

ECO 2121 B: Economics of Globalization
Winter 2018
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Practice Questions-Answer Key

Question 1

Suppose there are only two countries in the world and only one factor of production labor and these two countries produce only two goods, car and TV. The labor productivity in two countries for the production of two goods is as below.

Labor productivity (output per labor) for domestic and foreign countries

	Car	TV
Home	$LP_C = 20$ unit/labor	$LP_T = 40$ units/labor
Foreign	$LP^*_C = 2$ units /labor	$LP^*_T = 10$ units/labor

- a. What is the opportunity cost of car and TV production for Home and Foreign countries? Show the calculation and explain what these numbers mean?

One car requires 1/20 of labor

How much TV 1/20 labor produces?

Looking at the TV labor productivity,

1/40th of labor produces 1 TV

1 labor produces, 40 TVs (multiply both sides by 40)

1/20th of labor produces 40/20 (dividing both sides by 20) 2 TV.

Therefore, the OC of producing 1 unit of car is 2 TV

The OC of car for Home can be written as

$LP(T)/LP(C) = 40$ cars/labor

$$\frac{LP_T}{LP_C} = \frac{\frac{40 \text{ TV}}{\text{labor}}}{\frac{20 \text{ Cars}}{\text{labor}}} = \frac{40 \text{ TV}}{20 \text{ Cars}} = 2 \text{ TV per car}$$

- b. Which country has comparative advantage in which product and why?

A country has a CA in a good when it has a lower OC of producing it than does the other country.

For Home country, the OC of one car is 2 TV and the OC of one TV is 1/2 cars

$$\frac{LP_C}{LP_T} = \frac{\frac{20 \text{ Cars}}{\text{labor}}}{\frac{40 \text{ TVs}}{\text{labor}}} = \frac{20 \text{ cars}}{40 \text{ TVs}} = \frac{1}{2} \text{ car per TV}$$

For the foreign country, the OC of car is 5 TVs and OC of one TV is 1/5th car.

Therefore the OC of car is lower at Home (2 TV) compared to foreign (5 TVs) and OC of TV is lower in foreign (1/5th of car) compared to Home (1/2 of cars).

Home country will have CA in car and Foreign will have OC in TV.

- c. **Before trade, in each country, if there is perfect competition in the sense that wage of a unit of labor is equal to its value of production, and if both goods are**

produced, then show that the relative price of a good will be equal to the opportunity cost of producing it.

If we denote wage in car industry by W_c and wage in TV industry by W_t , perfect competition implies that wage = value of production

$$(1) \quad W_c = P_c \times LP_c$$

$$(2) \quad W_t = P_t \times LP_t$$

If both goods are produced then the wage should be the same in both industries.

$$(3) \quad W_c = W_t$$

Equation (3) implies that $P_c \times LP_c = P_t \times LP_t$, which can be written as

$$(4) \quad P_c / P_t = LP_t / LP_c = 2$$

The left-hand side is the relative price of car and the right-hand side is the OC of car, which are equal. Similarly, for the foreign, we have

$$(5) \quad P^*_c / P^*_t = LP^*_t / LP^*_c = 5$$

d. In that case, explain how Home country has incentive to export car and Foreign country has incentive to export computer.

At home, the pre-trade relative price of car to TV (P_c / P_t) is 2, meaning that one unit of car can buy 2 units of TV, whereas in the foreign country, the pre-trade relative price is 5, meaning that one car can be exchanged for 5 units of TV. Therefore, the Home producers have incentive to export car in foreign country.

e. When open for trade, the world relative price (one price for both countries) will be between the two countries pre-trade prices. Let us suppose that the relative price of car (P_C / P_T)—the price of car divided by the price of TV—is 4/1. In this case, show that Home country is better off producing only car and exporting and Foreign country is better off producing only TV and exporting it.

Let us suppose home country produces TV instead. Home can use 1 unit of labor to produce 40 units of TV & sell that in \$1 and make \$40 revenue. But if it produces car instead, it can produce 20 cars with one unit of labor and sell them in \$4 each (note the price of 4/1), making revenue of \$80. Obviously with that amount Home can buy 80 TVs (double of what it would have been able to produce). Let us look at the foreign country. One unit of labor there can produce 2 cars and make \$8 revenue. Alternatively, it can use 1 unit of labor to produce 10 units of TV, sell this amount to the Home country at current prices (\$1) to obtain \$10 and buy 2 plus something cars. So, Home is better off producing only car and exporting them, whereas Foreign is better off producing only TV and exporting them.

f. How are wage determined in these two countries? Population of which countries are richer and why?

Note that when specialization occurs: Home will produce only car and Foreign will produce only TV. So there will be only one wage equation in each country. Using the wage equation as given in equation (1) above for Home country

$$(1) \quad W = p^w_c \times LP_c$$

As price of car at the world market is \$4 (assuming the price of TV is \$1), we have

$$W_C = \$4 \times 20 = \$80$$

Wage in the Foreign country, as it produces only TV, we have

$$W^* = p_T^W \times LP^*_T$$

$$W^* = \$1 \times 10 = \$10$$

Prices are equalized because prices are determined by comparative advantage and each country has comparative in the production of each good. Wages are not equalized because wages in this model are determined by absolute advantage (one country being more efficient in the production of both goods) and Home country has absolute advantage.

Home country is 10 times more productive in car production, 4 times more productive in TV production and its wages are 8-times higher.