

## **GAINS FROM TRADE - A THEORETICAL OUTLINE**

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**IT IS POSSIBLE** to present several economic theories which seek to “prove” that free trade benefits all countries and possibly all individuals. However the worker is unlikely to have more than a rudimentary knowledge of economic theory and it would be tempting to present him with simplified theories without mentioning their limitations. This approach shall be avoided and I shall attempt to present a reasonably realistic description of the benefits of free trade.

### **THE HISTORICAL DEVELOPMENT OF TRADE THEORY**

The idea that multilateral trade is undesirable, and that exports should be maximized and imports minimized in order to create a balance of payments surplus, corresponds to the Mercantilist view of international trade, which saw it as a zero-sum game in which one country gains at the expense of the other. Thomas Mun summarised the idea when he said “the balance of our foreign trade is the rule of our treasure”. This theory was basically flawed. Hume has shown that a balance of payments surplus cannot be sustained indefinitely [1] as rising prices caused by an expanding money supply will lead to a decrease in exports and an increase in imports. Adam Smith attacked mercantilism further, pointing out that the principal benefit from trade was not the accumulation of gold but the ability to export goods which had a low demand domestically but were desired by foreigners who would pay a higher price for them. This “rent for surplus” could then be used to import goods which could be produced more efficiently abroad. A further advantage of foreign trade would follow from the enlarged market which it would provide allowing for division of labour and specialisation. The domestic economy would become more productive and wealth would be increased.

Ricardo further developed the theory of international trade describing the gains from trade in terms of comparative advantage [2]. This theory states that it benefits a country to export the good which it can produce relatively more cheaply and to import the good which is relatively more expensive. Ricardo demonstrated this theory in a simple model involving two countries, England and Portugal, producing two goods, cloth and wine. The model involves six assumptions: (1) A labour theory of value (2) Constant returns to scale (3) A close relationship between labour inputs, costs and prices (4) domestically mobile and internationally immobile labour (5) perfect competition and flexible prices and (6) full employment. The

following table shows the opportunity costs involved in the production of each good in terms of the other:

Opportunity Costs for:	Wine	Cloth
Portugal	$80/90 = 8/9$	$90/80=9/8$
England	$120/100 = 6/5$	$100/120=5/6$

Portugal has a comparative advantage in wine production as the opportunity cost of producing that good in Portugal is lower than if it were produced in England. Similarly, England has a comparative advantage in cloth production [3]. If Portugal can buy cloth for less than  $9/8$  units of wine and if England can buy wine for less than  $6/5$  of cloth trade is mutually beneficial. Therefore, if the price of wine is between  $8/9$  units of cloth and  $6/5$  units of cloth, England and Portugal will trade. As long as the opportunity costs of producing at least one of the goods differ, trade will occur. Both countries can move resources into the industry in which they have a comparative advantage, increasing production of that good, which can be consumed domestically or exported. Cheap foreign goods can be imported, thereby reducing price, rather as if improved technology had reduced costs and prices. Therefore, Ricardo saw this type of price reduction as being equivalent to a productivity gain through improvements in technology.

The Ricardian model appears very appealing but it has several limitations. It ignores demand factors, it ignores the role of capital and any factors of production other than labour, it assumes that labour is homogenous, it describes static rather than dynamic comparative advantage and it treats income distribution effects inadequately. If an unemployed Portugese clothing worker could move effortlessly into the wine industry, as he might assuming full employment, he would probably be quite content with the Ricardian explanation of the gains from trade. However, if he remains unemployed and impoverished, he is likely to become disillusioned with the model.

### FACTOR PRICE EQUALISATION AND HECSCHER/OHLIN/ SAMUELSON

A more sophisticated, although still simplified model is provided by the interlinked Factor Price Equalisation and Heckscher-Ohlin-Samuelson (HOS) theorems. The theorems assume (1) that there are two countries, two goods-X and Y and two factors of production-capital and labour (2) identical production functions in both countries (3) constant returns to scale (4) perfect competition (5) no factor intensity reversals between X and Y (6) no specialisation (7) perfect mobility of factors internally and no international mobility (8) zero transactions costs internationally. These assumptions imply a unique correspondence between the marginal products of capital and labour in both industries and as with free trade both countries will have the same relative product prices [4]. We are able to state the

factor price equalisation theorem: with free trade the prices of factors (in terms of goods) will be equal in every country. Furthermore, it is factor prices, when given, that determine the capital labour ratio ( $K/L$ ) in each industry and if we assume the  $K/L$  ratio for the whole country is given, this determines the product mix. If, for example,  $K/L$  is low, the country is labour intensive and according to the HOS theorem, it will produce and export relatively more of the labour intensive good, having a comparative advantage in this good. The theorem assumes identical homothetic tastes in both countries so that tastes do not influence trade patterns. This assumption is made in order to show that it is not differences in taste which provide the incentive to trade, but differences in factor endowments.

It must be said that even without the aforementioned assumptions of HOS, that any competitive world equilibrium would be fully efficient if all countries were free to do the best they could, given their initial factor endowments and prevailing world prices. But the Factor Price Equalisation and HOS theorems demonstrate a further benefit of free trade; trading goods can equate the value of the marginal product of a factor in all its uses worldwide, ensuring efficiency and rendering mobility of capital and labour unnecessary. There may be obstacles to free movement of labour and even of capital in the real world and movement of goods can act as a substitute for movement of factors.

## **INTERNATIONAL TRADE AND INCOME DISTRIBUTION**

We may now present a diagram (see figure 1) illustrating the gains from trade in the context of HOS theory. We assume that a worker lives in a small country such as Ireland which produces two goods, labour intensive clothing (good  $x$ ) and capital intensive electrical goods (good  $y$ ). If the country initially operates under autarchy, it will be in equilibrium at a point such as  $P, C$  where it both produces and consumes. The country is then exposed to free trade at relative world prices ( $P_x, P_y$ ). The consumption possibility set is no longer bounded by the production possibility frontier ( $F'F''$ ) because if domestic production moves to point  $P'$ , to take advantage of Ireland's comparative advantage in  $Y$ ,  $Y$  may be exchanged for  $X$  at the rate  $P_x/P_y$  and the new consumption frontier of the economy is given by  $T'T''$ , the line through  $P'$  with slope  $P_x/P_y$ . At  $P'$  the domestic marginal rate of transformation (DMRT), equals the world price ratio (i.e. the MRT through foreign trade (MRTF)). Production must be efficient to maximise world GNP and this happens when domestic prices  $P_x/P_y$  are equated with world prices. Therefore we have efficiency in an open economy when the following condition holds:  $MRT = P_x/P_y = P_x/P_y = MRTF$ .

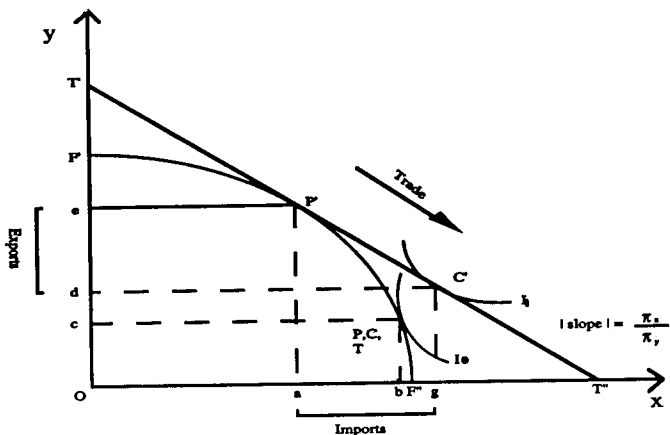


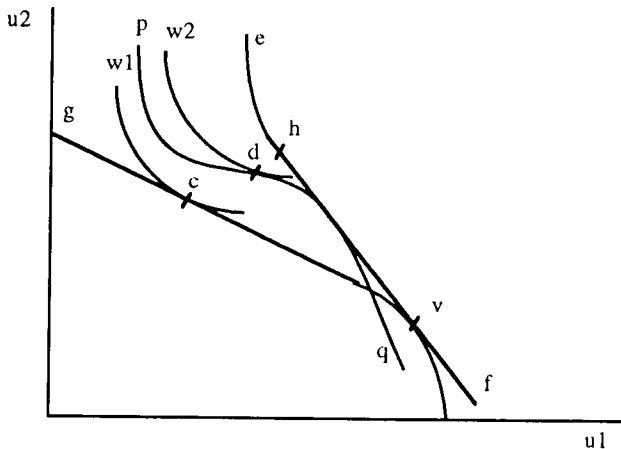
Figure 1: One Country's gain from Trade

It is now possible for the well being of both capital and labour to be improved if the economy operates at a point such as  $c'$  where an indifference curve ( $I_1$ ) is tangent to  $T''T''$ .  $I_1$  is higher than  $I_0$  which was tangent to the original point of productions.  $P, C$  so welfare has obviously improved. Production of good  $y$  has increased from  $oc$  to  $oe$ . A quantity equal to  $de$  is exported while domestic consumption of  $y$  increases by  $cd$ . Domestic production of  $x$  decreases from  $ob$  to  $oa$  (leading to the redundancy of our unfortunate worker, due to the contraction of the domestic clothing industry) but domestic consumption of  $x$  also increases as Ireland imports  $ag$ , increasing consumption by  $bg$ .

However, although the country as a whole gains from trade it is not clear whether labour will benefit, for according to the Stolper-Samuelson theorem, if cheap imports of good  $x$  enter the country, this will lower the domestic price of  $x$ , the labour intensive good relative to  $y$ , the capital intensive good which is exported. Due to the relation between factor and goods prices, the returns to capital and labour alter in the same manner. Thus while the welfare of capital increases, that of labour declines, with a lower wage rate prevailing.

In theory, it should be possible for those who have gained from trade to compensate the losers. As it is extremely unlikely that private capital owners will start handing out money to labourers while receiving nothing in return, this requires government intervention. It will no doubt irritate those who believe in free competition, that free trade in international markets is seen to be justified only by government intervention in the domestic market. If factors were in fixed supply, one could impose a tax on capital in order to subsidise labour and such a lump-sum transfer would have no efficiency cost. However in reality factors are not fixed and such a transfer will alter behaviour causing market distortions with resultant efficiency costs.

Figure 1 shows how trade lovers may compensate trade haters. The ordinal utility levels of two representative citizens, person 1 and person 2, are shown on the horizontal and vertical axes. Point d represents trade under autarchy, ef, represents the free trade social utility frontier and as, apart from the arc of intersection, it lies outside the autarchy frontier pq, we can see that consumption can be increased for the country as a whole. At the post trade point v person 1, the capital owner is much better off than under autarchy while person 2, the clothing worker has lost from free trade. If lump sum transfers are allowed, it is possible for full compensation to take place so that a point such as h, north-east of d, may be reached where both individuals are better off than under autarchy. However, if ideal lump sum payments are not feasible and we have Bergson social welfare contours such as w1 and w2, which favour the loser person 2, then redistribution may be harmful. We are now restricted to the feasibility locus Vg, which is inside ef and could even hoop inside point d. Therefore we end at a point such as C where person 2 is better off than person 1, but the economy is less efficient than under autarchy. It is unlikely that the government would sacrifice the gains from trade to compensate clothing workers and so, in this situation, it is unlikely that such redistribution will take place. Our clothing worker would have to suffer for the gains to the economy as a whole



**FIGURE 2**

## OTHER GAINS FROM TRADE

However the worker may be interested to know that not all gains from trade arise from comparative advantage and the Ricardian and HOS approaches do not provide an explanatory framework for all trade. If the assumptions of HOS are violated, in particular the relation of factor abundance to autarchy factor price ratios, and the assumed shapes of production functions, the theorem may fail to hold, or in some cases become completely meaningless.

Of the non HOS explanations for trade, the one most likely one to have relevance for an unemployed manufacturing employee is the theory of intra-industry trade. In the context of a market characterised by imperfect competition intra-industry trade can be generated by scale economies which increase efficiency of production. In this situation each country produces only a subset of the products of a given industry, being a net exporter in industries in which it has a comparative advantage, but also importing produce of that industry i.e. it engages in intra-industry trade. This type of trade is likely to occur if factor endowments and industry structures are similar.

This is likely to describe trade between developed countries. Labour will still be in demand and its price will not fall. It is possible for all factors to gain from trade. The worker rendered redundant by imports may find it relatively easy to find employment in another branch of the industry at home or he may seek employment abroad, as the model allows for mobility of labour.

International trade can lead not only to static production and consumption gains but also to dynamic gains from economies of scale, product differentiation and x-efficiency, from the learning curve effect and from innovation and technical progress. Free trade can play an important role in promoting competition and it can increase the variety of products available to consumers. In Eastern Europe international trade has provided a source of reference prices for countries whose prices did not reflect true domestic costs when they operated under the communist system. Trade has also provided an incentive for such countries to improve the quality of their produce where previously they were able to foist dreadfully inferior goods on their neighbours. These examples serve to illustrate how extensive the gains from trade can be in certain circumstances.

## CONCLUSION

So what does this imply about the consequences of free trade for a former worker in an industry which has been closed down due to competition from cheap imports. As the previous discussion shows, this question cannot be answered simply. It depends on what type of trade is involved and whether or not compensation is possible or desirable. It is also possible that free trade may lead to economic growth which will increase demand for all factors of production and provide

employment for the worker. In any case, whatever his own situation it is to be hoped that the worker will see that free trade has benefited his country in the aggregate and that it can be Pareto optimal with significant benefits for all.

#### **NOTES**

- (1) Assuming full employment and the absence of investment ahead
- (2) Smith referred only to absolute advantage
- (3) It does not matter that Portugal has an absolute advantage in the production of both goods.
- (4) This can be shown using an Edgeworth-Bowley Box diagram

#### **BIBLIOGRAPHY**

- Aron J., (1992),** "Understanding gains from trade" in *Student Economic Review*
- Balassa and Bauwells, (1987),** "Intra-Industry specialisation in a multi-country and multi-industry framework" in *Economic Journal*.
- Ethier E.J., (1988),** "Modern International Economics", Norton, London.
- Jones R.W.,** "International Trade essays in theory"
- Krugman P., (1987),** "Is free trade passe?" in *Journal of Economic Perspectives*
- Krugman P., (1983),** "New theories of trade"
- Layard P.R.G. and Walters A.A., (1978),** "Microeconomic Theory" London; McGraw-Hill
- Samuelson P., (1962),** "The gains from international trade once again" in *Economic Journal*
- Whelan M., (1990),** "Ricardo and 1992" in *Student Economic Review*