

Answer Key for Midterm Exam (Total Points = 100)

Thursday, October 29

2:30-3:45 p.m.

Name: _____

Instructions

This exam paper has 10 pages.

1. There are three sections: multiple choice questions, essay questions, and problems.
2. This is a closed book, closed notes exam.
3. Simple calculator is allowed.
4. Please show all your work (except for the multiple choice questions). If you need more space, use the back of the page.
5. Fully label all graphs.

Good Luck.

Part I: Multiple Choice Questions (Total = 50 points maximum, 2.5 points each)

Choose the best answer. Explanation is not required.

1. The ratio of a country's exports to its total output (GNP or GDP)
 - (a) is known as the index of openness.
 - (b) provides a rough measure of the importance of international trade to that economy.
 - (c) if calculated for the United States would be quite low.
 - (d) **All of the above.**

2. Which of the following statements is true?
 - (a) Countries tend to trade extensively with their neighbors.
 - (b) The United States is an important trading partner for many countries.
 - (c) The largest amount of international trade occurs between industrialized countries.
 - (d) **All of the above are true.**

3. If the autarky price of S were lower in country A than in country B, then if trade were allowed
 - (a) **A would likely export S to B.**
 - (b) A would likely import S from B.
 - (c) neither country would want to trade.
 - (d) None of the above.

4. The classical theory predicts that
 - (a) countries will completely specialize in the production of export goods.
 - (b) considerable trade will occur between countries with different levels of technology.
 - (c) small countries could obtain all of the gains from trade when trading with large countries.
 - (d) **All of the above.**

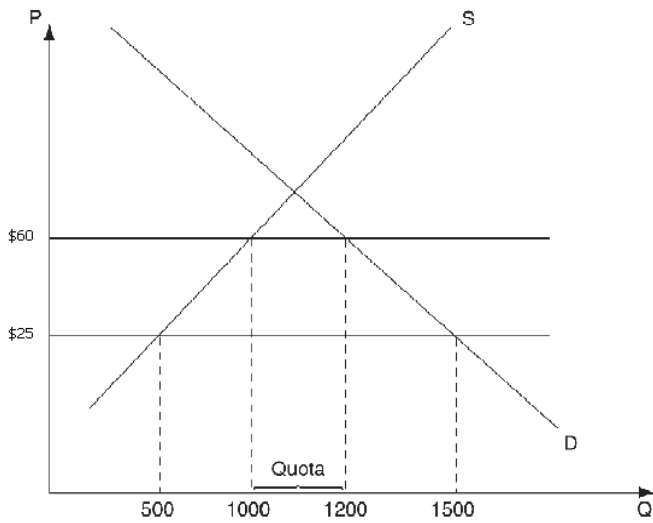
5. In the classical model, the direction of trade is determined by
 - (a) absolute advantage.
 - (b) **comparative advantage.**
 - (c) physical advantage.
 - (d) which way the wind blows.

6. One of the predictions of the HO model is that
 - (a) countries with different factor endowments but similar technologies and preferences will have a strong basis for trade with each other.
 - (b) countries will tend to specialize, but not completely, in their comparative advantage good.
 - (c) the gainers from trade outnumber the losers from trade.
 - (d) **All of the above.**

7. According to the factor price equalization theorem, if country A is capital abundant, then once trade opens
 - (a) wages and rents should fall in A.
 - (b) wages and rents should rise in A.
 - (c) wages should rise and rents should fall in A.
 - (d) **wages should fall and rents should rise in A.**

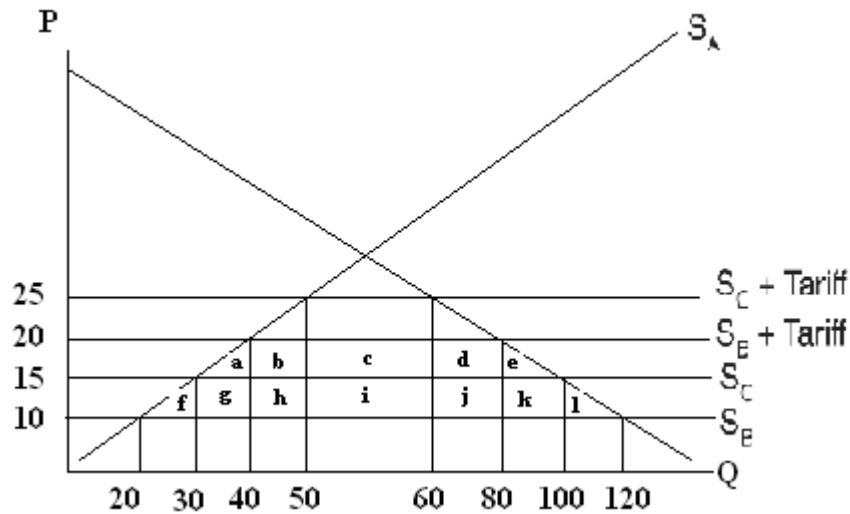
8. Suppose that there are two factors, capital and labor, and that the United States is relatively capital abundant while Mexico is relatively labor abundant. According to the HO model,
 - (a) Mexican workers should support Mexico-U.S. free trade.
 - (b) Mexican capitalists should oppose Mexico-U.S. free trade.
 - (c) U.S. capitalists should support Mexico-U.S. free trade.
 - (d) **All of the above.**

Answer question 15 based on the following diagram.



15. If the government was to auction quota licenses competitively, it could earn up to
- \$5000.
 - \$7000.**
 - \$12000.
 - Cannot answer without more information.
16. Like tariffs, quotas tend to lead to
- higher prices and reduced imports.**
 - increased government revenue.
 - increased consumer surplus.
 - All of the above.
17. Which of the following are used as nontariff barriers?
- health and safety standards
 - government procurement policies
 - Failure to protect intellectual property rights
 - All of the above**
18. One result of the Uruguay Round is the formation of an organization known as the _____, which is responsible for setting trade rules and settling trade disputes between members.
- World Commercial Council (WCC)
 - World Trade Organization (WTO)**
 - International Trade Organization (ITO)
 - United World Trade Council (UWTC)

Answer questions 19-22 based on the following diagram which depicts country A's market for its importable.



19. If A imposes a per unit tariff of \$10 on imports from both B and C, it will import
 - (a) **40 units from B.**
 - (b) 10 units from C.
 - (c) 40 units from each.
 - (d) 40 units from B and 10 units from C.

20. If A forms a customs union with B, the quantity of trade creation will be
 - (a) 100 units.
 - (b) **60 units.**
 - (c) 40 units.
 - (d) 30 units.

21. Domestic producers of this product in A would most prefer
 - (a) a customs union with C.
 - (b) a customs union with B.
 - (c) a free trade agreement with both B and C.
 - (d) **no agreement with either country.**

22. Domestic consumers of this product in A would most prefer
 - (a) a customs union with C.
 - (b) **a customs union with B.**
 - (c) a free trade agreement with C.
 - (d) no agreement with either country.

Part II: Essay Questions (Total = 8 points)

1. a) (2) Why were Leontief's findings considered to be paradoxical?

Leontief assumed that the US was the most capital abundant country in the world after World War II and expected his test of the HO model to confirm that US exports were relatively capital intensive while US imports were relatively labor intensive. Instead, he found that US imports were more capital intensive than its exports, hence Leontief's Paradox.

b) (3) Discuss one of the attempted reconciliations of Leontief's findings.

One of these with some explanation is fine.

- **Leontief: American workers were so productive relative to workers in the rest of the world, the U.S. should more properly be viewed as being relatively labor abundant.**
- **Jaroslav Vanek argued that an important third factor, natural resources, had been omitted from the analysis.** Natural resources, such as minerals, tend to be produced using capital-intensive techniques. Thus, on a two-factor basis, U.S. imports appeared to be relatively capital intensive. [U.S. imports were actually intensive in a third factor, natural resources]
- **Prevailing U.S. tariff structure:** U.S. tariffs on labor-intensive products tended to be high.
- **Assumption 17 –international equality of tastes – is violated.** Comparisons of expenditure patterns across countries indicate that differences in tastes and preferences could be significant in overturning HO predictions.
- **Assumption 14 - identical technology, A14 - is violated.** In his test, he used the U.S. input-output table to construct the factor requirements for both U.S. exports and U.S. import-*competing* goods. The assumption he then made was that foreign goods would be produced using technologies identical with those found in U.S. import-competing industries. If factor prices are not equalized internationally, and if labor is relatively more expensive in the U.S. than in the rest of the world, then Leontief's procedure would estimate that U.S. imports are relatively more capital intensive than the techniques actually used to produce these goods in the rest of the world.

2. (3) Discuss various reasons why we might expect countries to engage in intraindustry trade.

First, transportation costs may be a factor. If two parts of a country are very far apart, it might be logical for one region to export a product while another distant region imports the same product. Second, the data may be misleading. Since import and export data tend to be aggregated across broad categories, a country might be simultaneously exporting and importing goods in the same category although they have very different characteristics. Finally, economies of scale may lead to specialization in narrow product lines (or varieties of a good), with countries exporting several varieties of a product in exchange for different varieties of the same product.

Part III: Computation Questions (Total = 42 Points)

Please show all the formulas and calculations.

1. (30) Suppose that the United States and Mexico are the only countries in the world and that labor is the only productive input.

In the Mexico, it requires 8 hours of labor to produce one unit of good X and 4 hours of labor to produce one unit of good Y. In the United States, it requires 4 hours of labor to produce one unit of good X and 1 hour of labor to produce one unit of good Y.

In other words, we have the following input requirement table:

	hours of Labor required to produce	
	One unit of X	One unit of Y
Mexico	8	4
U.S.	4	1

a) (4) Which country has absolute advantage in X? in Y? Explain.

The U.S. has absolute advantage in both goods because it requires fewer resources to produce the same amount of goods.

b) (4) Determine the pretrade relative prices ($\frac{P_X}{P_Y}$) i.e. the price of a television (X) in units of computer (Y) in each country.

In Mexico:
$$\frac{P_X}{P_Y} = \frac{\text{Wages}_{\text{Mexico}} \times \text{hours}_{\text{Mexico, X}}}{\text{Wages}_{\text{Mexico}} \times \text{hours}_{\text{Mexico, Y}}} = \frac{8}{4} = 2$$
i.e. the price of X is 2 units of Y.

In the U.S.:
$$\frac{P_X}{P_Y} = \frac{\text{W}_{\text{US}} \times \text{hours}_{\text{US, X}}}{\text{W}_{\text{US}} \times \text{hours}_{\text{US, Y}}} = \frac{4}{1} = 4$$
i.e. the price of X is 4 units of Y.

c) (4) Complete the following table.

	Units of Labor required to produce		Opportunity Cost of producing 1 unit of	
	a television (X)	a computer (Y)	X	Y
Mexico	8	4	$8/4=2$	$4/8=1/2$
U.S.	4	1	4	$1/4$

d) (4) Which country has comparative advantage in X? in Y? Explain.

Students can answer this question either using part b) or c).

Mexico has comparative advantage in X because, as can be seen from b), the autarky (pretrade) relative price of X in Mexico is lower, or, as can be seen from c), it can produce X with lower opportunity cost.

U.S. has comparative advantage in Y because it can produce Y with lower opportunity cost.

e) (4) If Mexico and the U.S. sign a free trade agreement, what is the allowable range on the terms of trade (the price of a television (X) in units of computer(Y) under free trade) if trade is flowing between these two countries according to comparative advantage? Why?

The terms of trade must lie between the two autarky relative prices i.e. the rate of exchange for one unit of X must be between 2 and 4 units of Y. Otherwise, at least one country will not find it beneficial to engage in trade.

f) (4) If each country is endowed with 8000 hours of labor, many units of good X and good Y will each country produce **after** trade begins?

Mexico will completely specialize in the production of good X.

It will produce $8000/8 = 1000$ units of X, none of Y.

The U.S. will completely specialize in the production of good Y.

It will produce $8000/1 = 8000$ units of Y, none of X.

g) (3) What is the allowable range on the relative wage rate, $\frac{W_{US}}{E * W_M}$, if trade is flowing between these two countries according to comparative advantage?

Note: Let W_M , W_{US} , and E denote the wage rate in Mexico, the wage rate in the U.S. and the exchange rate that translate units of Mexican peso into \$ respectively.

For Mexico to export its comparative-advantage good X, it must be that

$$E * 8 * W_M < 4 * W_{US}$$

or
$$\frac{8}{4} < \frac{W_{US}}{E * W_M}$$

or
$$2 < \frac{W_{US}}{E * W_M}$$

For the U.S. to export its comparative-advantage good Y, it must be that

$$1 * W_{US} < E * 4 * W_M$$

or
$$\frac{W_{US}}{E * W_M} < \frac{4}{1}$$

or
$$\frac{W_{US}}{E * W_M} < 4$$

Combining the two conditions, it must be the case that
$$2 < \frac{W_{US}}{E * W_M} < 4.$$

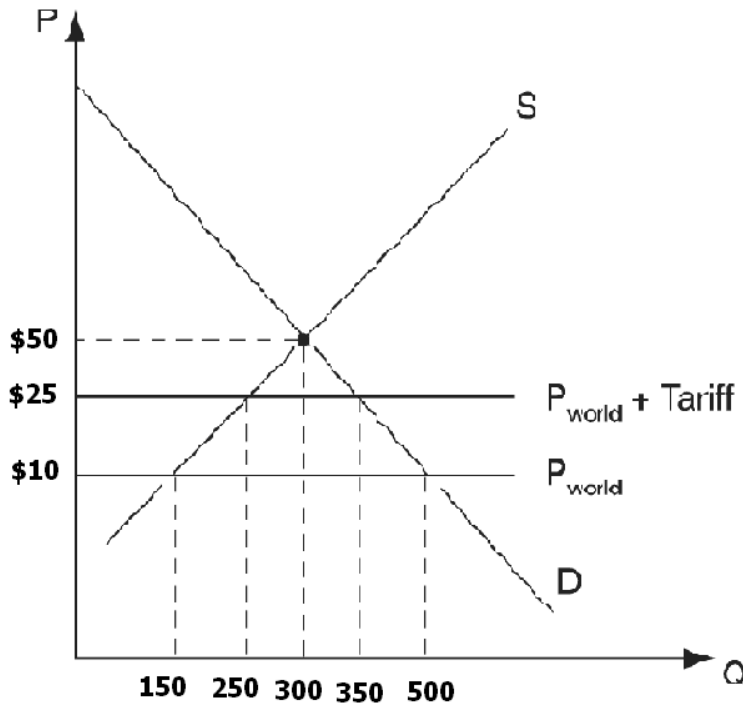
h) (3) Evaluate the following statement:

In the above example, workers in the U.S. must get higher wages than workers in Mexico.

This statement is true since workers in the U.S. are more productive than workers in Mexico.

As can be seen from part g),
$$\frac{W_{US}}{E * W_M} > 1.$$

2. (12) Answer the following questions based upon the following diagram (assume the small country case).



a) (2) What is the autarky price and quantity exchanged?

Autarky price = \$50. Quantity exchanged = 300 units.

b) (2) Suppose the world price of this good is \$10. With free trade, calculate the total quantity of imports.

500-150 = 350 units.

c) (2) With the tariff of \$15 per unit, calculate quantity of imports.

350-250 = 100 units.

d) (2) With the above tariff, how much will the government be able to collect as tariff revenue?

\$15 * 100 = \$1500

e) (2) Calculate the deadweight costs of the tariff and illustrate them on the above diagram.

f) (2) If instead of a tariff, the government restricts trade by imposing a quota. What is the amount of quota that would produce the same effects as the above tariff (assuming that quota licenses are auctioned with competitive bidding)?

The quota of 100 units.