

**ECON 305**  
**INTERNATIONAL ECONOMICS I**  
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19 November 2007

**Key to Exercise 05**

1. Suppose that  $L^A = 150$ ,  $K^A = 250$ ,  $L^B = 100$ , and  $K^B = 200$ . Which country is capital-abundant? Labor-abundant?

Country A  
250/150      less than      Country B  
200/100 → Country B capital-abundant

2. Suppose that  $W^A = 5/\text{day}$ ,  $r^A = 2/\text{day}$ ,  $W^B = 6/\text{day}$ , and  $r^B = 3/\text{day}$ . Which country is capital-abundant? Labor-abundant?

Country A  
 $W/r = 5/2$       less than      Country B  
 $W/r = 6/2$  → Country A labor-abundant

3. Suppose that  $L_X^A = 100$ ,  $K_X^A = 100$ ,  $L_Y^A = 50$ , and  $K_Y^A = 150$ . Which industry in country A is labor-intensive? Capital-intensive?

Industry X  
100/100      less than      Industry Y  
150/50 → Industry Y is capital-intensive

4. Suppose that  $L_X^B = 75$ ,  $K_X^B = 25$ ,  $L_Y^B = 25$ , and  $K_Y^B = 175$ . Which industry in country B is labor-intensive? Capital-intensive?

Industry X  
25/75 less than      Industry Y  
175/25 → Industry Y is capital-intensive

5. Given (1), (2), and (3) for countries A and B, and industries X and Y, which country is expected to export which commodity according to Heckscher-Ohlin (H-O) theorem?

Country B is expected to export Commodity Y and Country A is expected to export Commodity X.

6. Given (1) for countries A and B, and given that technology and preferences are identical across countries, what can you say about relative factor prices in these countries?

The wage rate must be lower in Country A and the rental rate of capital must be lower in Country B.

7. The lower the relative price of the factor that is intensively used in the production of a commodity, the lower is that commodity's relative price. True or false. Explain.

True. See p.124 and figure 4 in your textbook.

8. Given (1), rental price of capital in country A will rise after countries A and B open up their economies to trade with each other. True or false. Explain.

False. Country A is labor-abundant. Hence, it will export Commodity X, which is labor-intensive. Demand for capital will decrease, and hence its rental price decreases. See figure 5 at p.126 for details.

9. Given (7), the relative use of capital in country A will rise. True or false. Explain.

True. As rental price of capital decreases in Country A, its employment will increase due to substitution effect. See figure 5 at p. 127 for details. Read this explanation very carefully.

10. After countries A and B open up their economies to trade with each other, the rental price of labor in country B will rise. True or false. Explain.

False. Country B is capital-abundant. Hence, it will export Commodity Y, which is capital-intensive. Demand for labor will decrease, and hence its rental price decreases. See figure 5 at p.126 for details.

11. Given (1), capital owners of Country B will increase their real income after trade. True or false. Explain.

True. In order to answer this question, you need to refer to the definition of  $MPP_K$ . Recall that  $r = MPP_K * P$ , where  $r$  is interest rate,  $MPP_K$  is Marginal Physical Productivity of Capital, and  $P$  is price. Rearranging this equation, we may write it as:  $r/P = MPP_K$ . The left hand side of the equation may rise or fall. But the right hand side of the same equation rises for sure, as labor use in the capital abundant country rises. Hence, real income of capital owners must rise.

**12.** Suppose two countries, Malaysia and Thailand, can be described by a **Heckscher-Ohlin model**. Assume they each produce *rice* and *palm oil* using labor and capital as inputs. Suppose Malaysia is capital-abundant with respect to Thailand while rice production is labor-intensive. Suppose the two countries move from autarky to free trade with each other. In the boxes below indicate the effect of free trade on the variables listed in the first column in both Malaysia and Thailand. You do not need to show your work. Use the following notation:

+ the variable increases; - the variable decreases; **0** the variable does not change; **A** the variable change is ambiguous (i.e. it may rise, it may fall)

	in Malaysia	in Thailand
the price ratio $P_{po}/P_r$	+	-
output of palm oil	+	-
output of rice	-	+
exports of palm oil	+	0
imports of rice	+	0
real wage in terms of palm oil	-	+
real wage in terms of rice	-	+
real rental rate in terms of palm oil	+	-
real rental rate in terms of rice	+	-
capital-labor ratio in palm oil production	-	+
capital-labor ratio in rice production	-	+