

INTERNATIONAL TRADE AND THE WORLD ECONOMY

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Answers to * exercises in chapter 5 of the Study Guide

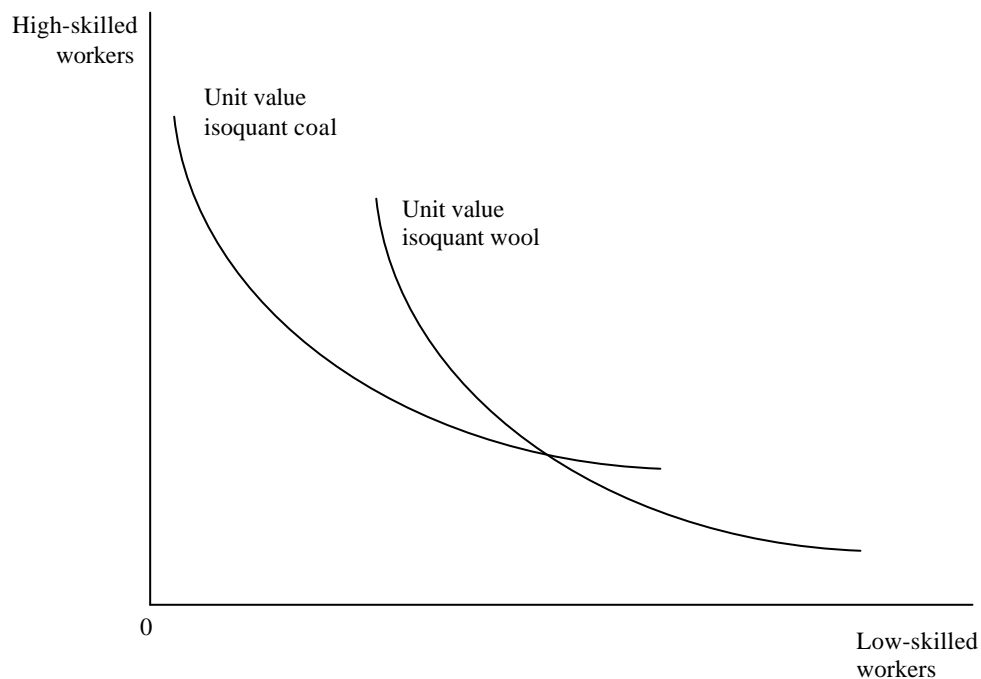
STEPHAN SCHÜLLER AND DANIËL OTTENS

The * exercises in chapter 5 are: 5.1 and 5.2.

Question 5.1

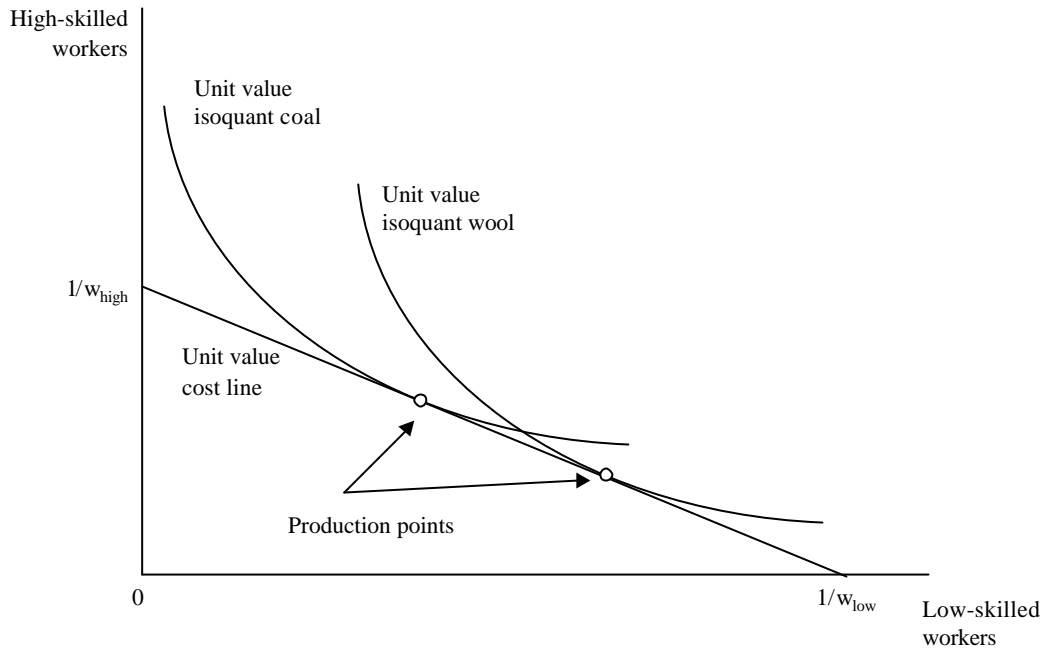
5.1A.

The figure below shows the unit value isoquants for coal and wool. Note that the coal sector is high-skilled worker intensive relative to the wool sector (see also 5.1C).



5.1B.

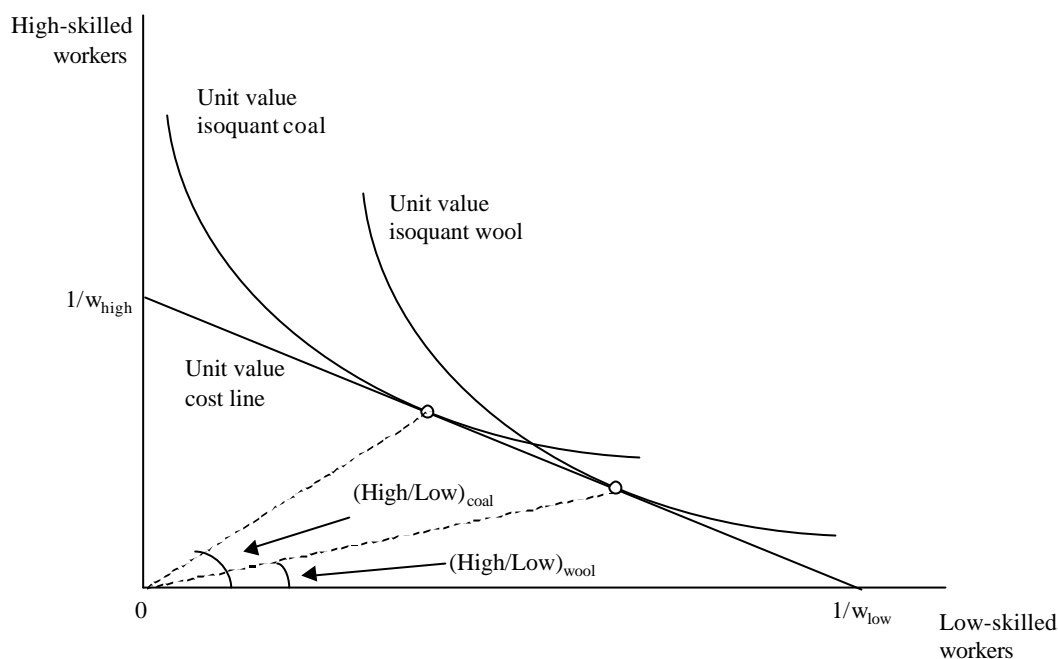
The figure below indicates the "unit value cost line" and the production points.



Consistency requires, as a result of constant returns to scale and perfect competition, that the cost of production is equal to the revenue of production in both sectors. The unit value cost line therefore has to be tangent to the unit value isoquants. Note that the two production points indicated in the figure above are only valid for the production of one unit of value in the respective sectors. The actual production level in each sector, and therefore the actual use of inputs in both sectors, is determined by other general equilibrium forces, see chapters 6 and 7.

5.1C.

The production points in 5.1B also determine the ratio between high-skilled and low-skilled workers that will be used in the production of one unit value of the final good, as indicated in the figure below.



The figure above shows that the high/low-skilled ratio is *higher* for the mining sector. This means that the mining sector uses relatively more high-skilled labour as compared to the agricultural sector, as required.

5.1D.

The factor price equalisation proposition and its corollary is listed in section 5.2 of your book:

Factor Price Equalization proposition (FPE)

In a neo-classical framework with two final goods and two factors of production, there is a one-to-one correspondence between the prices of the final goods and the prices of the factors of production, provided both goods are produced. This implies

- (i) *if the factor rewards (w, r) are known the prices of the final goods (p_m, p_f) can be derived, and*
- (ii) *if the prices of the final goods (p_m, p_f) are known the factor rewards (w, r) can be derived.*

Corollary (FPE)

In a neo-classical framework with two countries, two final goods, and two factors of production, international trade of the final goods, which equalizes the prices of these goods in the two nations, also leads to an equalization of the rewards of the factors of

production in the two nations, provided both final goods are produced in both nations and the state of technology in the two nations is the same.

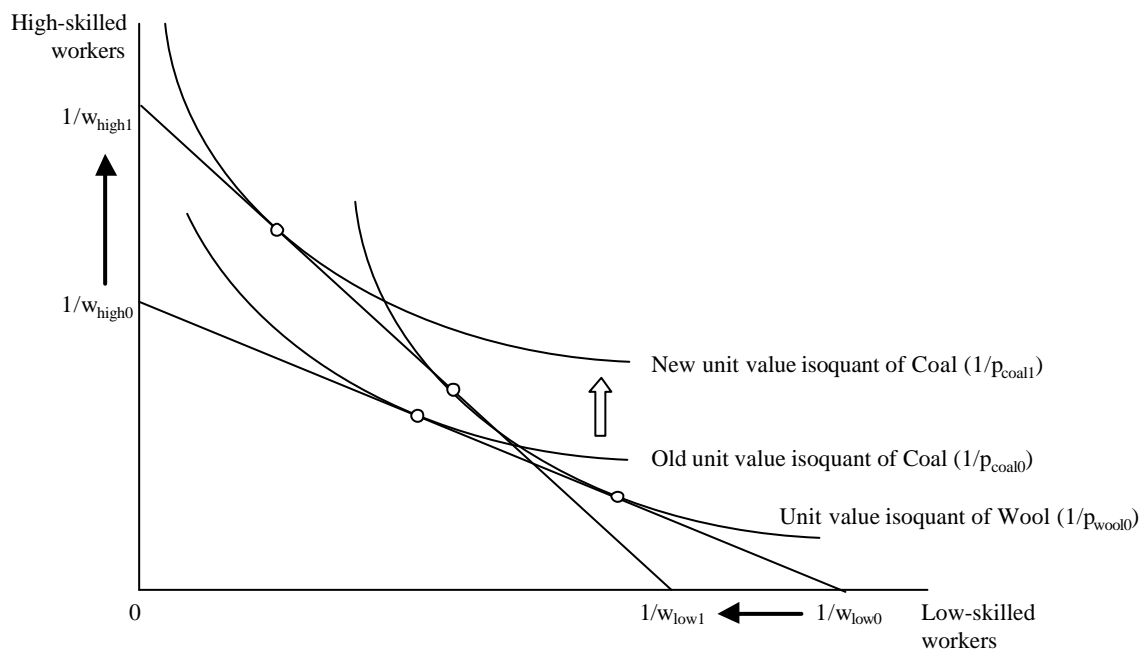
5.1E.

If we know the final good prices, we are able to draw the unit value isoquants for both wool and coal. So in 5.1A you have already implicitly assumed that you knew the final goods prices. The wages for high-skilled and low-skilled workers can be found by drawing the budget line tangent to both isoquants and inverting the values at the intersections with the horizontal and vertical axes, see the figure drawn in 5.1B.

Question 5.2

5.2A.

Because the price of coal *decreases*, the unit value isoquant of coal will shift *up* (a higher physical production level is needed to compensate for the fall in price and still produce 1 unit of value). The unit value isoquant of wool will remain the same. Tangent to new unit value isoquant of coal and the old unit value isoquant of wool, the new unit value cost line can be drawn. See the figure below.



5.2B.

The figure above already indicates that the wages for high-skilled workers will go down while the wages for low-skilled workers will go up. This happens because the lower coal price induces coal producers to produce less and this especially decreases the demand for high-skill workers. A price decrease of coal is equal to a price increase of wool (because prices are stated in relative terms). Producers of wool will therefore increase their production and demand relatively more low-skill workers. Consequently wages for low-skill workers rise and decrease for high-skill workers.

5.2C.

The Jones magnification effect tells us that final good prices are magnified in the factor rewards. A decrease in the price of coal will therefore lead to a relatively larger decrease in the wages of high-skilled workers. High-skilled workers are therefore no longer able to buy 1 ton of coal. Low-skilled workers on the other hand benefit from the price decrease in the sense that their wages go up. Consequently they are able to buy even more than 1 ton of coal.

5.2D.

Similarly as in 5.2C: high-skilled workers are no longer able to buy the 1 ton of wool. Low-skilled workers on the other hand can even buy more than 1 ton of wool.