

## Chapter A: The world economy

International economics is divided in two parts;

- **International real analysis:** trade and investment flows, imperfect competition, trade policy etc.
- **International monetary analysis:** demand and supply of money, interaction between nations through the exchange rate and other means.

If you look at which countries are important for the world, these countries are usually the large countries. But large can be measured on different aspects.

1. *Land area and population.* One can look at the size of the land area and of the population. The latter is a better indicator than the first.
2. *Income.* Looking at the domestic or national product of a country. This is the best indicator for determining the size of a country.
3. *Income per capita:* The production value per person, the well-being of the average person.
4. *International trade.* In this trade we distinguish between merchandise trade and trade in commercial services. Looking at exports relative to imports or relative to production.
5. *Globalization:* The increased interdependence of national economies and the trend towards greater integration goods, labor, and capital markets.
6. *Trade connections in the world economy.* Europe is the world's dominant trading partner. The majority of their export flows are **intra-European:** exports from one European nation to another European nation.

## Chapter B: Comparative Advantage

In classical and neoclassical economics we often combine the assumption of *constant returns to scale* with the assumption of *perfect competition*. If a firm wants to produce  $x$  units of a good, its costs are  $cx$ . The firm's profits  $\pi$  are total revenues – costs:

$$\pi = px - cx = (p - c)x$$

When the price  $p$  of a good is equal to the unit costs of production  $c$ , profits are zero independently of the level of production.

**Absolute cost advantage theory:** When a country can either import a commodity or produce it at home, it compares the cost of producing at home with the cost of procuring from abroad. If the costs of producing abroad are less than the costs at home, the country imports.

Productivity table; labor required to produce one unit of output

	Food	Chemicals
EU	$a_F^{EU} = 2$	$a_C^{EU} = 8$
Kenya	$a_F^K = 4$	$a_C^K = 24$

As is clear from the table, the EU is more efficient in the production of both goods. Based on the absolute cost advantage theory, Kenya would not be able to import from the EU. However, the **comparative cost advantage theory** argues that only relative costs are important for determining a nation's production advantages. A country will produce the good they produce relatively most efficiently. Kenya is twice as inefficient as the EU in producing food but three times as inefficient as the EU in producing chemicals. Therefore, it should specialize in the production of food and export it to the EU in exchange for chemicals.

The theory of comparative costs is better than the absolute costs theory. However, the per capita welfare is based on absolute cost advantages.

To determine the maximal production for the countries we have determine the amount of the production factors available. For instance, in the EU there are 200 laborers and in Kenya 120. The maximum production of food for the EU is then  $200/2 = 100$ . We have to keep in mind that there are constant returns to scale and there is only one factor of production

Table: Total labor available and maximum production levels.

	Total labor available	Maximum production	
		Food	Chemicals
EU	200	100	25
Kenya	120	30	5

If the EU produces 100 units of food and zero units of chemicals and it now wants to produce 1 unit of chemicals, 8 laborers have to be transferred from food to chemicals. The food production will drop with  $8/2=4$  units. This change is *equiproportional*, such that the Ricardian production possibility frontiers (PPF's) are straight lines.

**PPF:** All possible combinations of efficient production points of final goods, given the available factors of production and the state of technology. Consumers in both countries choose the optimal consumption point along the PPF, while entrepreneurs adjust their production levels to satisfy the consumers. The PPF is a straight line. (See p.60 for an example of a PPF)

We assume that both countries want to consume at least some units of both goods.

- If the price of chemicals in the EU is more than 4 units of food, entrepreneurs want to produce only chemicals and no food.
- If the price of chemicals in the EU is less than 4 units of food, entrepreneurs want to produce only food and no chemicals.
- Therefore, the price of chemicals is 4 units of food in autarky in the EU. So that entrepreneurs want to produce both food and chemicals.

The price of chemicals in terms of food in is  $\alpha_C^{EU} / \alpha_F^{EU} = 8/2 = 4$  in the EU and  $\alpha_C^K / \alpha_F^K = 24/4 = 4$  in Kenya.

As for the gains from trade, we can distinguish three different cases:

1. If trade is between four and six units of food, both countries will gain. Kenya will produce only food and will import the necessary chemicals from the EU at a price of 4.8. Similarly, the EU will only produce chemicals and will import the necessary food from Kenya. Consumers are able to choose a consumption point above the old optimum, because the budget line has shifted outwards.
2. If trade is four units of food, only Kenya will gain and the welfare in the EU will remain unchanged. In this case the EU will completely specialize on the production of chemicals and food production will drop. Production levels in the EU are much higher than in Kenya, the terms of trade will be the same as before opening up to trade. The equilibrium price in the EU will remain the same, this implies that the budget line of the EU has not changed and therefore the welfare does not change. Kenya specializes completely on food and can trade this with the EU. As a result of the trade with the EU, the welfare of Kenya will rise.
3. If trade is 6 units of food, only the EU will gain and the welfare of Kenya will remain the same. In this case changes similar to what is described in point 2 will happen.

**Balassa Index ( $BI_j^A$ )** : Indicates whether a country has a strong position in a certain sector.

$$BI_j^A = \frac{\text{share of industry } j \text{ in country exports } A}{\text{share of industry } j \text{ in reference country exports}}$$

If we use the term goods, we refer both to goods and services, although there is a difference between these two. If countries become wealthier, their services sectors become more important and the agriculture sectors become less important.

To understand the principles behind international trade and capital flows it is important to study the foundations of neoclassical economics. This theory focuses on differences in relative factor endowments as a cause for international trade and is based on the following 4 propositions:

1. The *factor price equalization* proposition: International free trade of goods leads to an equalization of factor prices.
2. The *Stolper-Samuelson* proposition: An increase in the price of a final good will increase the reward of the intensively used production factor and reduce the reward of the other production factor.
3. The *Rybcynski* proposition: An increase in the supply in a production factor results in an increase in the output of the final good that uses this factor intensively and a reduction in the output of the other final good.
4. The *Heckscher-Ohlin* proposition: A country will export the good that intensively uses the relatively abundant factor of production.

**The HOS model:** Model that is based on the findings and thoughts of Heckscher, Ohlin and Samuelson. This model has the following structure:

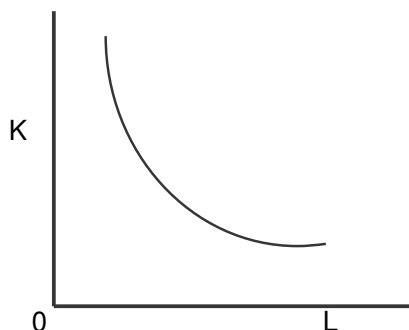
- There are two countries, two final goods and two factors of production (labor and capital)
- There are **constant returns to scale**: If both factors of production are increased by the same multiplicative factor  $\lambda$ , the output also increases by that factor  $\lambda$ .
- Identical technology; no technology differences between the countries.
- Labor and capital are mobile between different sectors but not between countries.
- There is perfect competition in all markets.
- The demand structure of the two countries is the same.
- The available amounts of labor and capital may differ between the two countries.

The Cobb-Douglas production functions for the manufacturing sector (M) and the food sector (F) are given by:

$$M = K_m^{\alpha} L_m^{1-\alpha} \quad F = K_f^{\alpha} L_f^{1-\alpha} \quad \text{with } 0 < \alpha_m, \alpha_f < 1$$

The parameter  $\alpha$  ( $\alpha_m, \alpha_f$ ) measures of the intensity of the production factor. At least one of the factors is needed to produce any output.

**Isoquant:** Line of all possible efficient combinations of capital and labor able to produce a certain level of output. An example of an isoquant with  $M=1$ :



The function for the entrepreneurs is to achieve profit maximization. If entrepreneurs do not strive for this goal they will be driven out of business. The entrepreneur can divide the production decision into two steps:

1. *Cost minimization.* The entrepreneur determines the level of costs associated with a certain level of input. With wage rate  $\omega$  and rental rate  $r$ , then costs =  $\omega L + r K$   
This equation gives different combinations of labor and capital which result in straight lines, called isocost lines. These isocost lines have a slope of  $-\omega/r$ .
2. *Output determination.* To determine what the profit maximizing point is it is necessary to determine the level of output you want to achieve. The profit maximizing point is the point where the isoquant touches the isocost line.

**Capital-labor ratio:** the optimal relative input combination of labor and capital.

$$\frac{K}{L} = \frac{\alpha}{1-\alpha} \frac{\omega}{r}$$

This ratio depends on two factors:

- The ratio is higher if the parameter  $\alpha$  rises.
- The ratio is higher if  $\omega/r$  rises.