A REVIEW OF COMPARATIVE ADVANTAGE

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The theory of comparative advantage was first stated clearly by David Ricardo in 1817. It has since been refined and extended by other economists. Instead of looking at the absolute level of costs of individual products, the comparative advantage idea suggests that we consider the cost of producing additional units of any one product measured by the reduction necessary in the output of other goods. For example, to produce additional units of wheat, a nation would have to rearrange its resources. In doing so, it might have to give up the opportunity to produce some units of corn.

The theory suggests that we compare these "opportunity" costs (i.e., the value of corn given up) with international prices. Then a nation should import goods for which the international price is less than the domestic opportunity cost of producing an additional unit at home. And, by the same logic, that nation should export products for which the international price is higher than the domestic opportunity cost of producing an additional unit.

The resources released from production by importing goods can, in theory, be deployed in the production of export goods. It follows that, via specialization and trade, consumers in each trading nation can escape from the limited combinations of products available from only domestic resources. Through exchange, they can obtain a lower cost, more abundant, and wider selection of goods and services.

In the context of comparative advantage, international trade rests upon differences in ratios of prices and costs when the whole nation is viewed as the economic unit. Mutually advantageous trade can arise among nations as long as these ratios differ. And they will differ whenever there are differences between nations in climate, resources, people, and technologies. Because these ratios involve one price divided by another, the principle of comparative advantage is symmetrical. That is, if a country has a comparative advantage in the production of one or more goods, then it must have a comparative disadvantage in the production of at least one other good.

Comparative advantage is a real concept. It is not affected by changes in currency exchange rates or general inflation. This is because it is

the structure of relative costs and prices (expressed as ratios) which forms comparative advantage. Exchange rates among currencies of trading nations (e.g., German marks obtained per U.S. dollar) translate comparative advantage into absolute comparisons to which individual buyers and sellers respond.

For illustration, think of two countries called Alphaland and Betaland. Each can use its resources and people to produce two major products — agricultural goods (F) and manufactured goods (M). Panel A of figure 1 shows Alphaland's possible outputs of F and M based on its particular combination of natural resources, capital, and people.

If Alphaland used all its resources in agriculture, it could generate 50 units of F per year and no units of M. This is point *a* in figure 1. If only manufactured goods were produced, 50 units of M could be had per year and no units of F, point *c*. By shifting resources between farms and factories, many output combinations of F and M are possible along the line *abc*. Points inside *abc*, within the shaded area, are possible too. But they are inefficient, reflecting resource unemployment or underemployment. From any shaded-area point inside *abc*, more M or F (or both) can be obtained without sacrificing any other output. Along *abc*, more M can be obtained only at the expense of some F and vice versa. The slope of steepness of *abc* reflects the rate at which F and M can be substituted for each other in production by rearranging fully-used resources inside Alphaland. In this particular case, that rate of substitution is 1.0 F for 1.0 M. No output combination outside of *abc* is possible for Alphaland, given its resources.

Panel B of figure 1 shows the same thing for Betaland. But there are some differences. First, Betaland is a smaller economy than Alphaland. No matter what it does, Betaland cannot match the potential production of Alphaland in either F or M. Betaland could possibly produce 40 units of F (and no M) at point *d*, or 20 units of M (and no F) at point *j*. Any of the points along or inside *dej* are feasible, but only the points along *dej* are efficient.

The rate at which F and M can be substituted for each other in production is different in Betaland than in Alphaland. For Betaland it is 2.0 units of F for 1.0 unit of M. This country-to-country difference in the rate of substitution of one output for another is the key to the concept of comparative advantage used in international trade analysis.

To grasp this concept, imagine that Alphaland is now producing and consuming the combination of 20 F and 30 M denoted by point *b* in figure 1. Assume similarly that Betaland is at point *e*, which is 32 F and 4 M. Now visualize taking panel A in your hand, flipping it over, and placing it upsidedown on panel B so that points *b* and *e* lie exactly on top of each other.

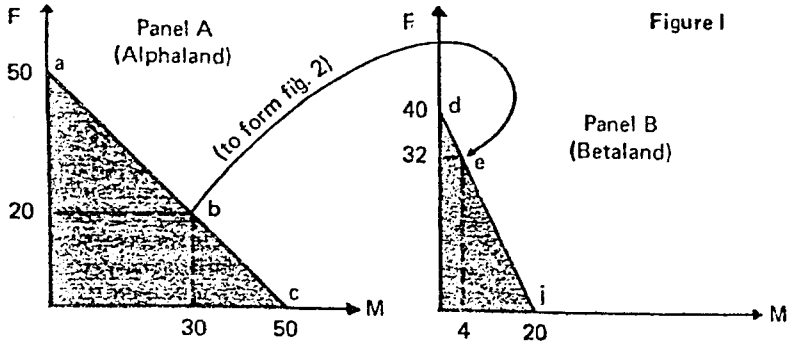

Figure I

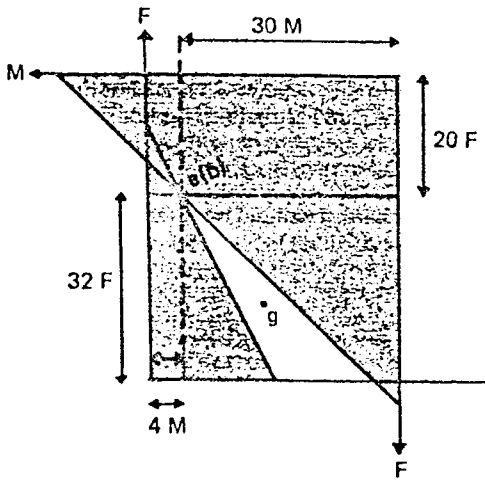

Figure 2

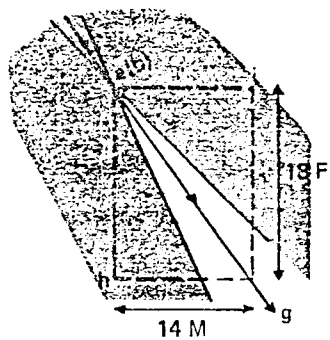

Figure 3

Figures 1-3. The Key to Comparative Advantage in Trade

This is point *e(b)* of figure 2. The size of the rectangle in figure 2 formed by this maneuver is the total amount of F and M produced by Alphaland and Betaland together. This "world" output is 34 M and 52 F. Point *e(b)* shows how this world production is shared between the

two. Betaland produces 4 units of manufactured goods and Alphaland contributes 30 units, the total being 34. On the other hand, Betaland produces 32 units of agricultural products while Alphaland grows 20 units, totaling 52.

Up to now, these two nations were isolated from each other. Now suppose that they look into possible international trades. Why might they wish to do this? For one thing, they could, via trade, separate the combination of F and M that each produces from the combination that each consumes. In figure 2, the two nations could possibly trade away from *e(b)* to any point inside the large rectangle by exchanging F and M with each other.

Alphaland would not be interested in any trade that would deliver it to a shaded-area point inside *abc*. Those points are available to Alphaland without trade and are inefficient besides. Similarly, Betaland would disdain trades leading to shaded-area points inside *dej*. However, there are points in the rectangle that are outside the capacity of each nation to achieve independently yet are available through trade. These are inside the unshaded area of figure 2. This unshaded area exists because the rate of substitution of F for M differs between Alphaland and Betaland. The greater this difference, the larger this unshaded area of potential exchange.

If these two nations are jointly producing F and M at point *e(b)*, demand analysis will show that, in general, the people of each nation will be better off if they trade away from *e(b)* down into the unshaded area. Determining a precise joint of mutually-agreeable exchange in that area is beyond this discussion, but it exists. Suppose for instance that it is point *g* in figure 2. At *g*, Betaland would have 18 units of M and 14 units of F available for use, while Alphaland would have 16 units of M and 38 units of F. Naturally, this distribution also uses up the total world output of 34 M and 52 F.

Figure 3 is a close-up view of part of figure 2. In order for the two nations to get from point *e(b)* to point *g via* trade, Betaland would need to import 14 units of M and export 18 units of F. On the other hand, Alphaland would export 14 M in exchange for 18 F.

Notice that this is a better trade-off of F for M than either Alphaland or Betaland could make by rearranging its own resources internally. Alphaland could obtain only 14 more units of F internally by shifting resources and giving up 14 units of M; but on the world market it can get 18 F units. Similarly, Betaland could get only 9 more units of M internally by releasing resources from 18 units of F; through international trade it can gain 14 M units.

In this example, Betaland has a "comparative advantage" in agriculture relative to Alphaland. This is because, within its own resource structure, it can generate 2.0 units of F for each 1.0 unit of M it gives up, and Alphaland can get only 1.0 unit of F for each 1.0 unit of M it

gives up. The reverse argument shows that Alphaland has a "comparative advantage" in manufactures relative to Betaland. The existence of comparative advantages produces an area of potential trade (an unshaded area) within which *each* nation can make better deals for itself by international exchange than by adjusting its own resources internally.

Further analysis shows the validity of the common sense notion that trading nations can capture even further trading gains by specializing, at least to some extent, in the products for which they have comparative advantage. As time goes by, however, nations' resources and abilities may change. Such changes can drastically alter the worldwide patterns of comparative advantage.