

International Economics Exam

Last name (in capital letters):

First name (in capital letters):

Student registration number:

Signature:

General instructions:

1. Answer all questions from sections A and C, and answer only one question out of two from section B;
2. Exam papers that are missing either name, student number, or signature are not valid;
3. Write your name, student number, and signature also on the sheets employed to solve the exam; these sheets, together with scratch paper, have to be handed back;
4. Questions are to be answered in pen; pencil is allowed only for graphs;
5. Available time: 1 hour and 30 minutes.

SECTION A

Multiple choice questions (2 points for correct answer, 0 for blank answer, -1 for wrong answer)

1. Consider the Brander-Spencer framework of strategic trade policy. If there is **not cooperation** among the two governments
 - a) there will be a subsidy paid to firms ($u=u^* > 0$)
 - b) there will be a tariff/tax paid by firms ($u=u^* < 0$)
 - c) there will not be either a subsidy or a tariff ($u=u^* = 0$)
2. When a big country pays a subsidy to exports of good Y, the international terms of trade $\hat{p} = \hat{p}_X / \hat{p}_Y$
 - a) change so that imports of X become relatively cheaper
 - b) change so that imports of X becomes relatively more expensive
 - c) do not change
3. Consider the horizontal FDI model. We know that the profit differential between the multinational and national form is $\Pi^{MNE} - \Pi^{NE} = tE - (F + H)$. Decreasing the fixed cost of a plant (**lower F**) leads to
 - a) a shift to the left of the threshold of foreign market size E below which it is convenient to stay national
 - b) a shift to the right of the threshold of foreign market size E below which it is convenient to stay national
 - c) making trade and FDI complements
3. Consider the vertical FDI model. We know that the cost differential between the multinational and national form is $B^{MNE} - B^{NE} = H + t - (c - c^*)$. Trade liberalization (**lower t**) is conducive to
 - a) shifting to the left the threshold of foreign marginal production cost c^* above which it is convenient to stay national
 - b) shifting to the right the threshold of foreign marginal production cost c^* above which it is convenient to stay national
 - c) making trade and FDI substitutes

SECTION B: Answer only one question out of the following two (answer either B.1 or B.2).

Question B.1: Heckscher-Ohlin model of trade

Consider two big countries, 1 and 2, that are trading with each other cloth, C , and food, F . The two factors of production are labor, L , and capital, K . The unit input requirements of labor and capital for the two goods in each country are a_{LC} , a_{LF} , a_{KC} , a_{KF} . Assume the same technology and the same preferences in the two countries for the goods.

- i) Write the condition that has to be satisfied by a_{LC} , a_{LF} , a_{KC} , a_{KF} when **cloth is intensive in the use of labor**.

The production possibility frontier in each country is the result of two distinct resource constraints, one on labor, the other on capital: $L_C + L_F \leq L$, $K_C + K_F \leq K$.

- ii) Write the analytic expression for the two resource constraints in terms of the quantity of cloth produced, Q_C , and the quantity of food produced, Q_F . Draw the two resources constraints in a graph where on the horizontal axis we have Q_C , while on the vertical axis we have Q_F .
- iii) Show the effect of an increase in capital on the production possibility frontier and explain what it is the Rybczynski effect.

Now allow the unit input requirements to be variable, with cloth still intensive in labor. Moreover, assume that **country 1 is relatively abundant in capital**. Define p_A^1 as the autarchy relative price in country 1 of the price of cloth over the price of food, $p_C^{A,1} / p_F^{A,1}$, and p_A^2 is similarly defined in country 2.

- iv) In the same graph, draw the production possibility frontiers for country 1 and country 2 and show the autarchy equilibrium in each country. What is the highest relative autarchy price, p_A^1 or p_A^2 ?
- v) After trade is opened up, will country 1 be an importer or exporter of food?

Question B.2: Models with increasing returns to scale and imperfect competition

In country H , in a given sector, in autarchy, there are n firms that produce the final good employing only labor, whose total supply is equal to L . The wage of workers is normalized to 1. The total cost function to produce q units of the final good is $TC = f + c \cdot q$.

- i) Derive the total labor demand in country H and write the full employment condition in the labor market.
- ii) Derive the profit function of a firm and write the free entry/exit condition.

The equilibrium price charged by each firm is $p = \sigma n c / (\sigma n - 1)$.

- iii) Write the operating margin of a firm.
- iv) Determine the equilibrium number of firms n_A in autarchy in country H , and carefully discuss the role of each exogenous variable.

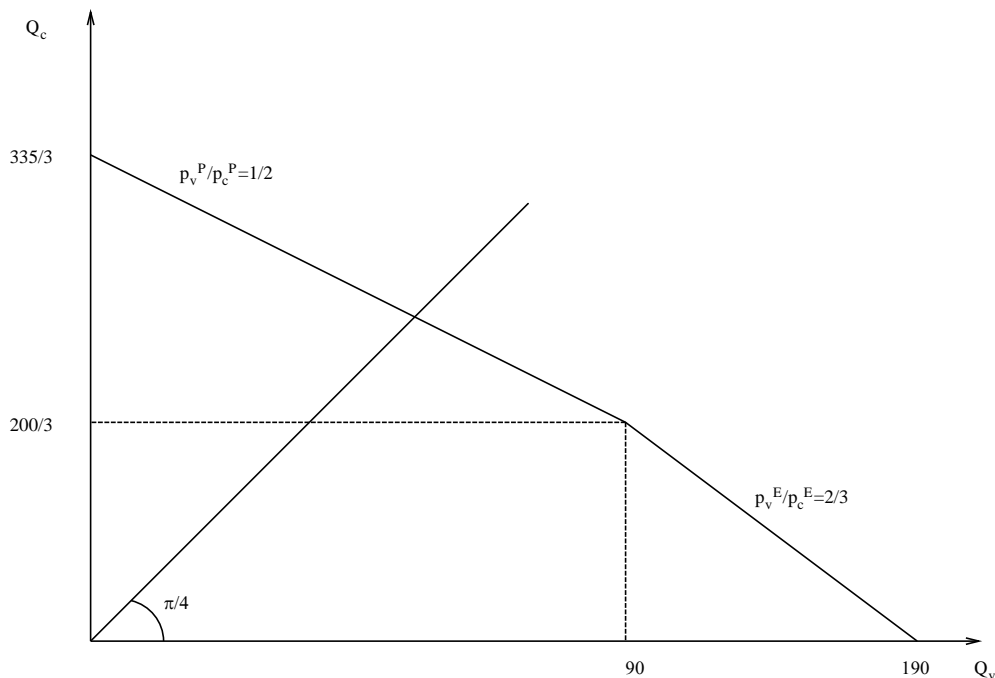
Let us assume now that country H becomes perfectly integrated with country F , which is equal to country H in all aspects. The total labor force in the integrated economy is now $2L$.

- v) Determine the equilibrium number of firms n_T in the integrated economy and compare it with n_A . The number n_T is larger or smaller than $2n_A$? Discuss these results from an economic point of view.

SECTION C

Traditional theories of trade

Consider the following Ricardian framework. There are two countries, E and P , two tradable goods, v and c , and one factor of production, labor, which is immobile across countries. Good c is the numeraire good in both countries; that is, $p_c^E = p_c^P = 1$. Country E is endowed with 200 units of labor while country P is endowed with 90 units of labor. We have the following technologies in each country (unit labor requirements): $a_c^E = 3$; $a_v^E = 2$; $a_c^P = 2$; $a_v^P = 1$. Preferences over the two goods are of the Leontief type in both countries. In the autarchy equilibrium for E quantities are $Q_c^E = Q_v^E = 40$, labor allocations are $L_c^E = 120$, $L_v^E = 80$, wages are $w_c^E = w_v^E = 1/3$. In the autarchy equilibrium for P quantities are $Q_c^P = Q_v^P = 30$, labor allocations are $L_c^P = 60$, $L_v^P = 30$, wages are $w_c^P = w_v^P = 1/2$. The world PPF is the following:



where it is also plotted the 45° line which identifies graphically world production and consumption.

- Compute analytically the quantities produced and consumed in each country, labor allocations and wages under free trade.
- Compute analytically welfare under autarchy and free trade in each country as real wages in terms of v and c . What is the country to gain from trade? Why?