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*The Review of Economic Studies*, Vol. 14, No. 2, 1946-1947

# The Pure Theory of International Trade

The classical theory of international trade is very remote from the problems which perplex us at the present day. Nevertheless, the traditional teaching has a vague but penetrating effect on current thought. In particular there is always lurking at the back of our minds the conception of a natural position of equilibrium in international trade which would establish itself if the economic forces of the market were allowed full play. It therefore seems worth while to re-examine the classical theory and to try to see what basis it offers for the belief in a natural tendency towards equilibrium.

## I

The classical model for the discussion of international trade, as we find it, for instance, in Marshall's *Pure Theory*, is based on the following assumptions[1]:

(1) Given productive resources within each country, all fully employed, and no mobility of factors of production between countries.
(2) Given tastes and technical knowledge.
(3) Perfect mobility of factors between industries within each country.
(4) Perfectly competitive conditions within each industry.
(5) Annual value of imports and exports equal for each country.

The assumption of full static equilibrium is made merely for convenience, and the classical model can be adapted to deal with a world in which capital accumulation is going on. But the assumption that trade balances for each country is central. This entails that there are no international capital movements. So long as owners of wealth are free to lend their money where they please, a world without capital movements can be conceived only if the rate of interest and the prospect of profit are the same in each country, so that there is no motive for international lending. Since this requires that capital accumulation has reached the same stage all over the world, we are pushed by the initial assumptions into contemplating a position so remote as to be entirely without interest.

The alternative is to postulate that international lending is non-existant simply because it is unknown—the owners of wealth in each country never contemplate acquiring foreign capital. The rate of interest and the level of profit on capital can then be different in different countries. Within each country the rate of interest is such that there is zero saving with full employment, and the stock of capital equipment is such that the rate of profit is adjusted to that rate of interest. Rich and thrifty countries attain equilibrium with a low rate of interest and a high ratio of capital to labour and land. Poor and unthrifty countries have a high rate of interest and a low ratio of capital. This interpretation seems more congenial than the first to the spirit of the classical analysis, which draws a sharp distinction between the principles of international and domestic trade, and it is on this basis that the argument of the first three sections of this paper is conducted.

The classical model can be adapted to the case where capital accumulation is taking place in the various countries, so long as we retain the assumption that there is full employment in each country when trade is balanced. On this assumption, the rate of interest in any one country is such as to assure whatever rate of home investment, in prevailing conditions of thriftiness, will maintain full employment there. The

[1] Marshall's *Pure Theory of Foreign Trade*, pp. 1–2.

actual stock of capital at any moment is then the result of past history, and the stock of capital is changing through time.

The assumption that trade is balanced for each country entails that relative levels of prices in different countries are such that traders, each acting individualistically in the pursuit of profit, selling in the dearest market and buying in the cheapest, between them produce the result that imports for every country are equal to its exports. What mechanism ensures that equilibrium price levels are established? There are two main factors governing the relationship of prices in any one country to prices in the world outside—the exchange rate of its currency, and the relative level of its money wage rates. To simplify the argument, let us postulate that exchange rates are rigidly fixed, and that a universal and smoothly working gold standard is in operation. Then the establishment of equilibrium price levels must come about through movements in relative money-wage levels.

When, by chance, prices in one country are below the equilibrium level, its exports exceed its imports, and gold flows in. Or when prices are above the equilibrium level, gold flows out. In its simplest form the traditional analysis, relying on a crude quantity theory of money, states that the movement of gold of itself brings about a movement of relative prices, gold continuing to flow until relative prices reach the level at which exports and imports are brought into equality.[1] In a more sophisticated form, the traditional analysis states that when gold is flowing out of a country its interest rate has to be raised. This checks investment, causes unemployment, thus reduces demand for consumption goods as well as for investment goods, and consequently lowers prices. Conversely, when gold flows in, the rate of interest is lowered, employment increases and prices rise.

This argument, as we find it, for instance, in the Cunliffe Report,[2] blurs over an essential point. The reduction in investment, caused by the rise in interest rates, and the consequent unemployment and fall in consumption, reduce the demand for imports, quite apart from any fall in home prices. Indeed, it is conceivable for the short-period elasticity of supply to be so great that the fall in home prices accompanying a fall in output is negligible. It is the fall in real income, in the first instance, which reduces imports, and staunches the outflow of gold. But this equilibrium in the balance of payments is maintained only on condition that incomes remain at their reduced level. Recovery to full employment would start the outflow of gold again. Meanwhile, however, it may be assumed that unemployment is leading to a fall in home money-wage rates. The consequent fall in home costs relatively to the world level (which at the same time may be rising because of the contrary effects produced in countries gaining gold) will increase the volume of exports and reduce the volume of imports corresponding to a given level of home income. If activity remains at its reduced level, an inflow of gold then develops, relaxing the restriction of credit. A sufficient fall in home money-wage rates will allow the rate of interest to be restored to its former level and full employment to be re-established. This is all implied in the Cunliffe doctrine, but the vital distinction, between restoration of the balance of payments due to reduced home activity and restoration due to the competitive advantage given to home production by a relative fall in home costs, is not clearly brought out in the analysis.

The traditional account of the operation of the gold standard is not very convincing. The rise in interest rates on which it relies is primarily a rise in bank rate. A rise in bank rate, in a stable world, could be relied upon to check an outflow of gold by

[1] Marshall, *op. cit.*, p. 3.

[2] *First Interim Report of the Committee on Currency and Foreign Exchanges after the War*, 1918, paragraphs 4-7 and 16-17.

attracting short term loans from abroad, but it is highly disputable that it could fulfil the more fundamental task of reducing employment. The direct effect of a rise in bank rate on investment in stocks could at most be very short-lived, and the indirect effect on long-term investment is very uncertain. It may be doubted whether the sympathetic rise in long-term rates due to a rise in bank rate was ever very great,[1] and it may be doubted whether even an appreciable rise in long-term rates is a very powerful influence in checking long term investment, when other circumstances are favourable to it. This is a complicated subject, which has given rise to much controversy. It is fortunately not necessary to settle the point before proceeding with our argument.

Once it is admitted that a fall in money-wage rates plays an essential part in the supposed mechanism, we can short-circuit the whole argument about interest rates, and assume simply that money wages fall when there is unemployment. To postulate absolutely full employment raises unnecessary complications. Let us suppose that in equilibrium conditions, with balanced trade, there is a small margin of unemployment, sufficient to give some flexibility to production, but not sufficient to allow any large change in total output to take place. We must further assume that with this normal level of unemployment wages are stable ; with more unemployment, wages fall continuously, and with less, wages rise continuously.

Now, since there is a normal level of unemployment when trade is balanced, an excess of imports (if investment remains the same) causes more than normal unemployment, and a fall in wages. An excess of exports reduces unemployment below the normal level, and raises wages.

On the assumption of perfect mobility of labour, any change in money wages must be uniform throughout the country, and on the assumption of perfect competition prices are governed by marginal costs, and therefore by wage rates. A relative change in home and foreign wage rates will produce a relative change in the prices of home-produced goods embodying imported materials. Apart from this, the prices at a given level of output of home produced goods will move proportionately with money wage rates.

On these assumptions, when there is disequilibrium in trade, home money wages and prices will continue to move, relatively to the world level, until trade balances, and the normal level of unemployment, which may be called " full employment " for short, is restored. This interpretation seems to be congenial to the spirit of the classical model, and the intention of the argument is no more than to bring its implications into a clear light.

If this interpretation is accepted, the next question to be met is : Can equilibrium in the balance of trade necessarily be established by the mechanism of changing relative money-wage rates ? It may be objected that in some concatenations of elasticities of demand and supply a rise in wages (or an appreciation in exchange rate) may increase a surplus of exports, or a fall increase a surplus of imports, instead of wiping it out,[2] but it can be shown that, from a formal point of view, this objection is not fatal to the classical analysis.

Let us first consider the case where departure from equilibrium consists in a surplus in the balance of trade of a certain country, Alpha. Money wage rates rise rela-

[1] Kalecki *Essays in the Theory of Economic Fluctuations*, p. 107, *et. seq.*

[2] Cf. Lerner : *Economics of Control*, p. 377, and Joan Robinson : *Essays in the Theory of Employment*, 1947 edition, p. 142.

tively to the world level.[1] This raises the costs of goods produced in Alpha, and raises the purchasing power of a day's earnings over goods produced abroad (the terms of trade have turned in Alpha's favour). Consider first the effect upon the value of Alpha's imports. Foreign goods have become cheaper relatively to home goods (because home costs have risen relatively to the world level). This increases the demand for imports. Real home incomes have increased (because home money incomes, which are partly spent upon foreign goods, have risen relatively to world prices) and for this reason also there will normally be an increase in demand for imports. Furthermore, the increase in demand will cause an increase in the prices of the goods concerned (neglecting cases of falling supply price) to an extent depending on their elasticity of supply. The total value of imports is therefore increased, and this tends to reduce the trade surplus with which story began.

A perverse case can be conceived in which the main imports into Alpha are " inferior goods " the demand for which falls off as real income increases. There may then be a decline in the value of imports when home money-wage rates rise, so that the disequilibrium would be enhanced instead of mitigated, as far as the import side of the balance is concerned.

Now look at the export side of the balance. Costs in Alpha have risen, and the price on world markets of Alpha's export goods tend to rise. The change in the value of Alpha's exports therefore depends on the elasticity of the rest of the world's demand for Alpha goods. If Alpha is a small part of the world, selling in competition with rival sources of supply, the demand for her exports will be elastic and their value will fall off as their prices rise. If Alpha is the sole source of supply of some specialities, world demand may be inelastic ; there will then be a perverse reaction, the value of exports increasing with home money-wage rates. But this can be true only over a certain range. So long as the export surplus persists wages (on our assumptions) continue to rise, and at some point the specialities in question become so expensive, relative to world money incomes, that the demand for them turns elastic. Moreover, real income in the rest of the world is reduced when money-wage rates in Alpha rise, and the goods which she supplies go up in price. (This is the converse of the rise in real income in Alpha referred to above). If Alpha is a small country this effect on the rest of the world is insignificant, but if Alpha represents an important fraction of world production, then the impoverishment of the rest of the world will cause a decline in Alpha's exports. Thus, though there may be a perverse reaction over a certain range, at some point, as Alpha money-wage rates rise, the value of Alpha's exports must fall off, and there is some level of Alpha wages at which exports fall to zero. Therefore, even if there is a perverse reaction in imports, the fall in value of exports must sooner or later counter-balance it. The mechanism of rising wages can be relied upon to wipe out an export surplus, at some level or other.

Now consider the converse case, where disequilibrium consists in a surplus of imports. There is a deficit in the balance of trade of a country, say Beta. Wage rates in Beta fall. The reduction in the price of her exports may lead to a rise in their total value, and so contribute to wiping out the deficit. But there may be a perverse reaction, the value of exports falling with price. In this direction, the perverse reaction does not tend to be reversed as the fall in wages continues, for demands tend to become less

[1] For simplicity of exposition we may assume that money-wage rates in all other countries remain unchanged. But our whole argument is conducted in terms of relative wage rates, and the absolute level of world prices does not come into it. It is possible, however, to use as a standard of value the wage unit of any one country—that is, the money value of a day's earnings of a representative worker in that country. Wages in Alpha and in the rest of the world can then be calculated in terms of this standard unit. The relationship between Alpha wages and world wages which gives equilibrium is the same in whatever unit they are calculated.

elastic as prices fall and the saturation point is approached. On the import side, however, equilibrium is bound to be restored, later if not sooner. Both the substitution of home for imported goods, and the decline in real income due to the fall in home money income relatively to world prices, reduce the demand for imports, and consequently also reduce their prices (to an extent depending upon elasticity of supply from the rest of the world). There is a limit to the possible fall of prices of imported goods, but no limit to the possible reduction in their quantity. At some level of relative money wages Beta becomes too impoverished to import anything at all. The value of exports can never sink to zero, as wages in Beta fall, but the value of imports can. Thus, even if there is a perverse reaction upon exports, sooner or later the fall in Beta wages must wipe out the surplus of imports.

From a formal point of view, the classical analysis (on its own assumptions) can thus be vindicated. It is to be observed, however, that there is nothing in the argument to show that balance can necessarily be established for a deficit country with its existing population. If it is densely populated (relatively to the fertility rather than the extent of its soil) and depends upon imports of food, the process just described, by which a fall in home money incomes relatively to world prices, reduces the physical volume of imports, will involve extreme distress. There will be strong pressure to emigrate, and if emigration is impossible, Malthusian misery will reduce the population. The hidden hand will always do its work, but it may work by strangulation.

While the traditional theory was being developed by Marshall the assumption of " given factors of production in each country " was belied by large-scale migration (as well as by international investment), and it was not necessary to take the assumption seriously. Nowadays the safety valve of migration is choked up, and many countries are faced with the problem of excessive population relatively to their opportunities to export. The classical argument requires whatever reduction in the price of their exports relatively to imports (that is, whatever cut in their terms of trade) will establish balance, and the required cut may entail a steep fall in their standard of life, unless the number of mouths to be fed on imports can be reduced. We need not go to the Malthusian east to find examples, or to the defeated nations of Europe. It may well be that our own country has been left by the war in some such situation.

A good deal of present-day discussion of international trade seems to be based on the notion that there always is a position of equilibrium to be found by relying upon the operation of the pricing system, and it is necessary to recognise that the classical doctrine does not exclude starvation from the mechanism by which equilibrium tends to be established.

Our argument is conducted in terms of varying money-wage rates with rigid exchanges, but it applies equally to varying exchange rates. The effect upon relative prices at home and abroad of a change in exchange rate is the same as the effect (on our assumptions) of an equal proportionate change in wage rates. A fall in money-wage rates entails certain evils for the home economy—a rise in the value of money gives an unearned increment of real income and wealth to creditors which may be socially undesirable, and the corresponding increased real burden of debt is deleterious to industry ; expectations of future falls in prices check demand for all durable goods, and may make the maintenance of full employment impossible. These secondary evils do not occur if adjustment is made by way of exchange rates. But this does not affect the main issue. The deterioration in the terms of trade of a deficit country necessary to wipe out the deficit is the same whether it is brought about by exchange depreciation or through reductions in money-wage rates. The loss involved in the passage to equilibrium cannot be evaded by chosing one route rather than the other.

In what follows we shall continue to assume fixed exchange rates, and argue in

terms of changing relative wage rates, in order to simplify exposition, but at every point the argument can readily be transposed into terms of changing exchange rates.

## II

We are now able to set out the classical doctrine of " comparative costs " without tying ourselves up uncomfortably in the classical " bales of goods."

The first point to be established is what determines the relative money-wage levels in the various countries. The stock of capital equipment in each country is given, at any moment, and it is assumed to be always adapted in the most appropriate manner to whatever type of production is being carried on. The rate of investment in each country is such that there is full employment when trade balances and the rate of interest must be such as to fulfil this condition. We can therefore determine the net productivity of labour in each country.

The gross productivity of labour (value of output divided by labour employed) is determined, in each country, by the capital stock in that country, by natural conditions, the level of skill and of education, and so forth, and by the conditions of world demand for the commodities which it produces. The net productivity of labour is the gross productivity *minus* the cost of capital and land. Thus in poor or unthrifty countries, where the stock of capital equipment is relatively small, and the rate of interest which ensures equilibrium relatively high, the net productivity of labour will be lower than in countries plentifully supplied with capital, unless this disadvantage is offset by natural endowments, such as a high ratio of fertile land to population, or natural facilities for producing some rarity which commands a high price in world markets. The productivity of labour falls as employment in any one line is extended, partly because of diminishing physical returns (which, allowing for transport, will be the normal rule) and partly because of the fall in price of any one commodity when more of it is sold.

Since perfect mobility within each country is assumed, there is a uniform level of real-wage rates throughout all industries in any one country, and net productivity at the margin of production in each industry is the same throughout the country. The level of money wages, in equilibrium, reflects the national level of productivity. Thus there is a definite pattern of relative national money-wage rates (corresponding to national productivities) which will give equilibrium. The competitive advantage of high productivity is offset by high money costs of labour, so as to ensure that trade balances. High-productivity, high-wage countries then trade on even terms with low-wage, low-productivity countries, each country being a high-cost producer for some commodities and a low-cost producer for others. This is the basis of the familiar doctrine that " no country can undersell the rest all round."

Suppose that one country, Alpha, has a money-wage level, in equilibrium, twice that prevailing in the rest of the world (treating the rest of the world as a unit for the sake of simplicity). Then Alpha will export those commodities for which the net productivity of labour, at quantities sufficient to supply the home market only, is more than twice the world level. Exports will be pushed up to the point at which the value of net product at the margin is equal to no more than twice the world level, that is to the point at which net productivity is equal to wages in Alpha. She will import those commodities for which the net productivity of labour, if the whole home market were supplied, would be less than twice the world level. For some commodities (grapes in Scotland) there is no output at which productivity in Alpha would be twice the world level, and the whole of Alpha's consumption will be imported. For other commodities productivity is twice the world level for small quantities, but falls below

that level before the whole of home demand is satisfied. Of these, part will be produced at home and part imported.

Another country, Beta, has a money-wage level in equilibrium half that in the rest of the world. She will export commodities in which productivity is more than half the world level, and import commodities in which it is less than half the world level.

For a high-wage country like Alpha the purchasing power of an average day's earnings over world produce is relatively high, and her citizens benefit in so far as imports enter into their standard of life. It is high productivity in tradable goods which necessitates high money wages. If Alpha's advantage lies in some freak of nature, such as valuable mineral deposits, and her general productive efficiency is not great, the purchasing power of a day's earnings over home goods will be relatively low, and the benefit from her high productivity is confined to high purchasing power over imports. If her advantages spring from a plentiful supply of capital equipment, superior technique, efficiency of management and skill of labour, productivity will be high in many lines which do not enter into international trade, as well as in those that do, so that over a wide range of home goods, as well as over imports, the purchasing power of a day's earnings is high, and for a further reason her standard of life tends to be high. But it so happens that there are a number of lines in which general industrial efficiency has little scope to show itself and in which importation is impossible. This is true especially of direct personal services. The wages of a valet in America are higher than those of an Indian bearer, not because the American is more efficient at valeting (the reverse may well be the case), but because superior productivity of industrial and agricultural labour in America has set wages there at a higher level than in India. This is of particular importance for those who are trying to support a middle-class standard of life on a moderate income. Middle-class pensioners often prefer to retire to industrially backward countries where " money goes further " than it does at home. The same principle applies, to some extent, to services such as retailing, which enters into the final price even of imported goods. And house-building is generally a relatively backward industry where importation is impossible (though " pre-fabrication " may perhaps change this situation). For these reasons, the cost of living tends to be higher in high-wage than in low-wage countries. Differences between countries in their standard of life therefore generally tend to be less than differences in their average money incomes.

In the foregoing paragraphs we have strayed here and there from the strict conditions of the classical model and appealed for examples to the real world. This is permissible because in a very broad sense the classical model does reflect reality. It is certainly not the case that balanced trade and full employment generally prevail, but surpluses and deficits are generally small relatively to a country's total trade, and (taking good times with bad), unemployment is small relatively to the total of employment. Great differences between productivity in different countries must therefore be broadly offset by differences in money-wage rates.

The offset, however, is never exact, and the classical doctrine that no country can undersell the rest all round is not fully applicable to the real world.

Starting from a position of balanced trade, suppose that one country, Alpha, improves in efficiency in producing tradable goods. She now develops a surplus of exports. If there were already nearly full employment in Alpha at the beginning of the story, money-wage rates would start to rise, and the surplus would be wiped out in the manner described above. But if there was sufficient unemployment (in open or disguised form) to permit the increase in output to take place (along with any further consequential increase due to increased home investment) and still to leave a reserve

of labour, there is no reason why money wages should rise. Alpha is now a country of cheap labour, in the sense that her productivity, relatively to the rest of the world, exceeds her wage level relatively to the rest of the world, and she is under-selling the rest of the world all round, in the sense that she is a low-cost producer over a wider range of tradable output than that over which she is a high-cost producer.[1] Her terms of trade are less favourable than they would be if wages rose to the equilibrium level, and the rest of the world benefits to the extent that her goods are sold to it so much the cheaper. But the rest of the world experiences the disadvantage of having lost markets to Alpha and is consequently suffering from unemployment, or from greater difficulty in maintaining employment. It also experiences monetary difficulties owing to the drain of gold to Alpha, but this matter can be better discussed later, when we have removed the assumption that international lending is unknown.

Complaints by producers in other countries who are suffering from competition from cheap labour are often raised in connection with a low standard of life in the cheap labour country. " The native can live on a handful of rice," and this gives his employer an unfair advantage. The foregoing argument has no necessary connection with the " handful of rice." The United States is just as likely to be a cheap labour country, in the sense that money-wage rates lag behind productivity, as Japan or China.

At the same time it is true that cheap labour, in this sense, will often be found where there is a low standard of life. When industry begins to develop in a backward over-populated country the rates of money wages which it is necessary for employers to offer are held down by an elastic supply of labour, accustomed to very low earnings, from the over-populated country-side. At first productivity in the new industries may be so low that, even with very low wage rates, it is a struggle to compete with industrially advanced, high-wage countries, but, as time goes by, efficiency in industry is likely to improve. If the total population is constant, average real income in agriculture rises as surplus population is drawn away, and consequently the level of wages which will attract workers to industry also rises. The rise in wages, however, may lag behind the increase in industrial productivity, and if population in the country-side is increasing there may be no rise of wages at all. Thus labour in industry grows progressively cheaper as efficiency increases.

Whether the standard of life is high or low, a surplus tends to develop wherever productivity increases faster, relatively to money wage rates, than in the rest of the world. Since technical progress and capital accumulation proceed very unevenly over the world, while the response of wage rates to increased employment is very sluggish, the tendency to establish the equilibrium wage rates never works fast enough to catch up with changing circumstances.

The classical model therefore shows us that in reality disequilibium is the normal rule.

## III

The chief purpose to which the analysis of comparative costs has been put is to demonstrate the merits of free trade. But actually, as we shall see, the classical model cannot be used to show that protection is harmful to the interests of any one country,[2] though it can for the world as a whole.

Starting from a position of equilibrium, the effect of introducing a tariff in Alpha is to reduce her imports (unless the demand for imported goods is perfectly inelastic) and to increase home production for the home market. Home production will increase even if there is no direct substitution of home for imported supplies. Alpha may

[1] I am indebted to Mr. John Knapp for this method of setting out the argument.

[2] Quite apart from the " infant industry " case, which is not here discussed.

import nothing but copper and caviare, neither of which can be produced at home under any circumstances. When the price of these commodities is raised to final consumers in Alpha, less will be consumed and the sums paid for them to foreigners will be reduced (though total outlay upon them by Alpha consumers may have been increased). The proceeds of the import duties may be disbursed to Alpha citizens, for instance, by remission of other taxes in such a way as to compensate consumers for the import taxes which they pay. The sums formerly paid to foreigners for those quantities of copper and caviare which are no longer imported will then be spent on home goods. If the proceeds of the import duties are used for government outlay, which would not otherwise have been undertaken, again home production is stimulated.[1] In one way or the other, home expenditure on home production in Alpha is increased. Employment is therefore increased above the normal level and money-wage rates in Alpha rise. Her exports therefore fall in physical volume, and the labour released from producing them is absorbed into the expanding home industries.

If Alpha is a sufficiently important part of the world unemployment in the rest of the world due to loss of Alpha markets[2] will cause money wages there to fall, until labour released from exporting to Alpha is absorbed into home production substituted for imports from Alpha.

When adjustment to the situation created by Alpha's tariff has been completed, and full employment once more everywhere prevails, labour has been transferred from export to home production, both in Alpha and in the rest of the world.

The same equilibrium position, as has often been pointed out, could be established by a tax on Alpha's exports, calculated so as to bring about the same change in their total value in world markets. In this case the initial effect is a rise in the price of Alpha exports, a fall in their physical volume, unemployment in Alpha, and a fall in money wage rates until the labour released from exporting industries is absorbed into home production displacing imports, which have now become more expensive relatively to Alpha money incomes and home costs. Although the final position is the same, in real terms, the transition takes the form of a slump in Alpha, instead of a boom, which introduces an important difference. The following discussion is confined to the case of import taxes.

Now, Alpha's tariff causes a loss to the rest of the world, in so far as its opportunities to sell to Alpha, and therefore to buy from her, are curtailed. In Alpha, the tariff reduces productivity in real terms. After the transition has been completed, net productivity of labour in money terms is once more the same, at the margin, in export and home industries (each being equal to the new money-wage rate).[3] But from the point of view of Alpha consumers, an extra £100 earned in exports is worth more than an extra £100 earned in home industry, for £100 of exports exchanges for £100 of imports at world market prices, and for these goods consumers in Alpha are

[1] If the proceeds are used as a sinking fund for the national debt our assumptions require that the rate of interest shall be lowered to the point at which other forms of saving are correspondingly reduced, or home investment correspondingly increased. This applies also if thriftiness is increased because some Alpha citizens, when they find caviare unduly expensive, prefer to increase their saving instead of their expenditure on other things. Thus even in this case, home production is increased. If investment is increased the stock of capital accumulates faster than it would have done otherwise. This may lead to a change in the position of Alpha industries in the scale of comparative advantages which would not have taken place if the tariff had never been introduced. But this belongs to another part of the story.

[2] During the transitional phase unemployment in the rest of the world will reduce demand for Alpha exports. If the marginal propensity to import from Alpha is large, the initial fall in employment in Alpha's export industries may be sufficient to offset the increase in employment in her home industries, so that money wages in Alpha do not rise. In this case equilibrium is restored entirely by the fall in money-wage rates in the rest of the world.

[3] It is assumed for simplicity that cases of economies of large scale industry, if any, are distributed equally between export and home production, so that losses due to the reduced scale of the one balance gains due to the increased scale of the other.

willing to pay an excess over £100 equal to the tax upon them. Thus the real productivity of resources in exports must be reckoned in terms of the purchasing power of money in world markets, and real productivity in home industry in terms of the purchasing power of money at home market prices. When money values of the two are equal, the real value of productivity in exports is greater than in home industry, and there has been a loss due to transfering labour (with the appropriate capital equipment and land) from export to home industry. Since productivities are equal at the margin in the first instance, the loss is insignificant for a small transfer, and it becomes progressively greater as the transfer is extended.[1]

In this sense, real productivity in Alpha is reduced by the tariff. But this is not sufficient to show that Alpha's real income has fallen, for the terms of trade have been turned in her favour. When the gain in the terms of trade outweighs the loss of real productivity, Alpha enjoys a larger share of a diminished total world real income.[2]

It is obvious that this must be the case where the rest of the world's demand for Alpha goods has an elasticity not greater than unity. If the elasticity of demand for Alpha exports over the relevant range is equal to one, the total value of Alpha's exports, and therefore both the value and the volume of her imports, is the same after the imposition of the tariff as before (though Alpha citizens are paying more for the imported goods which they buy) and the additional home product of labour released from export industries is a net gain. If elasticity of demand for Alpha's exports is less than unity, their value, and consequently the value and the volume of imports, actually rises, and Alpha enjoys additional imports as well as additional home output.

It may seem strange that a tariff should increase imports. The reason is that the rise in real income in Alpha due to improved terms of trade leads to an increase in demand for imports which more than offsets the relative disadvantage of imports in the home market imposed by the tariff. If the demand for imports in Alpha does not expand in this way, so as to offset a rise in the value of exports, the rise in money-wage rates in Alpha must continue until the demand for exports turns elastic and their total value falls. In that case the improvement in Alpha's terms of trade is so much the greater.

So long as the elasticity of demand for Alpha's exports is not greater than one, a tariff, however high, will increase Alpha's real income. Where the elasticity of demand for Alpha exports is greater than one, their value, in equilibrium, is less after the imposition of a tariff than before. In this case it is possible for a tariff to be so high as to reduce Alpha's real income, just as it is possible for a monopolist to reduce his profits below the competitive level by charging too high a price for his commodity. But provided the tariff is not too high, it can easily be seen that Alpha's real income is increased by it. Suppose a tariff calculated to bring about a small transfer of resources from export to home industries. Since productivity at the margin was initially the same in all industries, the real value of the output lost in exports is only slightly greater than the real value of the output gained in home industries. But the loss in total value of exports (which governs the value of imports) is appreciably less

[1] The familiar index-number problem is here involved. The reduction in productivity is different from the point of view of different individuals, according to the extent to which they were accustomed, before the tariff, to purchase imports or home goods for which the price is raised (relatively to home money wage rates) by the operation of physical diminishings returns when the production of them is extended with resources transferred from export industries.

[2] The following argument is the same in substance as that of Edgworth : *Papers Relating to Political Economy*, Vol. II, " Bickerdikes Theory of Incipient Taxes." See also Lerner : " The Diagrammatical Representation of Demand Conditions in International Trade," *Economica*, August, 1934, p. 333, Scitovsky : " A Reconsideration of the Theory of Tariffs," REVIEW OF ECONOMIC STUDIES, Vol. X, No. 2, 1942 and N. Kaldor, " A Note on Tariffs and the Terms of Trade," *Economica*, November, 1940.

than the value of the output lost, since the price of the remaining exports is raised. Therefore the gain in volume of home output is greater than the loss of volume of imports, even if world prices of imported goods are unchanged. If the rest of the world's supply to Alpha is less than perfectly elastic, there is a further gain to Alpha, since a given reduction in value of imports then represents a smaller reduction in volume of imports.

If Alpha is a small country, both selling and buying in close rivalry with others, the elasticities of demand for her products and of supply to her of world products may be very high, but, taking transport costs into account, it is impossible for them to be infinite. There is therefore always some gain in real income to be made by a tariff, as compared to the position of equilibrium under free trade.

The gain to Alpha from a given tariff is greater: (1) the less the elasticity of demand for Alpha exports; (2) the less the elasticity of supply to Alpha of imports; (3) the greater the elasticity of Alpha's demand for imports; (4) the less rapid the fall in productivity as output expands in Alpha industries.

The advocates of free trade (apart from certain fanatics[1]) have generally admitted that one country can gain, at the expense of the rest of the world, by taxing imports. But they condemn such a policy on two grounds. The first is that it is inexpedient for one country to introduce tariffs, as this will provoke other countries to do likewise. This argument would not apply if the relevant elasticities were such that Alpha stood to gain from her own tariffs more than she lost by those of other nations. It is possible (though certainly not generally probable) that the absolute amount of Alpha's share in world real income might be greater even when world real income is reduced by protection all round than it would be under universal free trade. Assuming, however, that Alpha stands to lose by all-round protection, the force of the argument depends upon Alpha's influence in the world. If Alpha's political influence is such that other countries follow her lead, or if her economic importance is so great that her resort to protection threatens the standard of life of the rest of the world and drives other countries to protection in self-defence, then the danger of starting the race is one which she would be unwise to challenge. But if the rest of the world would behave in the same way whatever Alpha does, this argument has no force at all.

The second argument in favour of free trade is much more general. It is simply that it is immoral for one country to gain an advantage at the expense of the rest. When Alpha's economic situation under free trade is fairly comfortable, this argument has great weight. But let us glance back to the miserable situation of Beta, described above, when the establishment of equilibrium under classical free trade conditions requires an intolerable sacrifice in her terms of trade. If Beta had been in equilibrium at some time in the past the fact that she is now suffering from a deficit indicates that she has lost some competitive advantage, and, whatever policy she pursues it is likely that she will experience some reduction in consumption, as compared to the position while the deficit is running. But what we have to compare is her position if balance were restored by the classical mechanism of falling wage rates (or exchange depreciation) with her position if it were restored by means of a tariff. The dominant feature of the situation, which makes the classical solution onerous—a low elasticity of demand for Beta's exports—is one which also makes protection a promising alternative. And, in any case, the loss will be less, as we have seen (and may even be nil) if tariffs are used, than if classical equilibrium is reached. In such a case the purely moral claims of free trade cannot be urged to Beta's citizens with much hope of success.

[1] See *Tariffs : the Case Examined*, p. 14, note.

## IV

We have so far interpreted the classical model as applying to a world in which international lending is unknown. This is severe restriction upon its usefulness. Let us now consider how it must be modified to apply to a world which forms a single capital market. It is not necessary to assume that the capital market is perfect. Owners of wealth may have preferences as between countries, on account of differences in risk. There will then be a certain pattern of national interest rates established in the world. But for simplicity of exposition we will assume an approximately perfect world market in capital, so that practically the same rate of interest rules everywhere.

To satisfy the condition of full employment in each country we must assume that the rate of interest always finds the level at which world investment absorbs the rate of saving corresponding to full employment for the world as a whole. Investment will take place in those countries where the prospects of profit are greatest, and if the rate of investment in any country is greater than the rate of saving corresponding to full employment in that country the level of money wages there (relatively to the rest of the world) must be such as to cause a surplus of imports equal to the difference between the rate of investment taking place in that country and its home rate of saving. In any country where investment at home is less than the rate of saving corresponding to full employment, the level of money wages must be such as to cause a surplus of exports equal to the difference.

There is thus a unique equilibrium pattern of relative national wage rates corresponding to each pattern of world investment, but the position is continuously changing through time as the stock of capital in each country alters relatively to its opportunities for profitable investment.

To illustrate the mechanism of adjustment, starting for simplicity from a position in which trade happens to be balanced for each country, let us suppose that some fresh investment opportunities arise in Alpha. Investment in Alpha increases, her demand for imports rises, and a world boom sets in. According to our assumption, the rate of interest in the world is raised to the point at which home investment in the rest of the world is reduced to the same extent that it has increased in Alpha (assuming thriftiness unchanged).[1] Now, Alpha may be importing investment goods—say steel rails. Investment in other countries has fallen off, but exports to Alpha have increased. It may be that steel which was formerly going into investment in other countries is now shipped to Alpha. In so far as this is the case, re-adjustment takes place without any shift in employment (except into transport). A further part of the re-adjustment takes place by labour from home investment industries in other countries transferring to the production of investment goods for Alpha. In so far as this supplies the whole increase in Alpha's investment, no further re-adjustment is required.[2] But it is unlikely that the whole of Alpha's increased investment can be provided by importation of investment goods. Even if the rails are imported Alphan navvies must build the embankments. There is therefore an excess demand for labour in Alpha, and Alpha money-wage rates rise. Alpha exports therefore fall off, and there is a transfer from home consumption to imports. The rise of wages goes to the point at which sufficient labour is released from export and home industry in Alpha to carry out the investment. For the rest of the world, employment in exporting to

[1] In so far as the rise in the rate of interest increases thriftiness, the total of world investment is increased. Part of the labour required for investment in Alpha is then released from consumption industries, in Alpha and in the rest of the world.

[2] As a curiosity we may observe that if thriftiness in Alpha is increased by the rise in the rate of interest, while the whole value of her increased investment is imported, there will be an initial fall in employment in Alpha.

Alpha, and in making home goods in substitution for imports from Alpha, increases to the same extent that employment in home investment has fallen.

Now consider the position of one country in the rest of the world, say Beta. The impact of the new situation upon Beta is that employment in home investment has fallen, as a result of the rise in the rate of interest, exports to Alpha have increased, and so has home production in substitution for imports from Alpha, but there is no reason why these movements should exactly balance. If the decline in employment exceeds the increase, money-wage rates fall. Imports then decline and exports increase (to the rest of the world in general, not only to Alpha) until full employment is restored. In another country, say Gamma, the increase in demand for exports to Alpha exceeds the decline in home investment. Money wage rates then rise, checking the increase in exports to Alpha, reducing exports to other countries and increasing imports in substitution for home production. Finally, a position of equilibrium is reached in which relative wage levels are such that each country takes its share, directly and indirectly, in providing the excess of exports from the rest of the world to Alpha.

Those countries where this equilibrium involves a rise in money wage rates, relatively to the rest of the world, enjoy improved terms of trade, so that their real income is increased, while for the others real income is reduced. Alpha will normally be amongst those countries whose terms of trade improve, but she will not necessarily experience the greatest rise. It might happen that the relative rise in wage rates necessary for equilibrium was greater in Gamma than in Alpha.

We must now consider the financial aspect of the re-adjustment. Since the boom was centred in Alpha we may suppose that the rate of interest in Alpha rises somewhat ahead of the world level. This may have the result that the whole of the finance for the new investment projects is raised abroad, where interest rates are relatively lower. Now, on our assumptions, Alpha's import surplus is equal to the increase in her investment. Thus, assuming the foreign loans are drawn upon *pari passu*, with investment outlay, her balance of payments remain exactly in equilibrium. But the issues corresponding to the new investment may be partly subscribed by Alpha citizens. Alpha's foreign borrowing then initially falls short of her surplus of imports, and she loses gold. This leads to an additional rise in her rate of interest, relatively to the world level, which, to check the outflow of gold, must go to whatever extent is necessary to attract loans at the rate corresponding to her deficit. Equally it may happen that the initial relative rise in her interest rate attracts loans in excess of what is required to match her trade deficit. Alpha then gains gold until a relapse in her interest rate towards the world level chokes off redundant borrowing.

If the quantity of money in Alpha is strictly related to the quantity of gold in her central bank she will require a larger stock of gold to support her raised level of money incomes. In this case, at some stage during the transition to the new equilibrium, she must gain gold. This is brought about by keeping the relative rate of interest for a time at a level which induces lending by the rest of the world at a higher rate than corresponds to her surplus of imports. Once the gold is in, the rate of interest falls to the level which insures borrowing equal to the deficit.

There is no necessary connection between the source of Alpha's borrowing and the source of her imports. It may be that loans to Alpha come mainly from Beta, and exports to Alpha, mainly from Gamma. In the first instance, then, Gamma's export surplus rises above her lending, she gains gold and her interest rate lags behind the world level. Beta initially lends more than her surplus, loses gold and raises her interest rate, relatively to the world level. If there are no other countries in the story, Gamma then lends to Beta the difference between Beta's loans to Alpha and Beta's export surplus.

We have assumed up to now a nearly perfect world market, so that very slight differences in relative interest rates are required to adjust lending and borrowing to surpluses and deficits. Gold movements are required, if at all, only to make minor adjustments. But even if the capital market is rather imperfect there are unlikely to be great monetary strains in our imaginery full employment world. The dominant cause of a trade deficit is a higher rate of investment than is taking place elsewhere in the world. Deficit countries are those with favourable profit opportunities, and are attractive to lenders. Surplus countries are those where the prospect of profit from investment at home is relatively poor, and where the owners of wealth are therefore likely to be favourably inclined to taking up foreign securities. Thus there is a broad tendency to harmony between the flow of lending and the pattern of surpluses and deficits, and gold movements do not have very much work to do to bring about an exact adjustment.

The difference between the above analysis and what has been called the " neo-classical " account of capital movements (elaborated for instance by Tanssig[1]) is that a different point of departure has been taken for the discussion. The neo-classical story begins with Beta lending to Alpha. Beta consequently loses gold, her interest rate rises, prices fall (which may be interpreted to mean that the fall in home investment due to the higher interest rate causes unemployment and brings about a fall in money-wage rates) and so Beta squeezes out a surplus of exports. Meanwhile the gain of gold to Alpha raises prices in Alpha and so leads to an import surplus, while the fall in her interest rate, due to the inflow of gold, stimulates investment. There is nothing incompatible with this in the foregoing argument, but the case in which the initiating cause of capital movements is a difference in the profitability of investment in different countries seems to have a wider application (at least in nineteenth-century conditions, with which the neo-classical analysis was concerned) than the case in which the initiating cause is a change in lending by the citizens of one country to another.

The foregoing adaptation of the classical analysis to a world with international investment enables us to describe a pattern of trade which gives equilibrium for the world (though the equilibrium position is continuously moving through time). But the whole analysis is based upon the arbitrary assumption that world full employment is always preserved. When that assumption is not fulfilled there is no one pattern of trade which can be described as equilibrium. If there was ample unemployment in Alpha when investment increased, there is no guarantee that money wages will rise to the point at which her surplus of imports offsets the increase in investment. All we can say is that if wages in Alpha rise (or her exchange is appreciated) employment in Alpha will increase by less, and in Gamma and Beta by more, than if they do not. There is no one distribution of employment between them which has any more claim than any other (within a wide range) to be called the equilibrium distribution.

Nor will the monetary mechanism work smoothly when there is unemployment (quite apart from the flights of money, which in recent times have wrecked it altogether). Relative national money-wage rates (or exchange rates) are not forced to the levels which offset competitive advantages in trade, and, as we saw earlier, a deficit may arise from a country being undersold by cheap labour abroad just as well as from a high rate of investment at home. Deficit countries are not necessarily the most attractive to lenders, and very large differences in relative interest rates may be necessary in order to adjust lending and borrowing to surpluses and deficits.

But in a country which is losing gold, because of an import surplus not fully covered by borrowing, the monetary authorities are reluctant to make unemployment still worse by restricting credit and raising interest rates ; while the countries which

[1] Tanssig : *International Trade*, p. 232.

are gaining gold may be relatively prosperous, and their authorities have little motive, and may, in fact, not have the power, to bring about such a fall in interest rates as would induce their wealthy citizens to lend abroad on a scale corresponding to the country's trade surplus.

Thus balances of payments may remain out of equilibrium for long periods (indeed, the whole international monetary system may be disrupted before they are restored) and monetary strains further bedevil the confusion of trade. It seems, then, that as soon as the assumption of full employment is removed, the classical model for the analysis of international trade is reduced to wreckage (the removal of the assumptions of perfect mobility and perfect competition would blast it afresh).

On the other hand, if full employment is established by national policies, each country has a range of choice between home investment (or measures to promote home consumption) and an export surplus, as a means of securing it.

The more a country makes use of home investment (or reduced thriftiness) the smaller its surplus of exports (or the greater its deficit) and the more it helps to provide employment in other countries. The more it makes use of wage cutting (or exchange depreciation) or of protection, the harder is employment to maintain in the rest of the world. The situation of each country is affected by the policies of the rest, and any number of permutations and combinations are possible.

In short, the notion of a unique natural position of equilibrium is a mirage, and for better or worse, international trade must be directed by conscious policy.

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