

**Globalization, Incomes, and Inequality**  
**Economics 4080, Fall 2008**  
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**Midterm Examination**

**ANSWER ALL QUESTIONS,    150 Points Total**

**I. True, False, or Uncertain? Explain! 10 Points Each**

Read the following assertions. For each assertion, state whether it is true, false, or uncertain. Explain why! **If you do not explain your reasoning, you will get no credit.** The answer should **not** be long, but it should be compelling and complete.

1. Let \* indicate a foreign variable. In a simple Ricardian model with homogeneous labor, let  $A_X = 12$ ,  $A_X^* = 4$ ,  $A_Y = 4$ , and  $A_Y^* = 12$  be the productivities in goods  $X$  and  $Y$ . A sufficiently strong demand shock in favor of good  $X$  may raise the foreign relative wage from 2 to 4.
2. In a move from autarky to free trade in a simple Ricardian model, a relatively more productive country will manage to hold on to all of its industries and so also will be the one that gains most from trade.
3. In a simple Heckscher-Ohlin model of migration, the mobile factor will move until factor prices are equalized, but since this will not equalize endowment ratios, it will also not equalize goods prices.
4. The Stolper-Samuelson Theorem says that in a labor scarce country, a movement of wages gives rise to a magnified (more than unit elastic) impact on prices, thus making wages a major source of price inflation.
5. In the simple monopolistic competition model, the equilibrium degree of exploitation of scale economies depends exclusively on parameters of the production technology.
6. In the Melitz model, a symmetric trade liberalization (i.e. both countries lowering tariffs) forces some firms to exit, and so lowers aggregate productivity.
7. In the Melitz model, a firm may respond to a trade liberalization by increasing employment, total sales, and penetrating foreign markets, yet still see profits decline.

8. One of the important insights of the “Figure 1” model of migration is that while redistribution among factors (e.g, labor and capital) is small, the total gain in the country receiving immigrants is large.
9. In the “Figure 1” model of migration, the move benefits the migrant, but it need not raise world income because there are losers as well.

## II. Problems: 20 Points Each

10. Consider a simple Heckscher-Ohlin-Vanek model. There are two goods,  $X$  and  $Y$ . The factor intensities are extreme, so that  $X$  uses only capital  $K$  and  $Y$  uses only labor  $L$  with production functions  $X = K$  and  $Y = L$ . Let preferences for the goods be Cobb-Douglas so that  $U(D_X, D_Y) = D_X^{1/2} D_Y^{1/2}$ . Let world endowments be  $(K^W, L^W) = (10, 10)$ . Let good  $Y$  be the numéraire.
- What is the relative price of  $X$  in the integrated world economy?
  - What are the wage and rental rates?
  - Draw a graph illustrating the FPE set for this world economy.
  - If we divide the world endowments into two countries, so that the endowments of the countries are  $(K^1, L^1) = (7, 3)$  and  $(K^2, L^2) = (3, 7)$ , is this consistent with FPE?
  - What is the pattern and magnitude of net goods trade for country 1? For net factor trade?
11. Consider an autarkic economy that produces a single good with two factors of production, capital and labor available in the quantities  $(K^1, L^1) = (8, 4)$ .
- In a diagram whose axes are  $K$  and  $L$ , illustrate how market clearing for the two factors determines their relative factor price.
  - In a diagram whose axes are  $r$  and  $w$ , illustrate how market clearing for the two factors determines their factor prices.
  - In a diagram whose axes are  $w$  and  $L$ , illustrate how market clearing for labor determines the wage.
  - In each diagram, illustrate how a rise in the labor force from 4 to 8 affects the equilibrium.

12. In the monopolistic competition model, demand for a producer of a good  $i$  is given as:

$$x_i = \frac{p_i^{-\sigma}}{P^{1-\sigma}} I$$

- A. Explain the meaning of each of the variables  $p_i$ ,  $P$  and  $I$ .
- B. Draw a diagram illustrating the producer's optimal choices of output and price. Label all key variables, including an explicit expression for the equilibrium price.
- C. What is the elasticity of demand as perceived by the producer?
- D. Consider two standard monopolistically competitive economies of sizes  $L > L^*$  and equilibrium number of varieties  $n > n^*$ . Assume that they can trade with iceberg costs of  $\tau > 1$ .
  - (i) Write down explicit expressions for the aggregate price indices for the two countries, where the typical prices of locally produced goods are  $p$  and  $p^*$  respectively.
  - (ii) Does welfare differ for residents of the two countries? Demonstrate.