

### Mid-term exam

You have 1 hour and 1/2.

#### Problem 1

Two countries, Home and Foreign, use one factor, labor, to produce two goods,  $E$  and  $T$  (electronics and textiles). The productivity of labor in the two countries is summarized in the following table.

	Home	Foreign
$E$	6	3
$T$	4.5	3

Both countries have a labor force of 200 units. Preferences are the same in the two countries and are described by the utility function

$$U(x_E, x_T) = \ln x_E + \ln x_T.$$

Let  $p$  denote the relative price of electronics in terms of textiles.

1. Which country has a comparative advantage in producing good  $E$ ? Explain in words why this is the relevant information to determine the pattern of specialization in an economy where the two countries are allowed to trade.
2. Derive the relative price  $p$  in autarky for each country.
3. Imagine now that the two countries are allowed to trade. Draw the world relative supply curve. For which range of prices will both countries specialize? What happens if the price is not in this range?
4. Now draw the world relative demand curve and find the world equilibrium price. Do both countries specialize? What is the pattern of trade?
5. Suppose the labor force in country Foreign grows to 400 units. What happens to the relative supply curve? What happens to the relative price  $p$ ?
6. Argue that Home consumers are better off after the demographic change in the foreign country. Explain.

#### Problem 2

Assume that there are only two countries in the world: Belgium and the U.S. Belgium's demand and supply curves for meat are:

$$q_D^B = 12 - p,$$

$$q_S^B = 3p.$$

1. Derive and graph Belgium's import demand schedule. What would the price of meat in the absence of trade be?

Now add the U.S., which has a demand curve:

$$q_D^{US} = 10 - 2p,$$

$$q_S^{US} = 8 + 2p.$$

2. Derive and graph the U.S. export supply curve, and find the price of meat that would prevail in the U.S. in the absence of trade.

3. Now allow Belgium and the U.S. to trade with each other. Find and graph the equilibrium under free trade. What is the world price?

4. Draw a graph that represents consumer and producer surplus, one graph for the autarky equilibrium and one for the free trade equilibrium in Belgium.

5. Quantitatively assess welfare under the two regimes.

### Essay question

“Can South Africa put more shine on the diamonds that it mines? It is the world's fourth-largest producer by value, with 12% of global output. Yet its cutting and polishing sector is small, employing about 2,000 people. Most of its stones get exported in rough form, to be cut in Belgium, China, India or Israel.

Now the government is keen to create jobs and add value to the country's diamond exports by boosting the local cutting and polishing industry, and by having more jewellery-makers at home. (...) An export levy on rough diamonds is (...) being planned.” (from the Economist, 10/27/2005)

1. How would an export levy work (explain the mechanism carefully)?
2. What would happen to the world price of rough diamonds if an export levy was introduced? What about the price of rough diamonds faced by the local cutting and polishing industry?
3. How would you measure the benefits and costs of the export levy (please be brief and precise)?
4. What sectors would be hurt by the intervention, what sectors would gain?

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