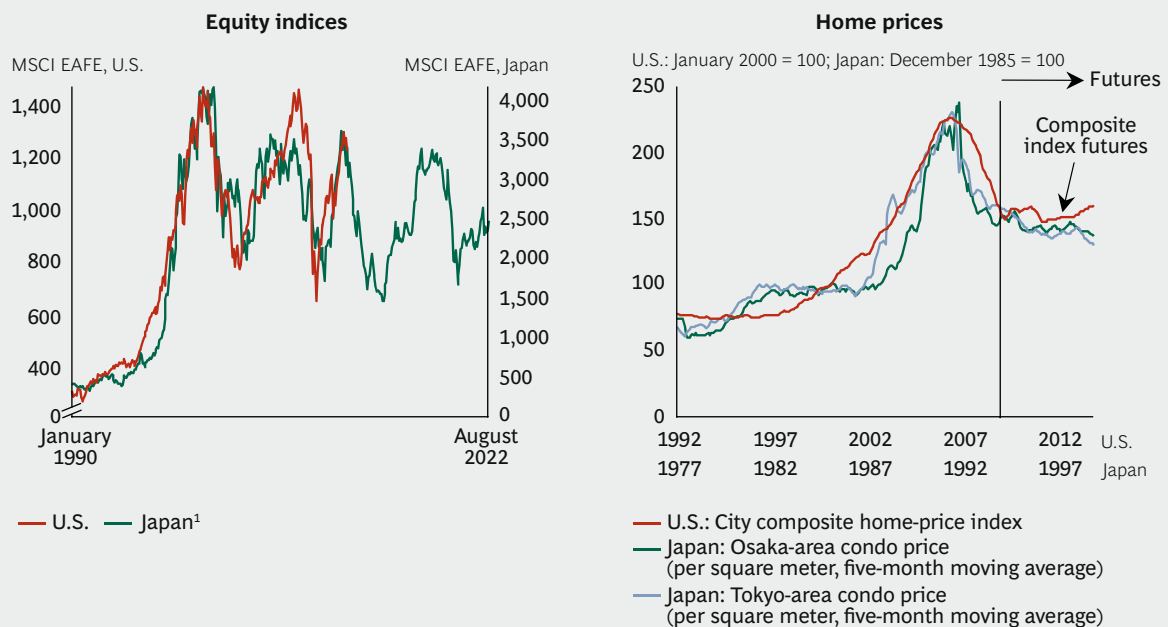
## A Program for the United States

The situation in the U.S. is different from that of the euro zone and, in a way, would be less complicated to resolve. The U.S. has all the levers with which to address the crisis and would not need to coordinate 17 countries with diverging interests. But some facts would need to be acknowledged before decisive action could be taken:

- In spite of massive intervention by the Fed and the U.S. government, growth remains anemic.
- The deleveraging of private households will have to go on for many years.
- The real estate market has not yet stabilized. About 11 million U.S. households suffer from negative equity (their mortgage outstanding is higher than the value of their home). And the supply of homes is still in excess by 1.2 to 3.5 million (depending on the data used to estimate this number).
- The U.S. government deficit is not sustainable and will need to be brought back to acceptable levels, which will slow growth and amplify the problems of the private sector.
- In spite of a significant weakening of the dollar, the U.S. is still running a trade deficit that cannot be blamed on China alone. It reflects a lack of competitiveness in some key markets and the low proportion of manufacturing in the U.S. economy compared with countries such as Germany and Japan.
- There is a striking similarity between the U.S. and Japan in the development of stock and real estate prices. (See Exhibit 5.) A correlation does not mean causality, but it is a sobering picture should Ben Bernanke and his team fail to reflate the economy.
- The interventions of the Fed, notably the programs to buy financial assets, have created a monetary overhang that could be the basis for sizable inflation in the future. (See *Stop Kicking the Can Down the Road: The Price of Not Addressing the Root Causes of the Crisis*, BCG Focus, August 2011.)

**Stabilizing the Real Estate Market.** The U.S. authorities recognize that the most important lever to get the economy back on track is stabilization of the real estate market. Not only is it important in its own right, but its effects on consumer confidence (and thus on spending) would be significant. Real estate is by far the most important asset of private households. The real estate bubble pushed already high levels of private household debt to an unprecedented 140 percent of disposable

## EXHIBIT 5 | The U.S. Looks Very Much Like Japan



**Sources:** Thomson Reuters Datastream; Richard C. Koo, “U.S. Economy in Balance Sheet Recession: What the U.S. Can Learn from Japan’s Experience in 1990–2005,” 2010.

<sup>1</sup>Data for Japan start in December 1978 and are moved forward by 133 months.

income in 2007. Since then, U.S. households have started to save and pay back. Nevertheless, their debt load is still at about \$13.3 trillion (117 percent of disposable income). Given that a further reduction of private household debt of between \$2 trillion and \$3 trillion would be necessary to restore the financial health of the U.S. consumer, such deleveraging would reduce economic growth for many years to come.

According to the S&P’s Case–Shiller Home Price Indices, real estate prices have dropped to 2003 levels. Potential buyers are unsure about which way the market will move. This uncertainty is exacerbated by the 11 million homeowners with negative equity, which is increasing the problems of banks trying to recover part of their loans through foreclosure.

So, if more traditional economic weapons are not working, how might the government try to stabilize the U.S. real estate market?

It could use a tax on financial assets similar to the one we speculated about in Europe. Private household debt in the U.S. needs to be reduced from 96 percent to 60 percent of GDP. To achieve this, the government might be forced to reduce the outstanding mortgage balance—for all those who bought or refinanced their home between 2003 and 2010—in line with the 2003 price levels now prevailing. This would imply write-offs in the range of 12 percent (for properties bought in 2004) to 28 percent (for properties bought in 2008, at the height of the real estate bubble). These would need to be real write-offs, reducing the effective debt burden of the

debtors. In addition, by writing a put option, the U.S. government would set a floor: guaranteeing 2003 home prices for everyone by using a “household stabilization vehicle.” The U.S. government would be setting a minimum price and simultaneously stimulating private demand, since potential buyers would be less likely to wait for even lower prices in the future.

Such a course of action would pose a significant issue of moral hazard, benefiting those who were reckless and imposing a share of the burden on those who were careful. But the government could conclude that the total economic and social costs of a prolonged period of low growth and deleveraging are so huge that unconventional measures are justified. After all, inflation would have even worse side effects.

**Addressing the Debt Overhang.** The U.S. would also need to reduce the debt overhang of the government, of consumer loans besides mortgages, and of the nonfinancial corporate sector in the same way as in Europe. As Exhibit 2 shows, the total debt overhang in the U.S. equals €8.2 trillion (\$11.5 trillion), or 77 percent of GDP. In the somewhat unlikely event of the U.S. following the same path that Europe might pursue, a one-time wealth tax of 25 percent of financial assets would be required. As in Europe, this would also require the following initiatives:

- Cleaning up the banking sector by calculating the losses and recapitalizing as needed—even if it means wiping out existing shareholders
- Additional taxes on real estate, including an increased capital-gains tax to offset the support for the real estate market
- Creating an incentive for corporations to invest in R&D and new machinery by taxing profits not reinvested
- A commitment by the government to restrict its debt level and to prepare for the increasing costs of an aging population by either limiting benefits or raising the retirement age

**Addressing the Fundamental Issues of the U.S. Economy.** We have argued for a long time that the U.S. economy needs to address some fundamental issues in order to become globally competitive again. In putting an end to muddling through, the government might also embark on a major restructuring of the economy:

- “Reindustrialize” and grow the share of the manufacturing sector from the current low of 12 percent of GDP to about 20 percent of GDP. This might then allow a rebalancing of trade flows.
- Revisit income distribution. Most U.S. families cannot make up for their income shortfall with increased credit—and 41 million Americans are officially considered to be below the poverty line.
- Take action to reduce dependency on imported oil by investing in new technologies and modernizing existing infrastructure.

- As in Europe, an administration that truly bit the bullet would take a long-term view and invest more in education.

All this is still speculation. But history shows that the U.S. economy, like no other, is capable of adjusting and implementing quite radical changes. And in our view, some of the actions described above might be pursued by the U.S. government if things do not improve soon.

## Global Coordination

The root cause of the financial and economic crisis is significant global trade imbalances. These have not improved since 2007: the U.S. and large parts of Europe run a trade deficit, while most Asian economies—notably China and Japan—as well as Germany and the oil-exporting countries run significant surpluses. All these countries have a large interest in an orderly debt restructuring, which would both protect their assets and lay the foundation for increased growth of the world economy.

Will this logic lead the countries with a trade surplus to contribute to a global solution to the crisis by importing more and exporting less? Only if the U.S. and Europe run a surplus can they support the necessary deleveraging and buildup of assets to (partially) cover future age-related spending. If Europe and the U.S. were to take drastic action, what would the emerging economies have to do?

- Encourage domestic consumption and refocus their economies away from purely export-driven growth. China has defined such a path in its latest five-year plan but it needs to happen much faster. Other countries should follow China's lead.
- Allow their currencies to adjust. By intervening to lower their exchange rates, the emerging economies not only supported their own export-based growth but also fueled the credit boom in the West. This pattern cannot continue.
- Encourage Western investment in their economies. Given their level of economic development, running a trade deficit and allowing foreigners to invest would be appropriate.

The G20 would also need to commit themselves to continued global cooperation and to not implementing protectionist policies. The G20 and the IMF could even consider establishing a global clearing mechanism for trade deficits and surpluses similar to the one proposed by John Maynard Keynes in 1943.<sup>7</sup> Such a mechanism would encourage countries to rebalance their current account balances.

## Will It Happen? And What Happens If Not?

The programs we have described would be drastic. They would not be popular, and they would require broad political coordination and leadership—something that politicians have replaced up til now with playing for time, in spite of a deteriorating outlook.

Acknowledgment of the facts may be the biggest hurdle. Politicians and central bankers still do not agree on the full scale of the crisis and are therefore placing too much hope on easy solutions. We need to understand that balance sheet recessions are very different from normal recessions. The longer the politicians and bankers wait, the more necessary will be the response outlined in this paper. Unfortunately, reaching consensus on such tough action might require an environment last seen in the 1930s. Things were certainly easier in Mesopotamia.

NOTES:

1. Jacopo Ponticelli and Hans-Joachim Voth, "Austerity and Anarchy: Budget Cuts and Social Unrest in Europe, 1919–2009," Centre for Economic Policy Research, August 2011, available at [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=1899287](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1899287).
2. "Fed's Bullard: Large Balance Sheet a Concern," Reuters, July 29, 2011, available at <http://www.reuters.com/article/2011/07/29/usa-fed-bullard-inflation-idUSW1E7IB05320110729>.
3. "Global Risks Are Rising, but There Is a Path to Recovery," Remarks at Jackson Hole by Christine Lagarde, Managing Director, International Monetary Fund, August 27, 2011, available at <http://www.imf.org/external/np/speeches/2011/082711.htm>.
4. Stephen Cecchetti, Madhusudan Mohanty, and Fabrizio Zampolli, "The Real Effects of Debt," BIS Working Paper No. 352, September 2011, available at <http://www.bis.org/publ/work352.htm>.
5. Stephen Cecchetti, Madhusudan Mohanty, and Fabrizio Zampolli, "The Future of Public Debt: Prospects and Implications," BIS Working Paper No. 300, March 2010, available at <http://www.bis.org/publ/work300.htm>.
6. See Stephane Deo, Paul Donovan, Larry Hatheway, "Euro Break-up—The Consequences," UBS Investment Research, September 6, 2011; Willem Buiters and Ebrahim Rahbari, "The Future of the Euro Area: Fiscal Union, Break-up or Blundering Towards a 'you break it you own it Europe'," Citigroup Global Markets Global Economics View, September 9, 2011, available at <http://www.willembuiters.com/3scenarios.pdf>; Willem Buiters, "A Greek Exit from the Euro Area: A Disaster for Greece, a Crisis for the World," Citigroup Global Markets Global Economics View, September 13, 2011, available at <http://www.willembuiters.com/exit.pdf>.
7. John Maynard Keynes, "Proposals for an International Clearing Union," in D. Moggridge, ed., *The Collected Writings of John Maynard Keynes*, Vol. XXV (London: The Macmillan Press, 1980), 168–96.

## About the Authors

**David Rhodes** is a senior partner and managing director in The Boston Consulting Group's London office and the chairman of the firm's global practices. You may contact him by e-mail at [rhodes.david@bcg.com](mailto:rhodes.david@bcg.com).

**Daniel Stelter** is a senior partner and managing director in BCG's Berlin office and the leader of the Corporate Development practice. You may contact him by e-mail at [stelter.daniel@bcg.com](mailto:stelter.daniel@bcg.com).

## Acknowledgments

The authors are particularly grateful to Dirk Schilder and Katrin van Dyken for their contributions to the writing of this paper. They would also like to thank the following members of BCG's editorial and production team for their help with its preparation: Katherine Andrews, Angela DiBattista, Kim Friedman, Abby Garland, Gina Goldstein, and Sara Strassenreiter.

The Boston Consulting Group (BCG) is a global management consulting firm and the world's leading advisor on business strategy. We partner with clients in all sectors and regions to identify their highest-value opportunities, address their most critical challenges, and transform their businesses. Our customized approach combines deep insight into the dynamics of companies and markets with close collaboration at all levels of the client organization. This ensures that our clients achieve sustainable competitive advantage, build more capable organizations, and secure lasting results. Founded in 1963, BCG is a private company with 74 offices in 42 countries. For more information, please visit [www.bcg.com](http://www.bcg.com).

For a complete list of BCG publications and information about how to obtain copies, please visit our website at [www.bcg.com/publications](http://www.bcg.com/publications).

To receive future publications in electronic form about this topic or others, please visit our subscription website at [www.bcg.com/subscribe](http://www.bcg.com/subscribe).

© The Boston Consulting Group, Inc. 2011. All rights reserved.  
9/11