

# International Economics

University of Miskolc  
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## The Ricardian Model

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1. The production data of a two-country world economy is given by the table below. Calculate the production surpluses that can be achieved through specialisation and the mutually beneficial relative price range (when the relative price of banana is given in terms of pearls)!

country	production data		prod. in autarky	
	pearl	banana	pearl	banana
Peru	2 hour/u	3 hour/u	100 units	70 units
Ecuador	4 hour/u	5 hour/u	100 units	60 units

2. The following are known about a two-country world economy. Calculate the production surplus that may be achieved with specialisation, and indicate the mutually beneficial relative price range (use the opportunity cost of engine in terms of microchips during the calculations)!

Country	production data		capacity	
	microchip	engine	microchip	engine
Lilliput	50 units/h	2 units/h	50 hours	50 hours
Brogdingnag	10 units/h	1 units/h	110 hours	10 hours

3. In a Ricardian model the unit labour requirement of producing cloth in England is 2 man-hours. England has a 1,5 times productivity lead over Portugal in the production of cloth. It is also known, that at a 1 unit of wine = 2,5 units of cloth world relative price neither country can benefit from international trade.

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- a) Give the comparative advantages of the two countries!  
b) What is the unit labour requirement of wine in Portugal?

## The Model of Specific Factors

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4. There are only two goods produced in Gondor: iron (denoted by  $x$ ), produced with the use of labour and the sector-specific capital; and corn (denoted by  $y$ ), produced with the use of labour and the sector-specific land. The amount of factors available in Gondor are: 8 units of labour, 16 units of capital and 3 units of land. The production function of the two sectors:  $x=2VK*L_x$  and  $y=2T*L_y$ . In autarky the consumers of Gondor trade 3 units of corn for a unit of iron.

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- a) Calculate the production possibility frontier (transformation curve) of Gondor!  
b) What combination of goods are produced and consumed in Gondor in autarky?  
c) What is the distribution of labour between the two sectors?  
d) What is the nominal wage paid on Gondor's labour market, if the price of iron is 30?  
e) What is the income of capital owners expressed in units of iron?  
f) After Gondor starts to trade with Rohan, the price of iron rises to 40 units, and so the international relative price is changed to 4. What is Gondor's new production combination?  
g) Where will labour be redistributed to after these changes?

## The Heckscher-Ohlin Model

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5. In a HO model of trading economies the following production intensity, and resource-endowment data are given:

	Hungary	Slovakia	Car	Food
Labour	5 million	4 million	20 mh	5 mh
Capital	25 billion	24 billion	1000 \$	25 \$

- a) Which is the intensive factor in car-production?  
b) Which are the abundant and scarce factors in the two countries?  
c) Which product will Hungary specialise in?
6. We assume that all remain unchanged, however the factor-endowments are not given this time. Instead, information on the factor prices are available:

	Hungary	Slovakia
Labour	700 \$	900 \$
Capital	10%	6%

## The Standard Model

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7. The equation of the production possibility curve in Hungary is  $y=35-1/4x^2$ . In autarky Hungarians trade off 5 units of  $y$  in order to get one extra unit of  $x$ .

- a) What combination of goods is produced and consumed in Hungary?  
b) At what international relative prices will Hungary export  $x$ , and  $y$  products?

8. The PP curve of country I. is  $y=36-1/4x^2$ , while for country II.  $y=25-1/8x^2$ . In autarky country I produces 20 units of  $y$ , while II. 7 units.

- a) At what international relative prices will the countries export  $y$ , or  $x$  products?  
b) At what international relative price will both countries export  $y$ ?  
c) In case of b), which country has a greater comparative advantage in the production of  $y$ ?

9. Let the PP curve of two countries be I.:  $y=50-x^2/50$ , and II.:  $y=100-x^2/25$  respectively. Both countries consume the goods in a 1x:2y combination.

- a) What are the quantities of goods produced and consumed in the two countries in autarky?  
b) What are the domestic prices (opportunity cost) in autarky?  
c) What are those international relative prices that provide mutually beneficial trade, and which products will the two countries specialise in?  
d) Give the quantities exported, and imported by the two countries if the international relative price  $P_x/P_y=1$ !  
e) Would the above situation fit into a two-country trading model?

10. Let the PP curve of two countries be I.:  $y=60-2x$ ; II.:  $y=54-\sqrt{x^3}$ . It is also known that in autarky country I. consumes twice as much  $y$  products as  $x$ , and that the domestic relative price in country II. is  $P_x/P_y=4,5$ .

- a) What are the quantities of goods produced and consumed in the two countries in autarky?  
b) Is there a possibility for mutually beneficial trade for the two countries?  
c) If yes, which product should the countries specialise in?

11. The production possibility curve of a country engaged in international trade is:  $y=72-x^2/8$ . The international relative price is  $P_x/P_y=2$ . The consumers of the country purchase the products in a 2y:1x combination.

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- What quantities of x, and y are produced in the country?
- What is the national income of the country measured in product x?
- How much x, and y will be consumed, and what are the quantities exported/imported?

### Trade policy

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12. We know a small country's domestic supply and demand for a certain good (x):  $D=650-10P$ ;  $S=P-10$ . The world price of the good is 40.

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- Determine the consumption, production and import of the good in the case of free trade!
- The government introduces a 10\$ unit specific tax for the good. How do the above mentioned variables change?
- Determine the effects of the tariff on producers, consumers and government!

13. There are two countries, which produce and consume a good. The first country's domestic demand and supply curves are:  $D_1=1000-0,5P$ ;  $S_1=0,5P-400$ ; in the second country:  $D_2=700-0,25P$ ;  $S_2=0,25P-300$ .

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- Derive the home import demand curve and the foreign export supply curve!
- Determine the price and the traded quantity of the good!
- If an import tariff of 90\$ is introduced, how do the countries share the customs duties?

14. Let's suppose that in a large country the supply and the demand of a good are as follows:  $D=765-P$ ;  $S=1/2P-60$ . The export supply curve:  $XS=3/2P-240$ . The country introduces a 90\$ specific tariff for each unit of the good.

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- How does the tariff influence the domestic and the world price of the good?
- Calculate the efficiency loss, the terms of trade gain and the total welfare effect of the tariff!

15. A domestic demand curve of a good is:  $D=100-P$ . Its supply is:  $S=2P-20$ . The foreign export supply curve is:  $XS=2P$ . The country levies 5\$ specific tariff for each unit of the good.

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- In the case of free trade how much is the price of the good, the domestic demand and the import?
- After levying tax, how do the price of the good, the consumption and the import change?
- Determine the effect of the tariff on the producers, consumers, government!

16. The price of a good in the world market is 2000\$, and the price of there inputs (the parts out of which that good is made) is 1200\$.

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- What is the effective rate of protection if the country places a 10 percent tariff on imported goods to protect the domestic production?
- Recalculate the effective rate of protection if the country places a 10 percent tariff on the inputs of the product.
- How does the protection change if 50 percent of the inputs are replaceable with duty free inputs?

17. The price of a good in the world market is 1000\$, and the price of there inputs (the parts out of which that good is made) is 800\$. The country places a 5 percent tariff on imported goods, to protect the domestic production.

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- What is the effective rate of protection in the country?
- Recalculate the effective rate of protection if the price of the inputs falls to 750\$!

18. The price of a good is 500\$ in the world market. A country levies a 10 percent tax on that good. The price of parts is 300\$ in the world market.

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- a) What is the effective rate of protection in the country?
- b) What rate of imposed tax on imported parts does enable us a 10 percent effective rate of protection?
- c) How does the protection change if one third of the inputs are replaceable with duty free inputs?

19. A small country's domestic supply and demand curves for a certain good are:  $D=100-P$ ;  $S=50+2P$ .

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- a) Calculate the production and consumption of the product in a closed economy.
- b) If the world price of the product is 10\$, what will be the domestic demand, supply and imports under free trade?
- c) How does an 11 unit quota influence the price of the product?
- d) Determine the effect of the quota on producers, consumers and government.
- e) Calculate the net welfare effect.
- f) Is there any change in welfare if the countries agree in a voluntary export restraint instead of the quota?

20. Let's suppose that a product's supply and demand curves are linear. The international price for this product is \$500. Imagine that the country which is a large country wants to stimulate its production by giving an export subsidy of \$50 per piece to the industry. Suppose that before the introduction of the export subsidy the amount of production was 10 000 and the amount consumed were 4000. After the export subsidy the domestic price increases to \$525, consumption falls to 3000 and production rises to 12 000.

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- a) Draw the graph that illustrates the situation in the industry before and after the export subsidy is provided to domestic firms.
- b) Calculate the net welfare effect of the export subsidy.

21. There are two countries, which produce and consume a good. The first country's domestic demand and supply curves are:  $D_1=100-20P$ ;  $S_1=20+20P$ . In the second country:  $D_2=80-20P$ ;  $S_2=40+20P$ . Starting from free trade we assume that Foreign offers an export subsidy of 0.5\$ per unit.

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- a) Calculate the effects of the subsidy on the price and on the effect of individual groups in each country.
- b) Calculate the net welfare effect.