

INTERNATIONAL TRADE AND THE WORLD ECONOMY

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Answers to * exercises in chapter 9 of the Study Guide

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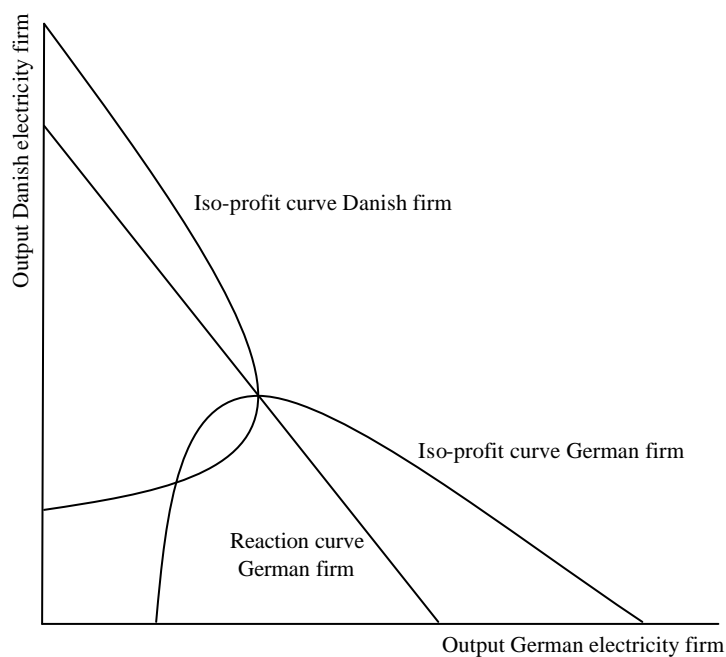
The * exercises in chapter 9 are: 9.3 and 9.8.

Question 9.3

9.3A.

The iso-profit curve of the German firm consists of all output combinations of both the Danish and the German firm that give the German firm the same profit level. Similarly for the iso-profit curve of the Danish firm.

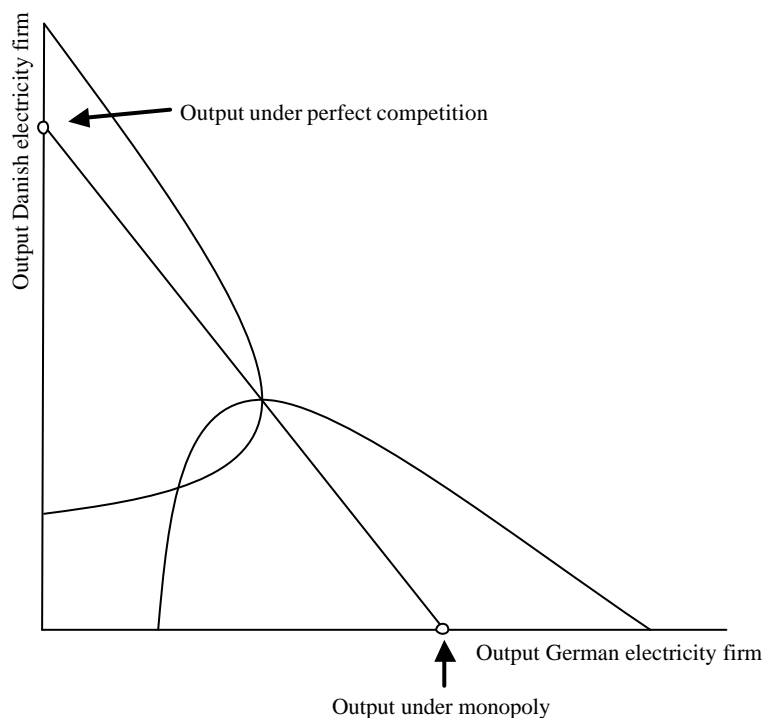
The reaction curve of the German firm gives the German firm's best output response for any given output level chosen by the Danish firm. It can be determined graphically by drawing a curve through all points of tangency of a German iso-profit curve and a horizontal line indicating the given level of output for the Danish firm, as is done in the figure below (which also indicates which iso-profit curve belongs to which firm).



9.3B.

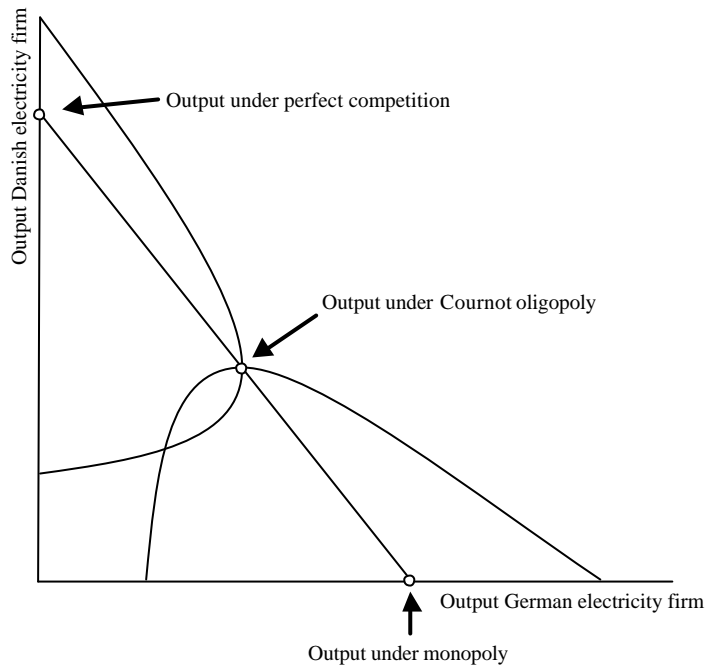
In a situation of monopoly only one firm determines the output level. So if the German electricity firm were a monopolist, the Danish firm would produce an output level of zero. The best output response of the German firm if the Danish firm produces nothing is given by the intersection of the reaction curve with the horizontal axis. This gives total output in a situation of monopoly.

In a situation of perfect competition profits are zero and it is therefore not profitable for a firm to enter the market. Suppose that the German firm is such an entrant and that the output level of the Danish firm represents the total output of all firms within the perfectly competitive market. The only point where the German firm does not want to enter the market (produces zero output) is when its reaction curve crosses the vertical axis. This point indicates the output level in a situation of perfect competition.



9.3C.

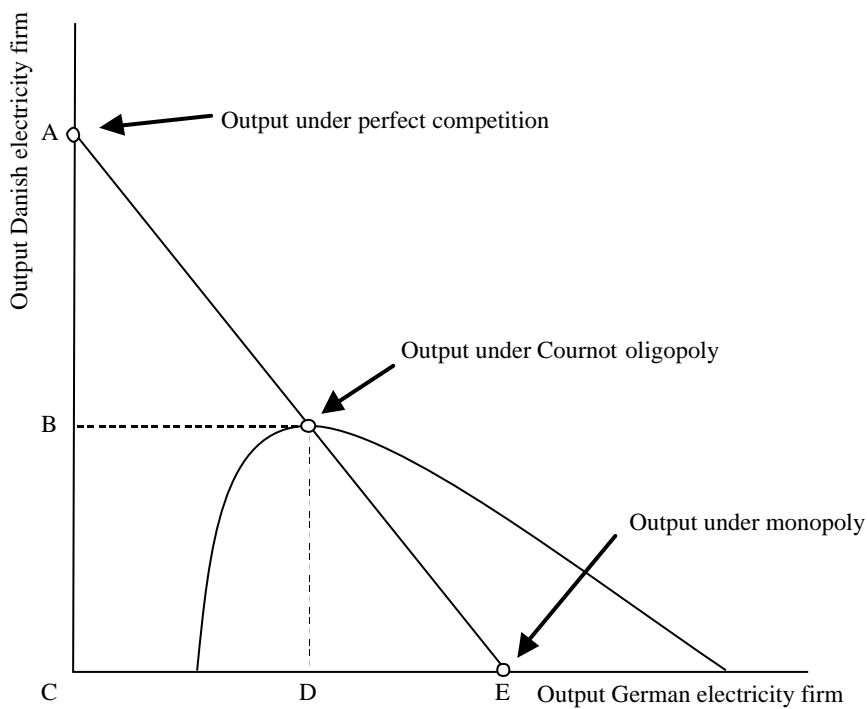
The intersection of the reaction curves of the German and Danish firms give the equilibrium in a situation of Cournot oligopoly. Remember that a reaction curve depicts all optimal output responses. The Cournot equilibrium is therefore already given by the intersection of the two iso-profit curves in the figure (see figure below).



The intersection point of both reaction curves is the so-called Nash equilibrium. Both firms have no incentive to change their production level given the output level (strategy) of the other firm. In that sense this is an equilibrium situation.

9.3D.

The figure below repeats the three production points for the three different situations.



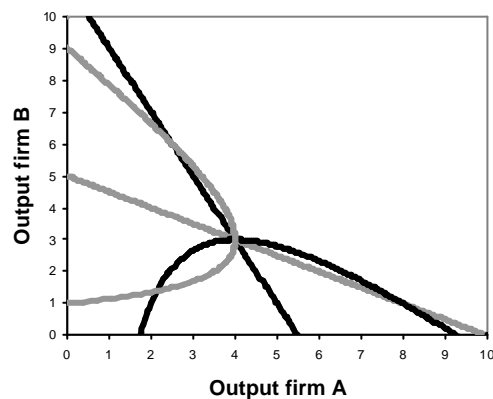
From the figure above it can be derived that output under perfect competition is larger compared to output under Cournot oligopoly which is larger again as output under monopoly. This is the case because line segment $AC > BC + CD > CE$.

Question 9.8

9.8A.

The figure below shows the simulation of the initial situation. Both firms face a marginal cost of 1, the transport cost of firm A is 1 and of firm B is 2. The output level for firm A is 4 and for firm B is 3. The profit level for firm A is 16 and for firm B is 9. Firm A supplies a larger quantity to market because it faces smaller transport costs. This also explains the larger profits of firm A as compared to firm B.

	Firm A	Firms B	Total market		
Marginal cost firm A	1,0	Marginal cost firm B	1,0		
Transport cost A	1,0	Transport cost B	2,0		
Output firm A	4,0	Output firm B	3,0	Total output	7,0
Profit firm A	16,0	Profit firm B	9,0	Price level	5,0



9.8B.

If you increase the marginal costs of firm A, the reaction curve of firm A moves inward (the equilibrium moves up to the left). This happens because for every output level of firm B production for firm A is less profitable as a result of higher costs.

The iso-profit curves of firm A move outward (note that the iso-profits depicted in the figure are related to the Cournot equilibrium, such that their level changes as you

change the parameters). Firm A's profits decrease due to the higher marginal cost. The iso-profit curve of firm B on the other hand moves inward. The market power of firm A has decreased and therefore the situation has become more profitable for firm B.

9.8C.

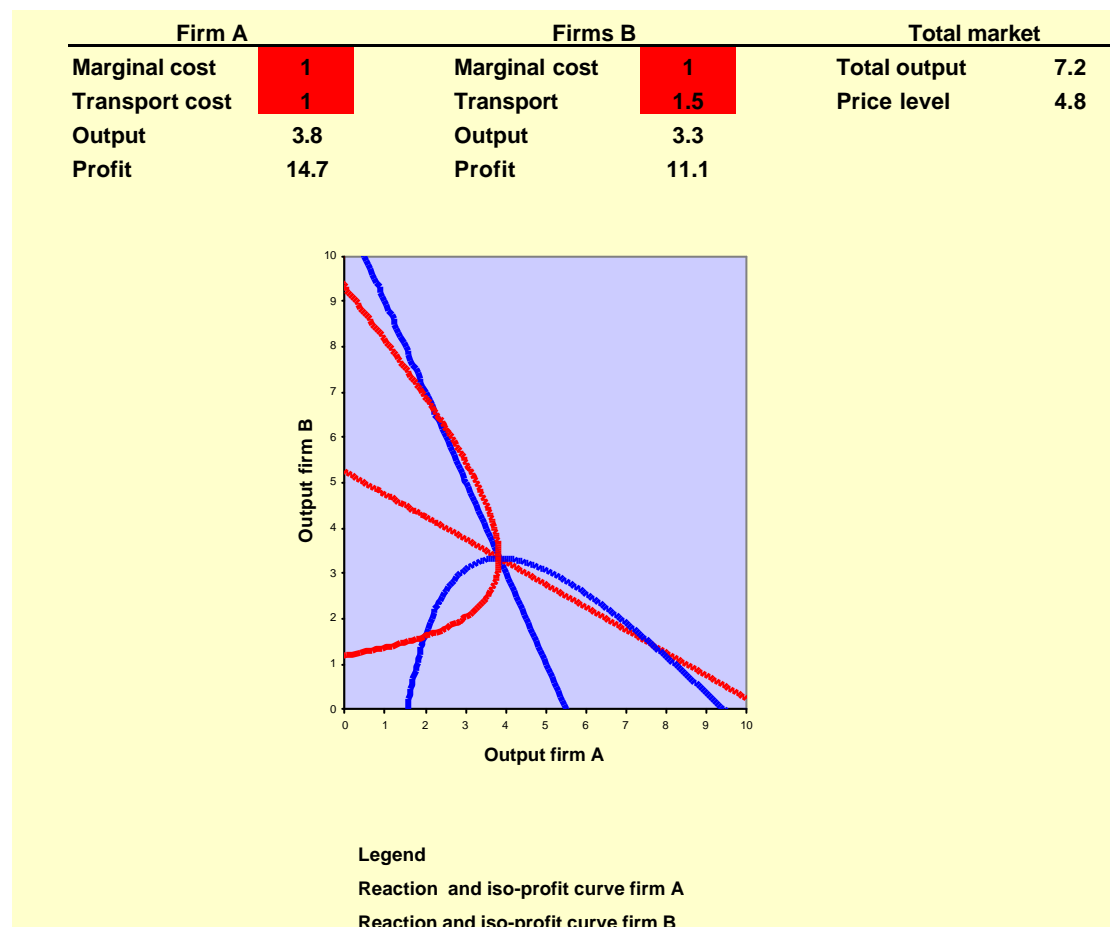
The same changes as in 9.8B appear when the transport costs of firm A are increased.

9.8D.

The changes in 9.8B and 9.8C are exactly the same because transport costs in this framework are marginal costs that have to be incurred before a product can be sold.

9.8E.

Lowering the transport costs of firm B, for example to 1.5 as in the figure below, decreases the quantity supplied and the profit for firm A and increases the quantity supplied and profit for firm B because firm B gains more market power.



9.8F.

Firm B will be in favour of building the road as it increases profits and firm A will be against building the road as it decreases profits.

9.8G.

The total quantity supplied increases and the price level decreases due to the building of the road. This happens because of the fiercer competition between firms A and B.

9.8H.

Consumers on the domestic market are better off if the road is built because the fiercer competition lowers the price on the market, so they will be in favour.