

# Written Exam for the M.Sc. in Economics 2010

International Trade and Investment

Final Exam/ Elective Course/ Master's Course

Winter 2010/2011

14. December, 2010

Three hour closed book exam

- There are 3 pages in this exam paper, including this instruction page
- You need to answer all FOUR questions, so manage your time accordingly.
- If a question asks you to list three things, please underline the list with preceding numbers as exemplified below.

1. Thing number 1

2. Thing number 2

3. Thing number 3

- Make your math legible and easily followed, with the final answer boxed.
- Partial credit may be given.

Good Luck!

1. Identify whether these statements are true or false. If false, rewrite the sentence to make it true, changing maximum 1 or 2 words.

- (a) The Leontief paradox questioned the validity of the Ricardian model.
- (b) The Stolper-Samuelson theorem suggests that free international trade should lead to wage increases in labor-abundant countries.
- (c) The presented model in Dornbusch-Fischer-Samuelson (1977) is a model of outsourced intermediate goods.
- (d) Autarky is a state of the economy where trade in goods do not exist.
- (e) The existence of Factor Intensity Reversals are necessary for Factor Price Insensitivity to exist.
- (f) An increase in the level of outsourcing increases wages for low, medium, and high-skilled workers in Danish firms.

2. Trefler (1995) suggests this amended HOV equation:

$$F_j^c = \pi_j^c V_j^c - s_c \sum_{n=1}^N \pi_j^n V_j^n$$

where  $F$  is the factor  $j$  content of trade for country  $c$ ,  $V$  is country  $c$ 's endowment of factor  $j$ , and  $s$  is country  $c$ 's share in world GDP.

- (a) What does  $\pi_j^c$  stand for in Trefler (1995)?
  - (b) Suppose  $F_{Labor}^c = 0 \forall c$ . Solve for the implied relative value  $\frac{\pi_{Labor}^{DK}}{\pi_{Labor}^{US}}$  between countries  $DK$  and  $US$ . How would you measure  $\frac{\pi_{Labor}^{DK}}{\pi_{Labor}^{US}}$  in the data? .
  - (c) What are the two mysteries in Trefler (1995)? Briefly explain each.
3. Consider Krugman (1980)'s monopolistic competition setup with 1 differentiated good industry. There are 2 countries, A and B, and they trade with each other. The utility function is  $u = \sum_{n=1}^N c_n^{\frac{\sigma-1}{\sigma}}$ , where  $c_n$  denotes the quantity consumed of good  $n$ . There is a ice-berg transport cost  $\tau$  to ship between countries A and B. Firms require  $l = \alpha + \beta x$  to produce  $x$  units of output. The wages of both countries is 1. The two countries have labor endowments of  $L_A$  and  $L_B$ .

- (a) Country  $B$ 's total imports of country  $A$ 's goods can be written as  $X_{AB} = \frac{N_A p_{AB}^{1-\sigma} I_B}{P_B}$ . Write down the zero-profit equilibrium expressions for  $N_A$ ,  $p_{AB}$ ,  $I_B$ , and  $P_B$  in terms of the parameters of the model in the description above.
  - (b) Write down expressions for  $X_{BA}$ ,  $X_{AA}$ ,  $X_{BB}$ , where  $X_{ij}$  denotes the total sales of goods produced in  $i$  and sold in  $j$ . Use only model parameters.
  - (c) How can you measure the term  $\mu = \tau^{\sigma-1}$  using only the data on the volumes of bilateral trade (i.e. values of exports and imports) between  $A$  and  $B$  plus data on domestic sales of the good in countries  $A$  and  $B$ ?
4. A country produces two goods: Legos and cells using two factors  $K$  and  $L$  under the standard assumptions of Heckscher-Ohlin. Suppose Legos are more  $L/K$  intensive than cells.
- (a) Draw a production possibilities frontier for the two goods, labelling axes correctly. Add a world price vector. Label it  $P1$
  - (b) Find the optimal production point. Label that point  $A$ .
  - (c) On top of your previous drawing, draw another production possibilities frontier resulting from an increase in the endowment of  $L$ .
  - (d) How does the world price vector change with the increase in  $L$ ?
  - (e) Draw the new world price vector on top of your graph and label it  $Q$
  - (f) Find the new optimal production point. Label that point  $B$ .
  - (g) Production changed from  $A$  to  $B$ . Did the production of Cells increase or decrease?
  - (h) What is the name of the theorem that provides the answer to part  $g$ ?