

# INTERNATIONAL TRADE AND THE WORLD ECONOMY

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## Answers to \* exercises in chapter 7 of the Study Guide

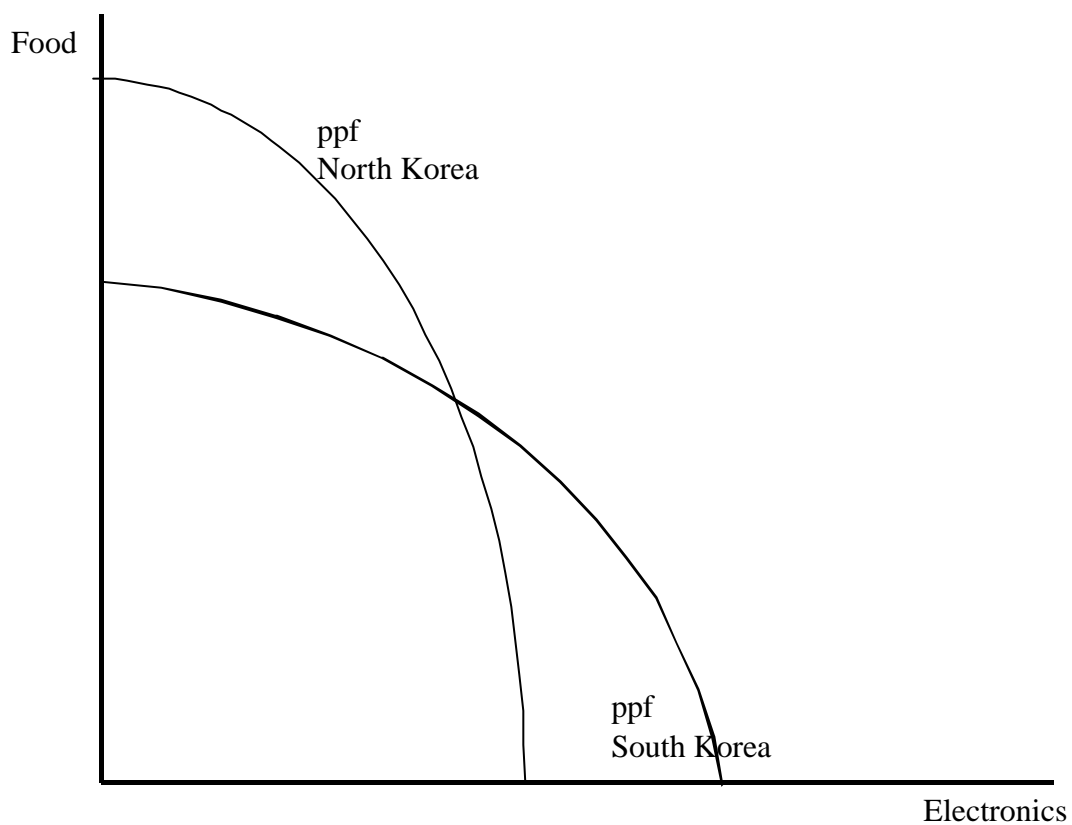
STEPHAN SCHÜLLER AND DANIËL OTTENS

The \* exercises in chapter 7 are: 7.1 and 7.2.

### Question 7.1

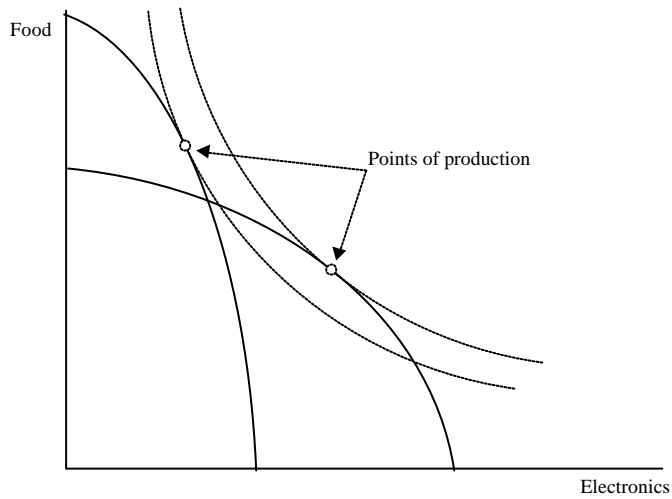
7.1A.

North Korea has more labourers and less capital. Hence, North Korea can produce relatively more food and less electronics. A possible production possibility frontier for North Korea is indicated in the figure below.



7.1B.

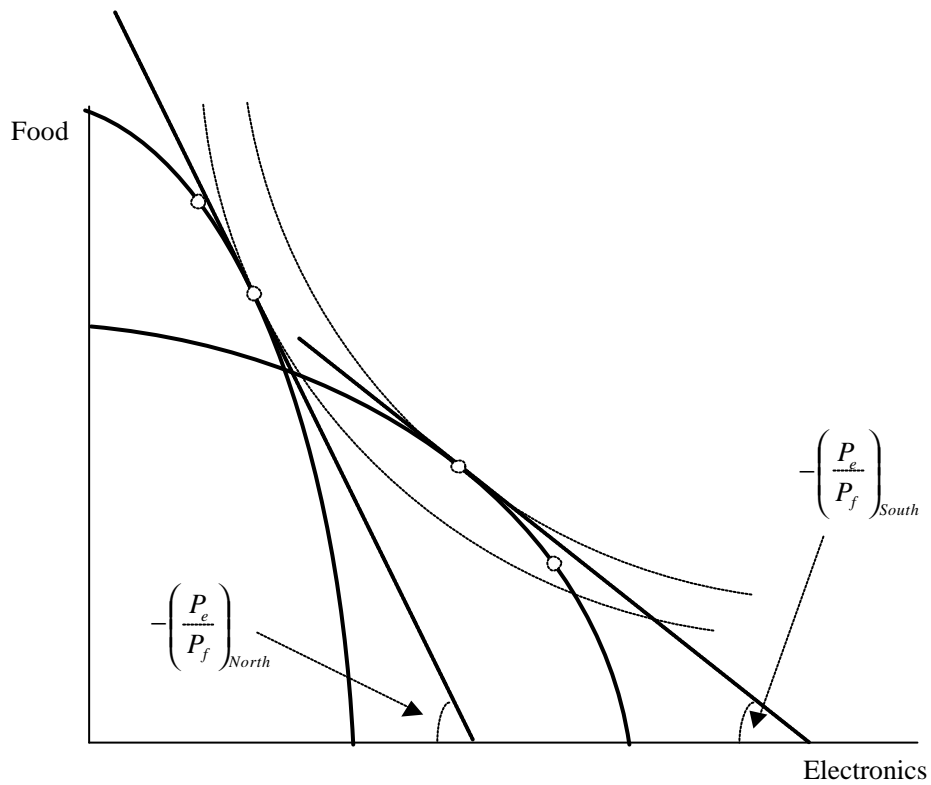
In autarky production has to be equal to consumption. The optimal point of consumption and production can be found by drawing isoutility curves in the figure and finding the point of tangency with the production possibility frontier.



7.1C.

The price ratio is equal to the marginal rate of substitution and the marginal rate of transformation. This is indicated in the figure below. It can be seen that:

$$\left( \frac{P_e}{P_f} \right)_{South} < \left( \frac{P_e}{P_f} \right)_{North}$$

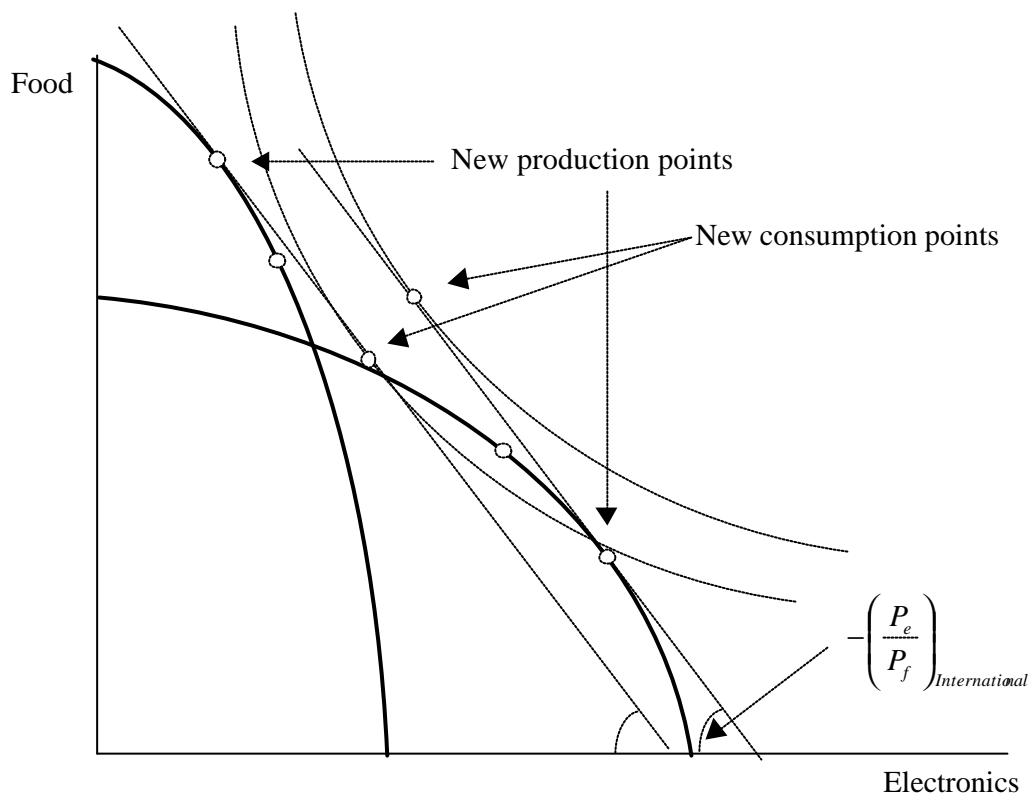


#### 7.1D.

When North and South Korea are going to trade with each other, final goods prices will become equal due to arbitrage. This means that either the price ratio in North Korea will decrease ( $P_e/P_f$ ), or the price ratio in South Korea increase, or both ratios will change simultaneously in the suggested directions.

#### 7.1E.

When both countries are allowed to trade, consumption need no longer be equal to production. The production point will be at the point where the marginal rate of transformation is equal to the international price ratio and the consumption point will be at the point where the marginal rate of substitution is equal to the international price ratio. This is shown in the figure below.



7.1F

The figure above shows that South Korea consumes more food and less electronics than it produces. Hence, South Korea imports food and exports electronics. North Korea exports food and imports electronics.

7.1G

Of course this is in accordance with the Heckscher-Ohlin proposition. The capital-abundant South Korea exports the capital intensive good, electronics. The labour abundant North Korea exports the labour intensive good, food.

### Question 7.2

7.2A.

Preferences are an ordinal concept. As such, we can only use iso-utility curves to indicate preferences, not to measure happiness. A doubling of the utility level does not mean you are twice as happy. Production isoquants indicate the production level

for given inputs. If we double the amount of inputs, for a constant returns to scale production function, the production level indeed doubles from the initial level.

#### 7.2B.

In chapter 4 it was shown that the capital intensity parameter  $\mathbf{a}_m$  in the Cobb-Douglas production function is equal to the share of costs paid to capital inputs (in the optimum). Similarly, the parameter  $\mathbf{d}_m$  in the Cobb-Douglas utility function is equal (in the optimum) to the share of income spent on manufactures.

#### 7.2C.

We say preferences are 'identical' if all consumers in different countries have the same preferences (or the same utility function).

#### 7.2D.

Heterogenous preferences can be another source for international trade flows ('demand bias') and as such may interfere with the Heckscher-Ohlin proposition. This is further explained in Chapter 17 of the book. Moreover, heterogenous preferences make the distribution of income over the agents in an economy important such that it no longer suffices to calculate aggregate income to determine the demand for food and manufactures.

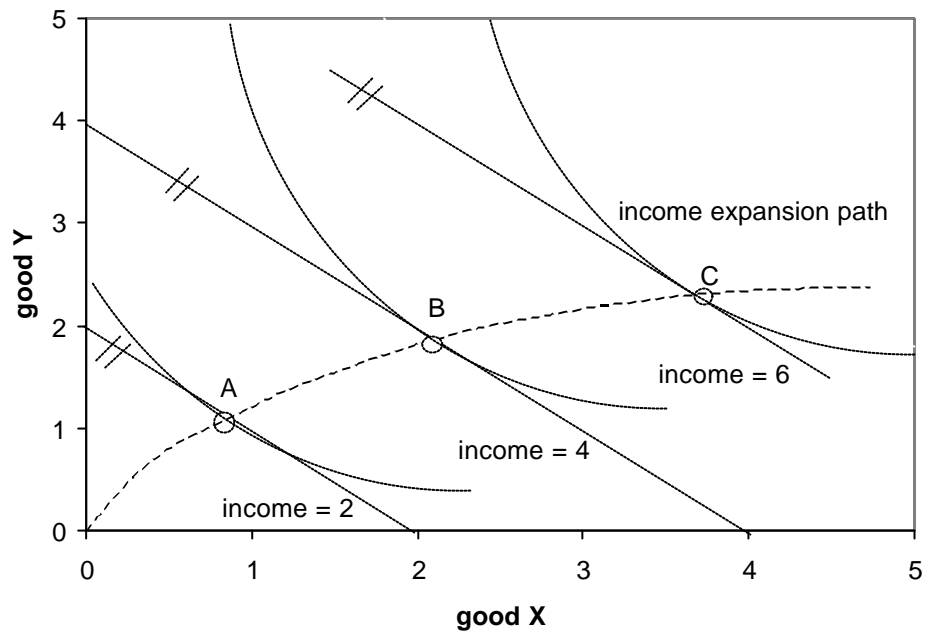
#### 7.2E.

Preferences are homothetic if the iso-utility curves are radial blow-ups of one another.

#### 7.2F.

The figure below shows an example of non-homothetic preferences. As a result, the income expansion path is no longer a straight line.

### Consumer optimization problem



7.2G.

Suppose for example that total income is equal to 6. Giving all income to one consumer leads him to consume at point C in the figure above. Sharing this income between two consumers, one with income 4 and one with income 2, leads to consumption points A and B. But  $A+B$  is not equal to C. So the distribution of income over the two agents has an effect on the consumption levels.