

**Ricardian Model Example used in class : Changes in Technology**

Consider a model with two countries (Home and Foreign (\*)), two goods (Textiles and Soy) and one input (Labor). The production technologies are specified by the following unit labor requirements:

	Home	Foreign (*)
Soy	2	3
Textiles	1	6

Labor endowments in each country: 60 units and preferences are "nice" and identical across countries. Assume the free trade prices are:  $p_S / p_T = 1.5$

(1) Suppose labor productivity doubles in both sectors in the home country. What will happen to the pattern of trade and the equilibrium free trade prices?  
The new matrix of unit labor requirements is:

	Home	Foreign (*)
Soy	1	3
Textiles	1/2	6

Notice that CA is the same as before therefore the pattern of trade will not change:

H will export Textiles and F will export Soy

However the relative price of Soy will increase (i.e. the relative price of textiles will decrease): the free trade price ratio  $p_S / p_T$  will go up (or  $p_T / p_S$  will go down).  
Why?

Suppose the price ratio  $p_S / p_T$  stays at 1.5.

Soy:

The foreign country will produce the same amount of Soy and demand the same amount of Soy as before. The Home country on the other hand will still produce no Soy but will demand more Soy than before assuming that Soy is a normal good (higher income results in higher consumption). Therefore, world demand will exceed world supply at these prices (i.e. there will be excess demand of Soy worldwide) and as a result the price of Soy will go up.

Textiles:

The foreign country will still produce no textiles and demand the same amount as before. The home country will produce now twice the amount of textiles (120 units) and textile demand will go up but by less than the increase in production (because we assume that consumers also want to increase their consumption of Soy as income goes up). Therefore world supply of Textiles will exceed world demand at this price ratio (i.e. There will be an excess supply of Textiles worldwide) and as a result the price of Textiles will go down.

**Diagrams assuming specific preferences**

*Home Country:*

Assume than in Autarky, in the initial situation the chosen consumption bundle is:  $S=15, T=30$  and that

after the productivity has doubled the chosen consumption bundle is :  $S=30, T=60$ .

Notice that in both cases the bundles are on the PPF's and that the autarky price ratio in both cases is :  $p_S / p_T = 2$ .

**Foreign Country:**

Assume than in Autarky, the chosen consumption bundle is :  $S^* = 10, T^* = 5$ . Notice that the bundle is on the PPF and that the autarky price ratio is :  $(p_S / p_T)^* = 1/2$ .

**About the International Equilibrium under free trade:**

Notice that in the initial situation,  $(p_S / p_T)^{FT} = 1.5$  is an equilibrium (i.e. the excess demand of Soy by the Home country is equal to the excess supply of Soy by the Foreign country).

However when home productivity doubles in both sectors, the excess demand of Soy by the Home country is bigger than the excess supply of Soy by the Foreign country (i.e there is an excess demand of Soy worldwide).

Notice that in our diagram, the equilibrium price in the new situation will be:  $(p_S / p_T)^{FT} = 2$  (i.e. the autarky price at Home).

