

## Homework 2 Answers

True/False/Uncertain: For each question, answer T/F/U and briefly explain the answer. (No points for an unsupported answer).

1. According to the Heckscher-Ohlin model, countries with a lot of labor will export goods that use a lot of labor.

**False. A country relatively well-endowed with labor will export goods that are relatively labor intensive. Absolute endowments and absolute quantities of labor used in production are not useful for understanding trade patterns in the Heckscher-Ohlin model.**

2. A decrease in the capital-labor ratio raises the marginal product of capital.

**True. When the capital-labor ratio falls, diminishing returns to capital operates in reverse. Now, each unit of capital has more labor to operate it and generates more output at the margin.**

3. An increase in the wage rate, holding the cost of capital fixed, raises the capital intensity of production in all sectors of the economy.

**True. A rise in the wage-rental ratio makes labor more expensive relative to capital. Individual firms respond by "hiring" more capital relative to labor. Overall, however, the labor-intensive sector of the economy contracts while the capital-intensive sector of the economy expands.**

4. When countries trade in the Heckscher-Ohlin model, relative prices equal opportunity costs provided both countries are diversified in production.

**True. Trade generates relative price convergence. For each good the country produces, marginal cost equals the price. Therefore, if a country produces both goods, relative prices equal opportunity costs.**

5. In the Heckscher-Ohlin model, an increase in the relative price of the capital-intensive good raises the return to capital relative to labor.

**True. A rise in the relative price of the capital-intensive good raises the return to capital relative to labor. See the textbook.**

**In fact, a rise in the price of the capital-intensive good alone raises the return to capital and reduces the return to labor. This extreme outcome is known as the magnification theorem.**

6. In the Heckscher-Ohlin model with capital and labor, immigration from Mexico to the US would decrease the quantity of capital-intensive products produced in the US.

**True. This is the Rybczynski effect from the textbook, i.e. an increase in a factor of production raises the production of the good that uses that factor intensively and reduces the production of the other good. It is an implication of the Heckscher-Ohlin model.**

7. In theory, national gains from trade permit the winners from freer trade to compensate the losers from freer trade and still leave everyone better off.

**True. In the absence of political frictions, some of the national gains from trade can be transferred from those who stand to gain from trade to those who stand to lose from trade. The pie is larger with trade than without.**

8. In the specific factors model with mobile labor, wages must be equal in both sectors.

**True. Workers switch sectors until wages equalize.**

9. In the specific factors model with mobile labor and sector-specific capital in both sectors, the return to capital must be the same in both sectors.

**False. Since capital is not mobile in the short run, returns to capital across sectors need not equalize.**

10. As an empirical question, there is little evidence that relatively “dirty” industries have migrated south to Mexico from the US in response to liberalized trade.

**True. Studies of US firms that have left the US in order to produce in Mexico show that they are no more or less likely to be “dirty” than industries that have not left the US. One reason may be that “dirty” industries also tend to be capital intensive. Because capital is cheaper in the US this creates a competing effect – pollution costs are higher, but capital costs are lower, so in net there isn’t much cost savings involved in moving the business south.**

Short Answer:

11. Suppose the US is relatively well-endowed with skilled workers and Mexico is relatively well-endowed with unskilled workers. Computers intensively use skilled workers and textiles intensively use unskilled workers.

- a. Prior to trading which country has a higher ratio of skilled to unskilled worker wages ( $W_s/W_u$ )?

**The US have a lower  $W_s/W_u$  ratio (skilled workers are in relative great supply in the US and so their wages are relatively lower; vice versa for Mexico – skilled workers are in relatively low supply in Mexico so wages are relatively higher)**

- b. What does this imply in terms of the relative prices of skill-intensive / unskilled-intensive goods?

**Goods whose manufacture intensively employs skilled workers (computers) will be relatively less expensive in the US.**

- c. Describe two ways to arbitrage wage differences across the US and Mexico.

**The first and simplest is to move workers. Skilled workers can migrate to Mexico and unskilled workers can migrate to the US. This reduces the ratio of skilled / unskilled workers in the US and raises it in Mexico. That increases  $W_s/W_u$  in the US and lowers it in Mexico.**

**The second is to trade goods that embody factors. Computers embody a lot of skilled workers and a small amount of unskilled workers, and vice versa for textiles. When the US exports computers it effectively sends a lot of skilled workers and a few unskilled workers south; when it imports textiles it effectively imports a few skilled workers and a lot of unskilled workers. The net effect is skilled workers south and unskilled workers north, just as if they had migrated.**

12. It has been claimed that the rising skill premium in the US is caused by the growth in world trade.

- a. Use the Heckscher-Ohlin model to explain how this could happen.

**See the answer to 10.c. If the US trades with countries that have lots of unskilled workers, it raises the  $W_s/W_u$  ratio.**

b. Describe two implications of this model that do not square well with the data.

**Here are three:**

**One, most US trade is with rich countries that are abundant in skilled workers, not poor countries that are abundant in unskilled workers. This suggests trade is not moving factor content around.**

**Two, a rise in the  $W_s/W_u$  ratio due to trade for the US implies that all sectors should be using fewer skilled workers. However, in the US all sectors now use more skilled workers than before.**

**Three, countries like Mexico should experience a fall in the  $W_s/W_u$  ratio, but in fact Mexico has seen a rise in the skill premium just like the US.**