

Examiner: Dr. Ludwig v. Auer

The following aids may be used: Calculator, dictionary

This examination comprises three questions. All of them are to be answered. The available amount of time is two hours.

Question 1:

Consider a partial equilibrium analysis for the cotton market of the large country *Home*.

- a) (6 points) Draw the supply and demand curves of *Home*, such that with free trade *Home* is an exporter of cotton. Indicate in your diagram the free trade price of cotton (P_W). Also indicate the autarky price (P_A) that would prevail in *Home*.
- b) (3 points) Suppose that *Home*'s government pays an export subsidy s to exports of cotton. Explain verbally how this subsidy affects the price *Home*'s consumers (P_S) and *Foreign*'s consumers (P_S^*) have to pay for cotton.
- c) (12 points) Indicate in your diagram of question 1a the export subsidy s and how this subsidy affects the welfare of *Home*'s consumers, producers, and government. What is the net welfare effect for *Home*? Also show in your diagram the effect on *Home*'s exports.
- d) (5 points) The net welfare effect can be decomposed into a „terms of trade effect“ and a „efficiency effect“. Using your diagram of question 1c, determine the size of these two effects. Explain verbally why „terms of trade effect“ is a suitable name.
- e) (10 points) In question 1a, *Home*'s market for cotton was considered. Also for *Foreign* a cotton market exists. In a three part diagram (with *Home*'s cotton market forming the left hand side part of the diagram and *Foreign*'s cotton market forming the right hand side part) construct the free trade *MD*-line and *XS*-line (forming the middle part of the diagram) that are consistent with *Home* being an exporter of cotton. Also indicate the Price P_W and the volume of trade.
- f) (4 points) Using the middle part of your diagram of question 1e, graphically derive the new equilibrium resulting from the export subsidy. Indicate the subsidy s as well as the new equilibrium prices P_S and P_S^* .

Question 2:

Consider the usual Heckscher-Ohlin-model with two countries (*East* and *West*), two goods (Q_S =simple good, Q_H =high tech good), and two factors of production (L =labour, K =capital). Both countries have the same linearly homogeneous production functions $Q_S(L_S, K_S)$ and $Q_H(L_H, K_H)$. P_S is the price of the simple good and P_H is the price of the high tech good. The factor price of labour is the wage w and the factor price of capital is r .

- a) (4 points) Suppose that *East* is abundantly endowed with labour and that the production of the simple good is labour intensive. Translate these two statements into a formal representation, where L and K represent the factor endowment in country *East* and L^* and K^* represent the factor endowment in country *West*.
- b) (8 points) Based on the information given in question 2a, draw the familiar Heckscher-Ohlin-diagram that depicts for country *East* the relationship between P_S/P_H and the factor price ratio and the factor input ratios (Hint: Think carefully about whether w/r or r/w should be used, and also about whether L_S/K_S and L_H/K_H is appropriate or rather K_S/L_S and K_H/L_H). Explain verbally to which extent the corresponding diagram of country *West* would differ.

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- c) (7 points) *East's* total resources are $L = L_S + L_H$ and $K = K_S + K_H$. Using a suitable diagram (of the Edgeworth box type), demonstrate how the precise allocation of *East's* total resources between the two industries can be graphically derived.
- d) (10 points) Using your diagrams of question 2b and 2c, show how a rise in P_S/P_H would change the allocation of resources in country *East*. What would be the effect on the relative supply of the two goods (Q_S/Q_H)? In a new diagram, draw *East's* relative supply curve (RS).
- e) (9 points) Using the information given in question 2a, add to *East's* relative supply curve (diagram of question 2d) the relative supply curve of country *West* (RS^*). Suppose that the preferences of consumers are identical in both countries. Show graphically how the relative prices in the two countries will change when the countries switch from autarky to free trade. Using the same diagram, also justify the pattern of trade that will emerge.
- f) (2 points) As a result of trade, are *East's* and *West's* capital owners better off or worse off?

Question 3: Shorties

- a) (12 points) Consider the Ricardian model with two goods: *chocolate* (Q_C) and *rice* (Q_R). Suppose that *Home* has $L = 400$ units of labour available and that its labour unit requirements are $a_{LC} = 5$ and $a_{LR} = 1$. *Foreign* has $L^* = 600$ units of labour available and its labour unit requirements are $a_{LC}^* = 3$ and $a_{LR}^* = 2$. In a diagram, show how the resulting world relative supply curve (RS) would look like (approximately). Add to your diagram a world relative demand curve (RD) such that only *Foreign* would gain from trade.
- b) (9 points) Consider the monopolistic competition model outlined in the course. That is, the average cost of a profit maximizing producer of *Home* is given by $AC = nF/S + c$, where n is the number of producers selling on the market (and therefore the variety of choice), F is the producer's fixed cost, S is the total market size, and c is the marginal cost. The producer's optimal price setting behaviour is characterized by $P = c + 1/(nb)$, where b is the price responsiveness of consumers. In a suitable diagram, demonstrate that trade mitigates the trade off between the product's price P and the variety of choice. As a result of trade, what happens to the equilibrium price, to the number of producers in *Home*, and to the variety of choice?
- c) (6 points) A country that joins a custom union may witness *trade creation* or *trade diversion*. Using a simple numerical example, explain the difference between the two effects and why one effect is preferred to the other.
- d) (6 points) Using a numerical example, explain why labour market pooling can be beneficial for both workers and employers.
- e) (7 points) Russia primarily exports oil whereas it imports high-tech products. Using the standard-trade-model, illustrate graphically the impact on Russia's terms of trade of the following events:
 A) turmoil disrupts Iraq's oil production;
 B) an unusually warm winter in Europe;
 C) the European Union *abolishes* an import tariff on oil.