**Text No. 3** **Alan O. Sykes**, *Comparative Advantage and the Normative Economics of International Trade Policy*, in: Journal of International Economic Law, Vol. 1, 1998, 49-53

## 1. The Engine of Trade: Comparative Advantage

International trade occurs because a buyer in one country desires something produced in another country, and is willing to pay the price required to obtain it. Implicitly, the buyer in question must prefer the imported item to a domestically produced substitute, either because it is cheaper or of higher quality (or both), or because domestically produced substitutes are unavailable. The theory of comparative advantage affords the predominant explanation for why such circumstances arise. We begin with the meaning and consequences of comparative advantage, and will then consider its genesis.

### A simple illustration

Like many international economics texts, I will develop theory of comparative advantage in a simple, numerical illustration. Given the simplifying assumptions necessary to this illustration, the reader may wonder whether it has any generality or real-world applicability. In fact, none of the assumptions made here is logically necessary to anything of importance, and they merely serve to facilitate an accessible exposition. The next section indicates how greater generality on all fronts makes no essential difference.

Thus, consider an exceedingly simple global economy, with only two nations, A and B. Each nation has its own labour force, and let us assume that it is impossible (or unattractive) for labour to migrate from one nation to the other. The only input into the productive process is labour (measured in units of time), and all workers are identical. The only outputs are 'guns' and 'butter'. It is perhaps useful to think of this economy as one without firms, where the workers in each nation must simply choose whether to allocate their labour to gun or butter production. All markets are competitive.' Let transportation costs for guns and butter between countries be zero. The unit of currency in country A is the $, while in country B it is the £. Lastly, let production in each nation occur in accordance with the following input-output table:

Labour Requirement Per Unit of Output

| | Guns | Butter |
|---|---|---|
| Country A | 1.0 | 2.0 |
| Country B | 2.0 | 3.0 |

From an examination of the input-output table, observe that gun production in country A requires only half as much labour per unit of output as in country B, while butter production in country A requires only 2/3 as much labour per unit of output as in country B. Accordingly, country A has *absolute advantage* in the production of both guns

and butter – country A is better at everything in this simple economy. One might thus be tempted to conclude that country A will have no interest in trading with country B. But this conclusion would be incorrect, for despite its absolute inferiority in all lines of production, country B nevertheless has *comparative advantage in* the production of butter, and can export it profitably.

To see why, we begin by asking what the prices will be for guns and butter, in each country, in the absence of international trade (so-called *autarky).* The assumption that markets are competitive implies that each good will sell, in each country, for its marginal cost of production. The marginal cost of each good is simply the cost of the number of units of labour that go into it. With no loss of generality, assume that the currency units in each country are such that the market price of a unit of labour in autarky is 1.0. Hence, the autarky prices for guns and butter in each country will be equal to their labour input requirement. We can thus modify the input-output table slightly to create a table of autarky prices:

Labour Requirement Per Unit of Output

| | Guns | Butter |
|---|---|---|
| Country A | $1.00 | $2.00 |
| Country B | £2.00 | £3.00 |

These prices accord with common sense: If it takes twice as much labour in country A to produce a unit of butter as it does to produce a gun, then a unit of butter ought be twice as expensive. Further, if the market price of the labour to produce a gun is $1.00 and if prices reflect their marginal costs, then a gun should cost $1.00 and a unit of butter $2.00. Equivalent reasoning produces the respective prices of £2 and £3 in country B.

From this starting position of autarky, imagine that an entrepreneur from country A visits country B, and happens to bring along a gun. The entrepreneur observes the market prices for guns and butter in country B, and comes to the realization that the gun can be sold for enough local currency (£2) to buy 2/3 of a unit of butter. The butter can then be transported back to country A (at zero cost given my earlier assumption) and sold at a price of $1.33 (=2/3 x $2.00). The returning entrepreneur can then buy a new gun in country A for $1.00, and still have $0.33 left over as profit for the transaction. He will quickly realize as well that by expanding the scale of operation, exporting lots of guns and importing lots of butter, a good deal of money can be made.

Had the entrepreneur from country A brought butter to country B rather than a gun, however, no such profit-making opportunity would exist. A unit of butter fetches only £3 in country B, which buys only 1.5 guns (double everything if the notion of 1/2 gun is bothersome). The 1.5 guns can be sold in country A for $1.50, which is $0.50 shy of what is needed to replace the unit of butter that was sold in country B to get the 1.5 guns – the transaction thus loses $0.50.

The analysis works in reverse if we imagine that an entrepreneur from country B visits country A and brings along some butter. The reader can readily verify that selling butter in country A at the autarky price, buying guns with the currency earned on the sale, and then returning to country B to sell the guns, is a profitable venture. Likewise, it is not profitable to bring guns into country A for the purpose of selling them and converting the currency into butter for sale in country B.

Entrepreneurs from country A can make money selling guns in country B because country A has *comparative advantage* in the production of guns. The entrepreneur from country B can make money selling butter in country A because country B has *comparative advantage* in butter production. Perhaps the easiest way to understand the concept of comparative advantage is to restate the autarky prices for each good in terms of the foregone production of the other good that is necessary to produce one unit of the good in question (the 'opportunity cost' of a unit of production in terms of the other good). Thus, in country A, because a unit of butter production requires two units of labour that could have been used to produce two guns, the price of butter in terms of guns is 2.0. Reciprocally, the price of guns in terms of butter is 1/2, because a reduction of butter production by one-half unit frees the labour necessary to produce one gun. In country B, the analogous reasoning implies that the price of guns in terms of butter is 2/3, while the price of butter in terms of guns is 1.5. When these prices are compared, it is evident that country A has the lower price of guns in terms of butter – 1/2 versus 2/3. Country B has the lower price of butter in terms of guns – 1.5 versus 2.0. Accordingly, gun production in country A sacrifices fewer units of butter production than it does in country B, and butter production in country B sacrifices fewer units of gun production than it does in country A. One can thus say that gun production is *comparatively* more efficient in country A, and that butter production is *comparatively* more efficient in country B.

These comparative efficiencies, as has already been shown in this example, are all that is necessary to create the opportunity for profitable international trade. They beget a difference across nations in the *ratios* of the prices for goods sold in autarky, which entrepreneurs can exploit by exporting the good that is relatively cheap locally (in terms of the other) and importing the good that is relatively expensive locally (in terms of the other).

The theory of comparative advantage thus yields a simple prediction: nations will tend to specialize in the production of goods in which they have comparative advantage, exporting them to other nations in exchange for goods in which they lack comparative advantage. Depending on the relative size of the countries in question and the demands for each good that they produce, the end result may be complete specialization (with no domestic production of certain goods) or partial specialization (simultaneous imports and domestic production of a particular good). The same principles apply to service sectors as long as the services are exportable (it is difficult to export a haircut).

Of course, once trade opens, the autarky prices that motivate trade will change. In the example here, as guns flow into country B the price of guns relative to butter should fall, and vice versa in country A. The precise changes in prices that will result will depend on consumer demand in each nation, a complication that we need not introduce for present purposes. In *equilibrium,* the economic returns to engaging in the import-export business should be no greater than the returns to engaging in other activities. But trade will persist, for if it were to cease the price differences that gave rise to it in the first instance would resurface and trade would again yield especially high returns.

Notice also how little is necessary for a country to have comparative advantage in *something.* In our two-country, two-good illustration, *any* difference in the ratio of the price of guns to butter between the two countries in autarky ensures that one country has comparative advantage in one good and one in the other. Only if the price ratios were identical across the two countries would comparative advantage disappear.