International Economics

Absolute & Comparative Advantage

Thomas Goda

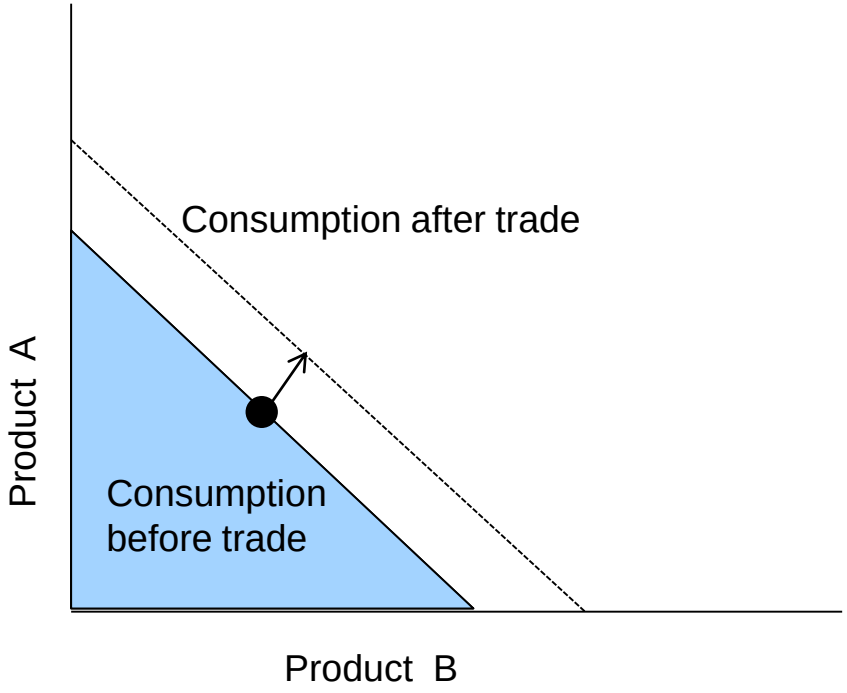
Agenda

- Absolute Advantage
- Comparative Advantage

Adam Smith (The Wealth of Nations, 1776)

- Mercantilism is bad and free trade is good, on the grounds that the international division of labor promotes efficiency and increases output
- **Absolute advantage** – the ability of a country to produce more units than other countries using the same quantity of input (i.e. labour)
- Productivity is based on natural advantages (raw materials like oil, copper etc.) and acquired advantages (skills and techniques)
- All nation should produce the goods in which it have an absolute advantage and then trade with other countries to acquire other products it needs
- Trade barriers lead to lower efficiency (and less global wealth)

Gains from trade in a classical framework



The theory of absolute advantage is based on the following assumptions:

- Two nations, two products, one production factor (labour)
- Full employment and workers can switch frictionless between sectors
- Constant production costs
  - The level of technology is fix (the productivity of workers is constant)
  - The production costs per unit do not change when the quantity produced changes
  - Homogenous labour (i.e. all workers can produce a good with a given productivity)
- Products are homogenous between countries
- Perfect competition (firms are price takers)
- No barriers to trade (transportation costs are zero)
- Trade is balanced (X = M) – assumption is based on Hume

What happens if the two countries first specialise and then trade?

	Production	***Input***
Beer		
Germany	10	100
Colombia	15	240
Coffee		
Germany	6	300
Colombia	14	160
	45	

Agenda

Absolute Advantage

Comparative Advantage

In 1817 David Ricardo improved Smith's absolute advantage theory

- Absolute advantage considers *absolute* cost differences between countries
  - Each country needs to produce something at a lower cost than the other country, otherwise no trade takes place
- Ricardo's principle of **comparative advantage** considers *relative* production cost differences
- Even if a nation has an absolute cost disadvantage in the production of both goods, specialization and trade will be beneficial for both countries
- The less efficient nation should specialize in the product in which it is less inefficient (i.e. where its absolute disadvantage is smallest)
- The more efficient nation should to specialize in the product in which it is most efficient (i.e. where its absolute advantage is greatest)

If we assume only one factor of production (i.e. labour) the opportunity cost of a product are measured as follows:

$$Oportunity\ Cost_{Beer} = \frac{\frac{cost}{unit_{Beer}}}{\frac{cost}{unit_{Coffee}}} = \frac{\alpha_{LB}}{\alpha_{LC}}$$

- The opportunity cost is the amount of a good (in this case beer) that a country sacrifices when it produces another good (in this case coffee)
- To produce one unit of beer the country needs α_{LB} working hours (cost per unit); each of these working hours could be used, instead, to produce x units of coffee (depending on α_{LC})
- If $OpportunityCost_{Beer} < 1$ the country is more productive in the production of beer than coffee
- The opportunity costs also define the slope of the PPF

Example – trade of 10 coffee for an exchange of $1.5_B : 1_C$

	Production	*Input*
Beer		
Germany	20	100
Colombia	5	200
Coffee		
Germany	10	100
Colombia	10	200
	45	

What would happen if the terms of trade would be 2.5 beer for 1 coffee?

Global demand determines global prices and in which product a country specializes

- Working hours necessary to produce one unit and the global market price determine de wages of workers (P_B/a_{LB} y P_C/a_{LC})

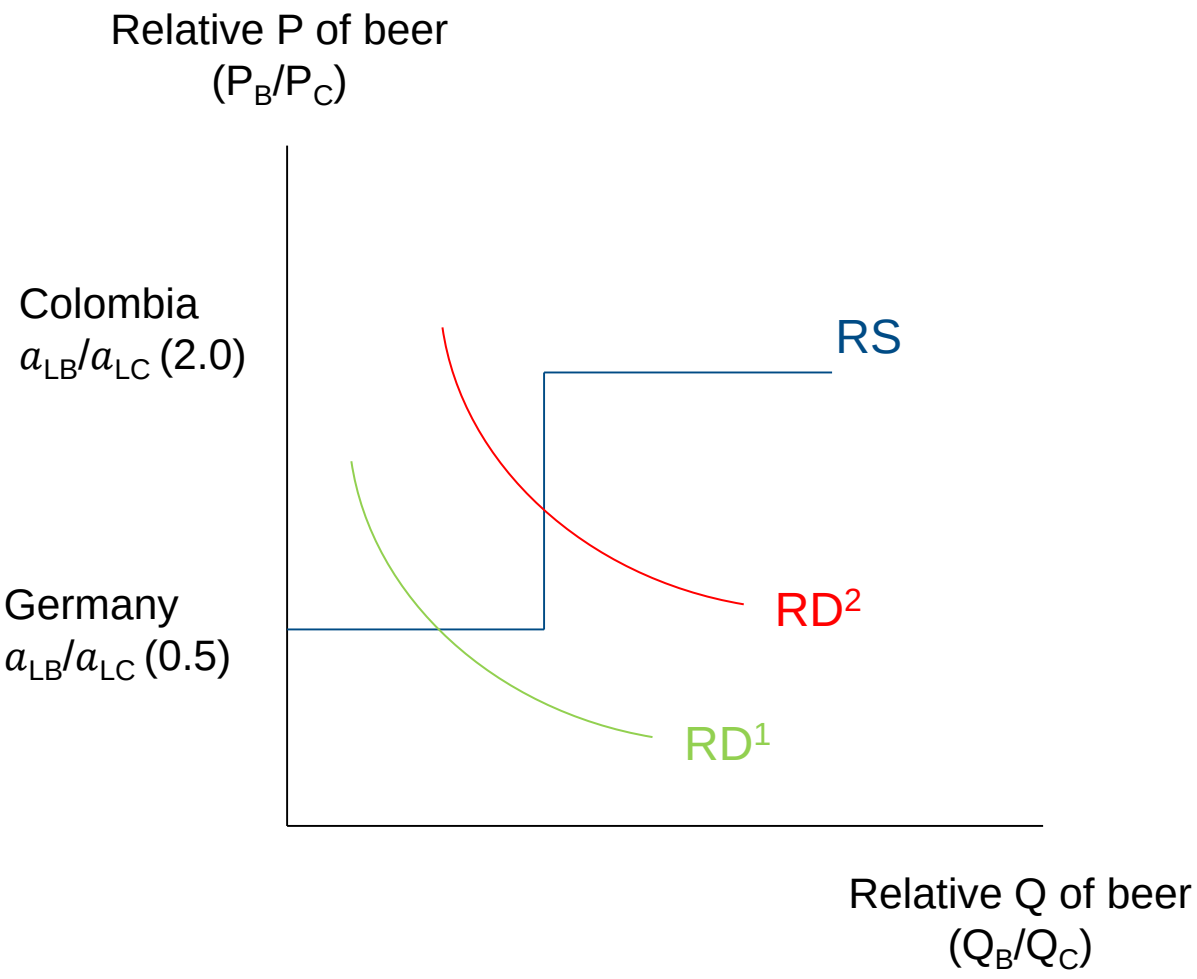
- The wage of workers determines which product will be produced
  - All workers want to work in the industry that pays higher wages

- Equally, a country will produce the product in which the relative price is higher than the opportunity cost (P_B / P_C **vs** a_{LB} / a_{LC} & P_C / P_B **vs** a_{LC} / a_{LB})

Example: $P_B = \$1.75$ **and** $P_C = \$1.2$

In which product will Germany and Colombia specialize when P_B would be **$3.0**?

Depending on the world demand countries thus specialise or do not specialise Germany has a comparative advantage in beer, Colombia in coffee



- If $\mathbf{P_B/P_C}$ is **< 0.5**, no supply of beer (both countries produce **coffee**)
- If $\mathbf{P_B/P_C}$ is between **0.5 and 2** Germany specializes in **beer** and Colombia in **coffee**
- If $\mathbf{P_B/P_C}$ is **> 2.0** both specialise in **beer** (no coffee production)

Mill's theory of reciprocal demand

- The **actual terms of trade is determined by** the relative strength of each country's **demand** for the other country's product

- If one of the two nation is considerably smaller, its demand will have only little effect on the domestic price of the large nation (the small nation is a price taker) – it can buy foreign products relatively cheap

- The large nation also needs to keep on producing the good in which it has a comparative disadvantage, because the smaller nation will not be able to cover its total demand for the product

➢ Smaller countries enjoy larger gains, whereas large countries enjoy fewer gains

➢ If two nations of approximately the same size trade, the gains will be shared about equally between them

Terms of Trade estimates

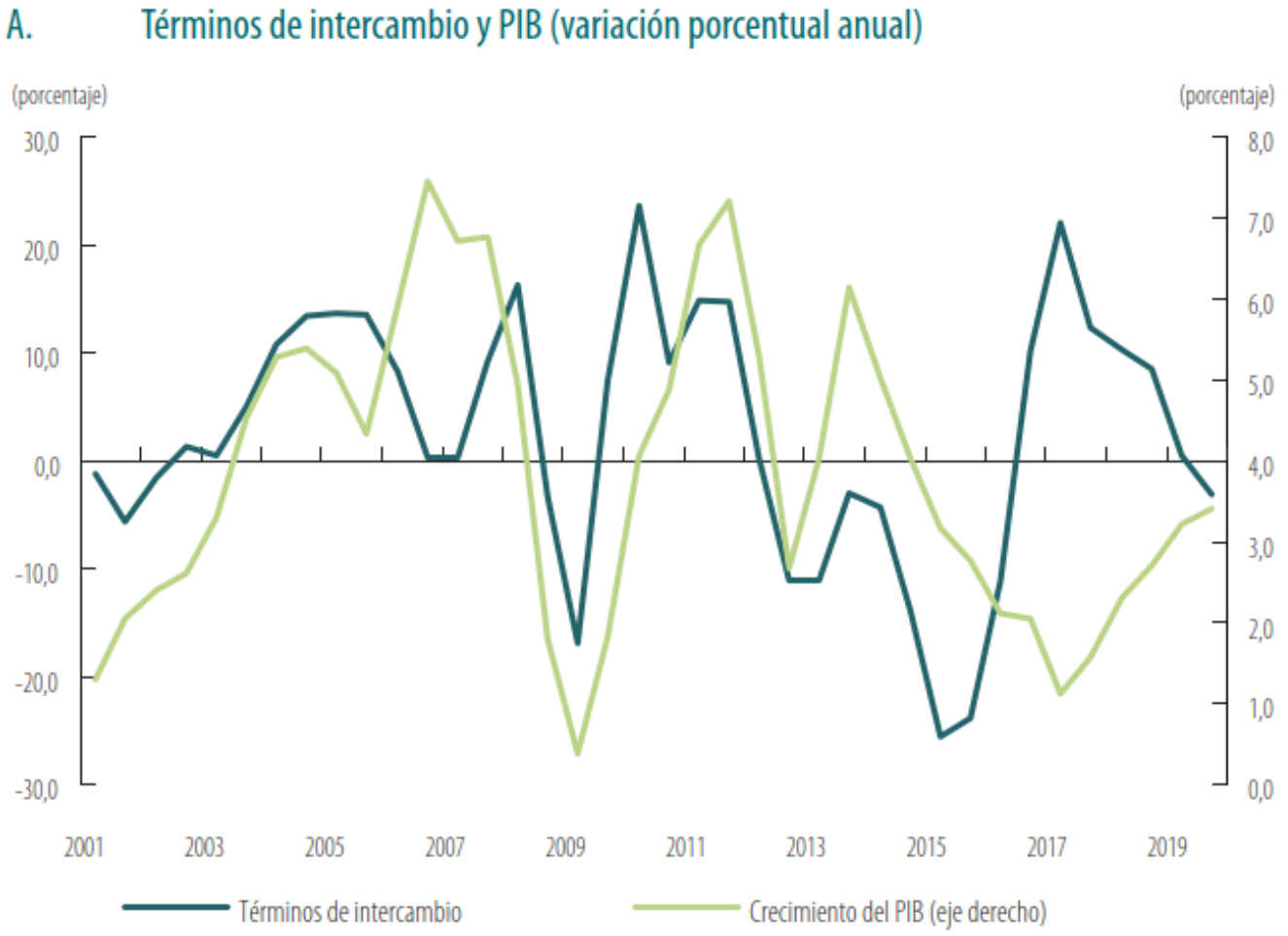
$$Terms\ of\ Trade = \frac{Export\ Price\ Index}{Import\ Price\ Index} \times 100$$

Commodity Terms of Trade, 2013 (2005 = 100)

Country	Export price index	Import price index	Terms of trade
Australia	194	143	136
Argentina	166	153	108
Canada	132	125	106
Switzerland	148	142	104
United States	124	127	98
China	127	130	98
Brazil	156	184	85
Japan	108	145	74

Source: Carbaugh (2015)

The dependence of Colombia's exports on commodities means that the economy is vulnerable to strong terms of trade movements



Source: Garavito et al. (2020)

Group exercise

Consider the following hypothetic situation: Colombia and China are producing Mangos and Cars. Colombia produces 20,000 tons of Mangos with 500 workers and 10,000 Cars with 800 workers, whereas China produces 30,000 tons of Mangos with 700 workers and 5,000 Cars with 100 workers.

a) Determine the production and opportunity costs of each country/product. Which country has an absolute and comparative advantage in the production of these products? What is the aggregate global output and the global gains after specialisation (before trade)?

b) If the country that has a competitive advantage in mangos exports 31,000 tons of Mangos, and the terms of trade are 1 ton of Mango for 0.5 Cars, how much would both countries gain/lose from trade?

c) Draw the production possibility frontier (PPF) and consumption possibility line (CPL) of the two countries, considering the above mentioned terms of trade.

d) Show mathematically in which product each country specializes, when the world market price of Mangos is $150/ton and that of Cars is $400/car.