Comparative Advantage

It has been said that "everything's relative." That is surely not true, but it definitely *is* true of comparative advantage. This fundamental concept in explaining why countries engage in international trade and why they gain from trade can only be understood in terms of *relative* prices. And what matters is relative prices in two senses simultaneously, both across goods and across countries.

Definition: Comparative Advantage is the relative cheapness of a good or service in a country that enables that country to export it. More precisely, a country has a comparative advantage in the good whose price in the absence of trade (autarky), *relative* to other goods in the same country, is lower than the relative price of that same good on world markets.

Formally, let $\tilde{p}_g^c$ be the autarky price of good g in country c (the "~" here indicates autarky), and $\tilde{p}_g^W$ be the price of the same good on the world market (which could be simply the other country, if there are only two). Then country c has a comparative advantage in good g_1 if

$$\frac{\tilde{p}_{g_1}^c}{\tilde{p}_{g'}^c} < \frac{\tilde{p}_{g_1}^W}{\tilde{p}_{g'}^W} \qquad \text{for all } g' \neq g_1$$

Notice that the comparison involves four individual prices of goods, two in one country and two in the other. The left-hand side is the relative price of good g_1 compared to another good in country c, while the right-hand side is the same relative price abroad.

The Ricardian Model: In the Ricardian model, it is assumed that unit labor requirements for production are constant (do not vary with output). Let a_g^c be the unit labor requirement for producing good g in country c. If the autarky wage of labor (the only factor) in country c is $\tilde{w}^c$, then with competitive markets price equals cost: $\tilde{p}_g^c = \tilde{w}^c a_g^c$. Substituting this into the definition of comparative advantage above, the wages cancel out of each fraction and it becomes:

$$\frac{a_{g_1}^c}{a_{g'}^c} < \frac{a_{g_1}^W}{a_{g'}^W} \qquad \text{for all } g' \neq g_1$$

This gives us an equivalent definition of comparative advantage, for the Ricardian model:

- In the Ricardian Model, a country has a comparative advantage in the good whose labor cost, *relative* to other goods in the same country, is lower than the relative labor cost of that good abroad.

For the special case of only two countries (A and B) and two goods (1 and 2), country A has a comparative advantage in good 1 if

$$\frac{a_1^A}{a_2^A} < \frac{a_1^B}{a_2^B}$$

If this inequality is reversed, then country A has a comparative advantage in good 2. Except in the coincidental case of the two ratios being equal – in which case neither country has a comparative advantage or disadvantage in anything – it must be true that one or the other holds, and therefore that each country has a comparative advantage in something.

An alternative definition: Notice that, while this puts the relative prices of goods within a country on each side of the inequality, one could just as easily compare the relative prices of goods across countries. Multiplying both sides of the inequality by a_2^A and dividing both sides by a_1^B (which, since both are positive, does not reverse the inequality), we get the equivalent condition:

$$\frac{a_1^A}{a_1^B} < \frac{a_2^A}{a_2^B}$$

Thus a country can also be said to have a comparative advantage in a good if its labor requirement relative to the labor requirement abroad is smaller than for other goods.

Another alternative definition: Notice also that we could as well define comparative advantage in terms of the productivity of labor instead of unit labor requirements, as is done in the Kreinin text. If a_g^c is the unit labor requirement for producing good *g* – that is, the quantity of labor divided by output – then $\pi_g^c = 1/a_g^c$ is output divided by labor, or labor productivity. It is easy to transform all of the above conditions into ones comparing these p's instead of the *a*'s. For example, country A has a comparative advantage in good 1 if

$$\frac{\pi_1^A}{\pi_2^A} > \frac{\pi_1^B}{\pi_2^B}.$$

That is, a country has a comparative advantage in a good if its productivity in that good, relative to other goods, is *higher* than abroad.

Theoretical Implications of Comparative Advantage:

1. If countries are permitted to trade freely (and actually, even if that trade is restricted), and if they have competitive, undistorted markets, then they will export the good or goods in which they have comparative advantage and import those in which they have comparative disadvantage.

2. Under the same conditions, all countries will gain from trade, in the sense that those individuals who gain from trade within each country will gain enough that they could potentially fully compensate those individuals who lose, within the same country, and still remain better off than in autarky.