Written Exam for the M.Sc. in Economics 2010-1

International Trade and Investment
Final Exam, December 15th, 2009

4-hour closed book exam

- There are three pages in this exam paper, including this instruction page
- You need to answer all THREE questions, so manage your time accordingly.
- Make your math legible and easily followed, with the final answer boxed.
- Partial credit may be given.

Good Luck!

1. Empirical questions

   (a) Has the intra-industry share of trade increased or decreased in the last 50 years? Is there more or less trade between countries with similar capital/labor ratios?

   (b) What two trade models do Head and Ries (2001) test? Which model's predictions are supported by their results?

   (c) Define the intensive margin of trade and the extensive margin of trade.

   (d) Do exporting firms, on average, pay higher or lower wages than their non-exporting counterparts?

   (e) Explain the Alchian-Allen Effect and its cause.

   (f) What is the Leontief Paradox?

2. Factor Price Equalization (FPE)

   Use a single graph for this question. Consider a world with 2 countries(Denmark and Finland), 2 factors (capital & labor), and an infinite number of goods. Each good is produced using a concave, constant returns to scale production function using both labor and capital. Each good has a different capital/labor intensity. Technology is freely movable across countries. The two countries take world prices as given. Preferences are identical and all goods are demanded in both countries.

   (a) Using capital as the vertical axis, draw the FPE set for this world economy. (You should draw this graph pretty big.)

   (b) Place an endowment point OUTSIDE the FPE set corresponding to a world in which Denmark is labor-abundant. Label the endowment point E. What can you say about factor prices in the two countries?

   (c) Given endowment E, let's look at the production of a particular good y with capital/labor intensity = 2. How many countries produce good y? (0,1, or 2?) Explain your answer.

   (d) Now suppose open migration occurs between Denmark and Finland and after 10 years, we arrive at a new endowment point J inside the FPE. Label this endowment point J.

   (e) What can we say about the production of y under this new endowment point J? (Who produces y? How much of y is produced?)

(f) Suppose the technology used to produce y improves so that the world price of y decreases very slightly. How does that affect factor prices in the country or countries that produces y?

3. An extension of The Krugman (1980) model

Assume there are an infinitely countable number of potential firms indexed by $i \in [1, 2, ..., \infty)$ with labor cost function

$$l(i) = f(i) + w\beta q(i) \tag{1}$$

where $w = 1$ is the wage normalized to 1, β is the marginal cost, and $q(i)$ is the quantity that firm i outputs. The fixed cost $f(i)$ is unique to the firm and equals $f(i) = iA$. So firm 5 has a fixed cost of $5A$, firm 10 has twice the fixed cost as firm 5, etc... The firms compete in a market where total expenditure on the varieties in the market is Y, which is exogenous to the industry. The sub-utility function for varieties is $u = \sum_{i \in \Omega} c_i^{\frac{\sigma-1}{\sigma}}$, where Ω is the set of firms in the market. N is the endogenous number of firms in the market, where $N = |\Omega|$, the number of firms in Ω. A, β, σ, Y are the model parameters.

(a) Given this information, what is the firm's profit maximizing price in terms of the parameters of the model?

(b) Show that firm $i's$ profits in terms of the parameters of the model and N is $\pi_i = \frac{Y}{\sigma N} - iA$.

(c) Use the profit cutoff condition to find the endogenous set Ω.

(d) Suppose $\sqrt{\frac{Y}{A\sigma}}$ is a whole number. What is the output $q(i)$ for firm i in terms of the model parameters?

(e) In this model, how does a 10% increase in the expenditure Y affect the number of firms? Compare this prediction to the long run equilibrium prediction of Krugman 1980. Your choices are: i. Decrease by more than 10% ii.Decrease by 10% iii. Decrease by less than 10% iv.Does not change v. Increase but less than 10% vi.Increase by 10% vii.Increase by greater than 10%.

(f) In this model, how does a 10% increase in the expenditure Y affect the output quantity per firm? Compare this prediction to the long run equilibrium prediction of Krugman 1980. Your choices are: i. Decrease by more than 10% ii.Decrease by 10% iii. Decrease by less than 10% iv.Does not change v. Increase but less than 10% vi.Increase by 10% vii.Increase by greater than 10%.