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International Economics - Problem Set 2

Exercise 1: **The basics of Comparative Advantage**

a. Define *comparative advantage* and explain its drivers under Ricardo and Heckscher-Ohlin.

b. Who gains from Trade?

c. As a results how do countries specialize?

Solution:

Model	**Source**	**Winners**
Ricardo	Productivity	No one loses, small country gains more
Heckscher-Ohlin	Endowments	Overall both countries. Within each country, the factor that is used intensively.
Model	**Result**	
Ricardo	(Complete) Specialization	
Heckscher-Ohlin	Incomplete specialization	

Exercise 2: **The Heckscher-Ohlin theorem**

Heckscher-Ohlin: *Each country exports the good that is using intensively for production the factor the country is abundant in.*

Suppose we have two countries, Pakistan and Iran. Both produce robotic machinery and hand-made carpets. Keeping the implications of the model by Heckscher-Ohlin in mind:

a. **Which country is likely to be relatively more abundant in labor? And which in capital? Which production, do you think, is more K-intensive and which one more L-intensive? Discuss.**

   Solution:

   Pakistan is *slightly* larger than Iran (212,200,000 vs 81,800,000 inhabitants), and its population tend to be younger (on average, 22.8 vs 31.7 years of age). On the other hand, per capita GDP is larger in Iran (5,627.75 US$ in 2018) with respect to Pakistan (barely 1,482.4 US$ in 2018). Thus, we can expect Iran to be relatively more abundant of Capital.

Looking at the two goods in play, we can assume the production of robotic machinery to be more K-intensive than the production of hand-made carpets.

b. **Based on your reasoning, plot the PPFs for both Pakistan and Iran, as well as the indifference curves and the relative price curves in autarky (assume preferences to be the same in both countries). What does the slope of the relative price curve say about the direction of the exchange?**

Solution:

See below.

c. **Assume the two countries open to international trade. Represent the triangle of exchange, and identify imports and exports on the sides of the triangles.**

Solution:

See below.

Exercise 3: **Stolper Samuelson Theorem**

Stolper-Samuelson: *A rise in the relative price of a good will lead to a rise in the relative return to the factor that is used intensively in the production of that good.*

Assume a country to produce personal computers (C) and shoes (S) at the following terms:

Production	**Revenues** $P_c \times Q_c$	**Wages** $W \times L_c$	**Rents** $R \times K_c$	**% Increase in Price** $\delta P_s / P_s$
Personal Computers	100	50	50	0%
Shoes (very fancy ones)	100	5	95	+50%

THEN:

a. **Which sector is K-intensive and which one is L-intensive?**

Solution:

We know that factor intensity in either sector can be interpreted as the relative share of factors that are employed in the production of a given product. Then,

	Capital	**Labor**
Personal Computers	$\frac{R_c \times K_c}{P_c \times Q_c} = 50/100$	$\frac{W_c \times L_c}{P_c \times Q_c} = 50/100$
Shoes (very fancy ones)	$\frac{R_s \times K_s}{P_s \times Q_s} = 95/100$	$\frac{W_s \times L_s}{P_s \times Q_s} = 5/100$

According to the figures above, the production of shoes is more K-intensive than the production of personal computers.

b. **Given the variation in prices following the opening to international trade, which is the % variation of both the cost of K (rents) and of L (wages)?**

Solution:

We know that the rent can be (simplifying) computed by subtracting the total sum paid in terms of wages from the total revenues of the sector, all divided by the amount of capital in the sector. Thus,

$$\begin{aligned} R_c &= \frac{P_c \times Q_c - W \times L_c}{K_c} \Rightarrow \delta R_c = \frac{\delta P_c \times Q_c - \delta W \times L_c}{K_c} \\ &= \left(\frac{\delta P_c}{P_c}\right)\left(\frac{P_c \times Q_c}{R \times K_c}\right) - \left(\frac{\delta W}{W}\right)\left(\frac{W \times L_c}{R \times K_c}\right) \end{aligned}$$

$$\begin{aligned} R_s &= \frac{P_s \times Q_s - W \times L_s}{K_s} \Rightarrow \delta R_s = \frac{\delta P_s \times Q_s - \delta W \times L_s}{K_s} \\ &= \left(\frac{\delta P_s}{P_s}\right)\left(\frac{P_s \times Q_s}{R \times K_s}\right) - \left(\frac{\delta W}{W}\right)\left(\frac{W \times L_s}{R \times K_s}\right) \end{aligned}$$

We also know that $\delta \frac{P_c}{P_c} = 0$, and $\delta \frac{P_s}{P_s} == 50\%$. Since the remuneration of the factors of production is the same in the two sectors (by assumption of the H-O-S-S model), we can substitute the first equation in the second, by replacing $\delta R/R$ and solving for $\delta W/W$.

$$-\frac{\delta W}{W} \times \frac{50}{50} = 50\% \times \frac{100}{95} - \frac{\delta W}{W} \times \frac{5}{95} \Rightarrow \frac{\delta W}{W} = -55.41\%$$

We can see the effect on the remuneration of the capital by replacing $\delta W/W$ back in the first equation

$$\frac{\delta R}{R} = -\frac{\delta W}{W} \times \frac{50}{50} = -\left(-55.41\%\right) \times \frac{50}{50} = 55.41\%$$

c. **Which factor gains in real terms? Is this result coherent with the Stolper-Samuelson Theorem?**

Solution:

Capital gains from trade, while labor looses in real terms. This is consistent with the S-S theorem

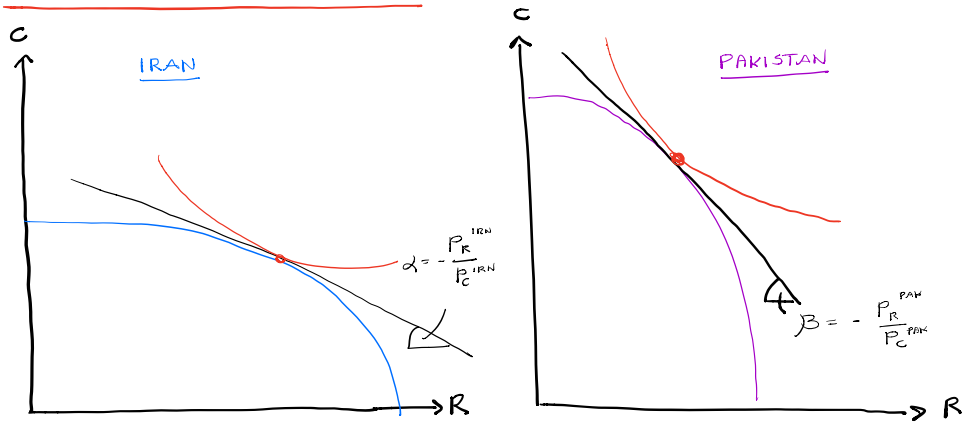
Exercise 4: **Oper Question**

What is the so-called 'China-Shock'? What do you think has been its impact on the US' and European economies? Discuss them in light of the insights from the Heckscher-Ohlin model and its derived theorems.

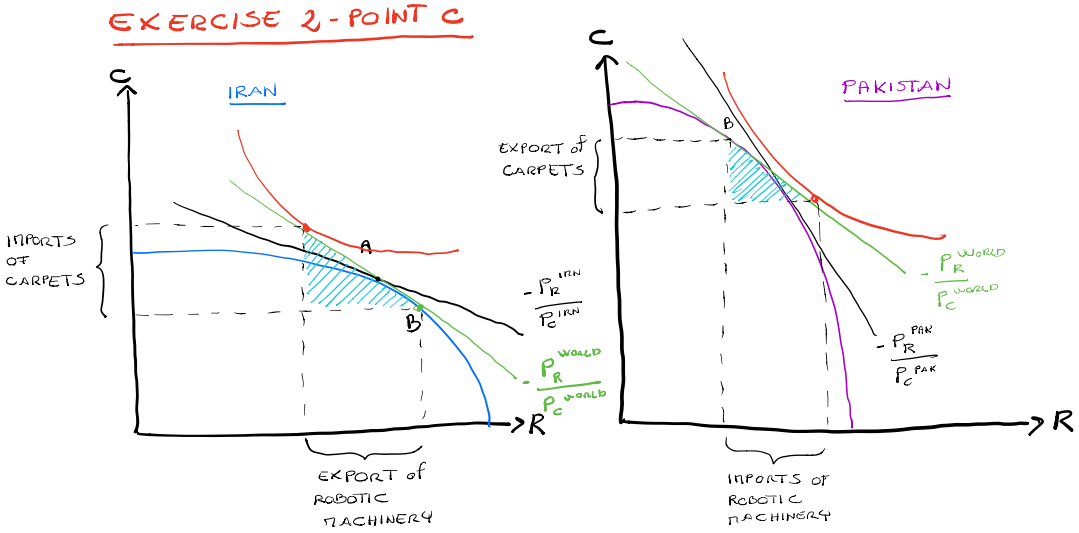
Solution:

Left as Homework

EXERCISE 2 - POINT B



EXERCISE 2 - POINT C



= TRIANGLE OF TRADE