

Homework #3

problems #2, 4, 5, 6 and 7 from Ch. 4, p. 87 of Krugman/Obstfeld (4th ed.)
and some questions for Graduate Students

A Question on Rybczyński Effects:

2. Suppose that at current factor prices cloth is produced using 20 hours of labor for each acre of land and that food is produced using only 5 hours of labor per acre of land.
 - a. Suppose that the economy's total resources are 600 hours of labor and 60 acres of land. Using a diagram, determine the allocation of resources.
 - b. Now suppose that the labor supply increases first to 800, then to 1000 and then to 1200 hours. Using a diagram like Figure 4–6, trace out the changing allocation of resources.
 - c. What would happen if the labor supply were to increase even further?



Two Questions on Factor Price Equalization:

4. The U.S. labor movement – which mostly represents blue-collar workers rather than professionals and highly educated workers – has traditionally favored limits on imports from less affluent countries. Is this a short-sighted policy or a rational one in view of the interests of union members? How does the answer depend on the model of trade?
5. There is substantial inequality of wage levels between regions within the United States. For example, wages of manufacturing workers in equivalent jobs are about 20 percent lower in the Southeast than they are in the Far West. Which of the explanations of failure of factor price equalization might account for this? How is this case different from the divergence of wages between the United States and Mexico (which is geographically closer to both the U.S. Southeast and the Far West than the Southeast and Far West are to each other)?



Two Questions on Empirical Tests of the Heckscher-Ohlin Model:

6. Explain why the Leontief paradox and the more recent Bowen, Leamer and Sveikauskas results reported in the text contradict the factor-proportions theory.
7. In the discussion of the empirical results on the Heckscher-Ohlin model, we noted that recent work suggests that the efficiency of factors of production seems to differ internationally. Explain how this would affect the concept of factor price equalization.

Questions for Graduate Students

Four Questions on Stolper-Samuelson and Rybczyński Effects:

Jones (1965) and Jones and Sheinkman (1977) define “magnification effects” as:

- percentage changes in factor prices that are more widespread than percentage changes in commodity prices, i.e. the Stolper-Samuelson Effect: $\hat{w} < \hat{p}_M < \hat{p}_F < \hat{r}$
- percentage changes in commodity outputs that are more widespread than percentage changes in factors of production, i.e. the Rybczyński Effect: $\hat{M} < \hat{L} < \hat{T} < \hat{F}$

Jones and Sheinkman describe three sets of cases:

- “even cases” – number of factors equals then number of outputs (e.g. Heckscher-Ohlin),
- “uneven cases” – number of factors exceeds the number of outputs (e.g. Specific Factors) and
- cases of joint production – number of factors is less than the number of outputs (e.g. Ricardian).

1. Why do magnification effects occur in the even and uneven cases? Why don't magnification effects occur in cases of joint production.
2. What is a “natural enemy?” What is a “natural friend?”
3. In the even case, does each factor have a natural enemy? Does each factor have a natural friend?
4. In the uneven case, does each factor have a natural enemy? Does each factor have a natural friend?



Two Questions on Empirical Tests of the Heckscher-Ohlin Model:

5. Answer the following questions on the empirical tests of the Heckscher-Ohlin model:
 - a. How did Leontief (1953) test the Heckscher-Ohlin model and why were his empirical results considered a paradox? In your answer, explain how Leontief made his basic calculations and describe his basic results.
 - b. Leamer (1980) solved the Leontief paradox by using the “factor content” version of the Heckscher-Ohlin model developed by Vanek (1968), i.e. the HOV model. Write down the HOV equation and explain the intuition behind the equation.
 - c. Explain how Leamer used the HOV model to solve the Leontief paradox. What equation did he use to test the HOV model? What data did he use? What were his basic results?
 - d. Redraw Figure 2.3 (in Feenstra p. 41) to illustrate the case of a country that has a trade surplus and exports both capital and labor services.
 - e. Leamer argues that a key problem with Leontief's test of the Heckscher-Ohlin model is that Leontief's test was not robust to unbalanced trade. Explain why Leamer's test was robust to unbalanced trade and Leontief's was not.

6. Bowen, Leamer and Sveikauskas (1987) and Treffer (1993 and 1995) argue that one of the reasons why the Heckscher-Ohlin model performs poorly in empirical tests is that the assumption that all countries share the same technology is a poor assumption. In other words, unit labor requirements and unit capital requirements may be lower in some countries than they are in others.
- a. Treffer (1993) incorporates factor productivity into his tests the HOV model. One of his findings (reproduced in Figure 2.4 of Feenstra p. 51) is that the relative wage positively correlated with labor productivity. How is this finding similar to a basic prediction of the Ricardian model?
 - b. What is the “mystery of missing trade” (Treffer, 1995)?
 - c. How does the introduction of uniform technology differences into the HOV model explain half of the missing trade?
 - d. How does the introduction of uniform technology differences improve the performance of the HOV model in sign and rank tests?