

INTERNATIONAL TRADE AND THE WORLD ECONOMY

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Answers to * exercises in chapter 11 of the Study Guide

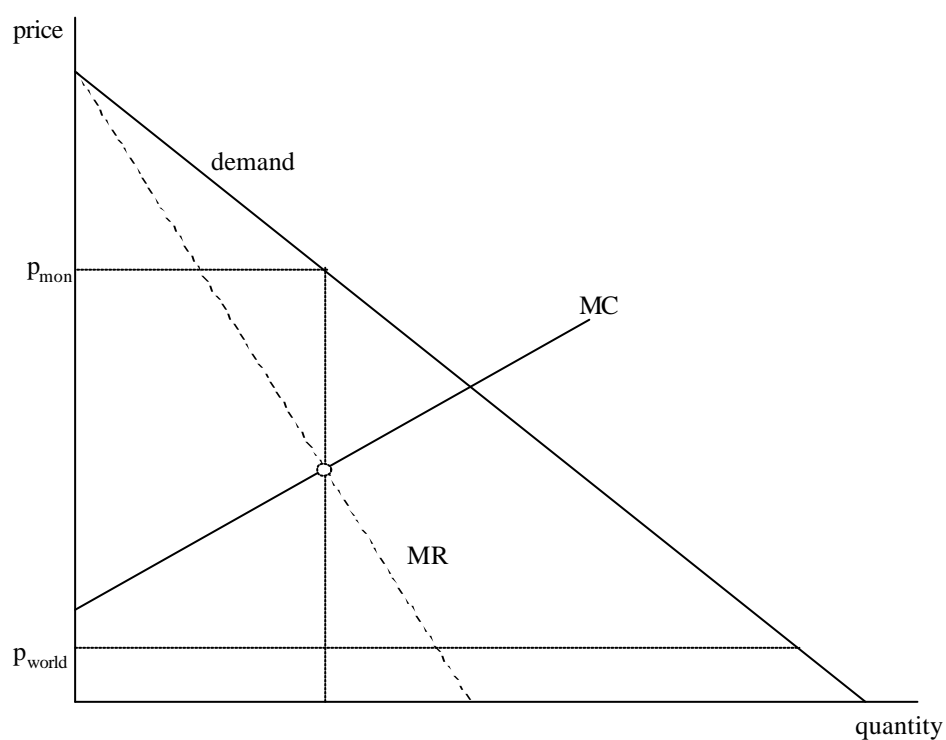
STEPHAN SCHÜLLER AND DANIËL OTTENS

The * exercises in chapter 11 are: 11.1 and 11.11.

Question 11.1

11.1A.

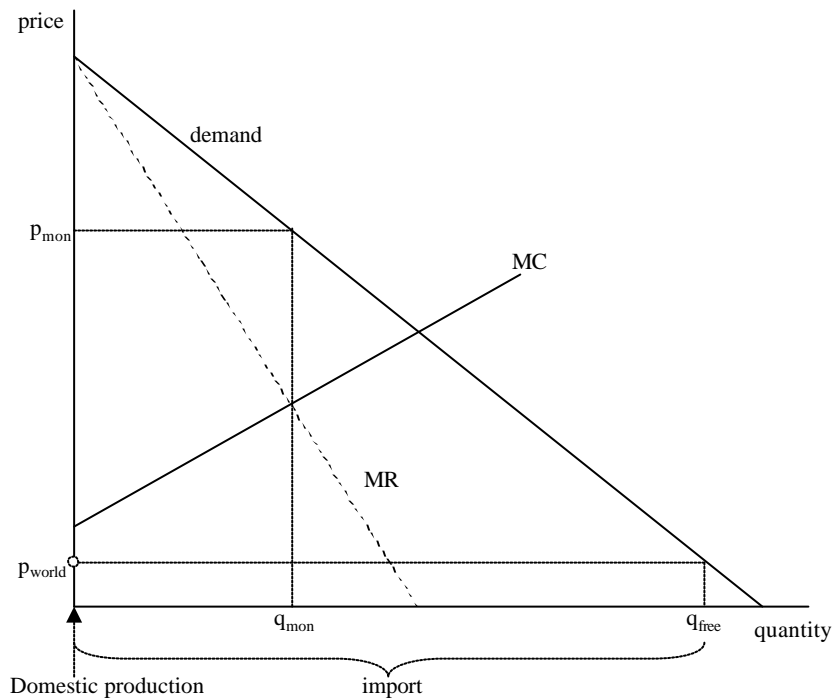
To maximise profits a monopolist will produce at the point where marginal cost equals marginal revenue. The price and production of the monopolist can therefore quite easily be derived by drawing the marginal revenue curve in the figure.



11.1B.

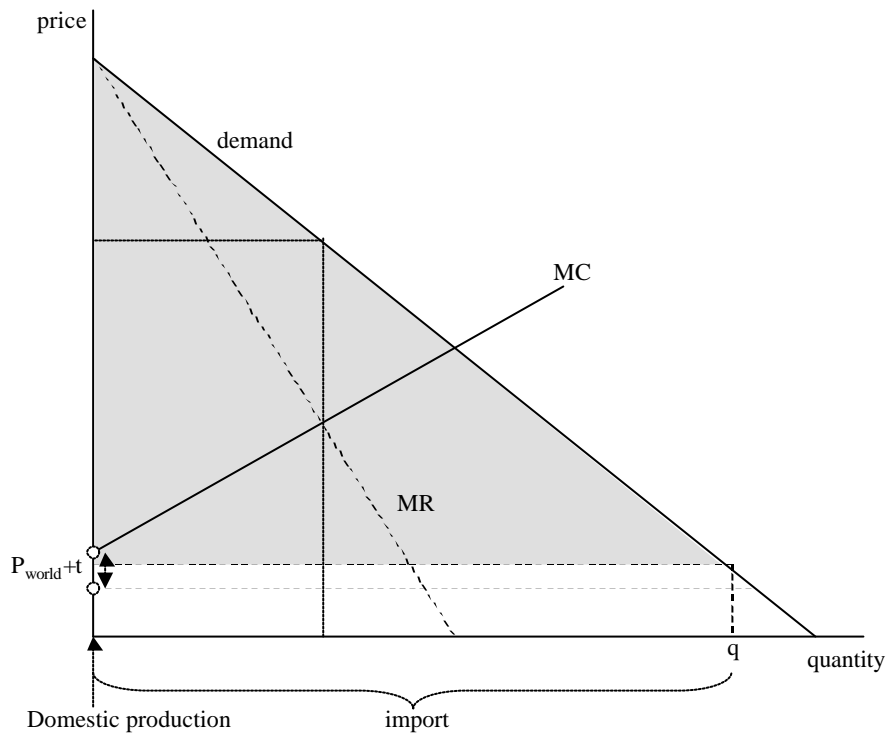
With free trade, the domestic price will be equal to world price (p_{world}). At this price demand for olive oil will be equal to q_{free} and domestic production will be zero because the world price is below the intersection of the marginal cost line of the

monopolist with the vertical axis. Hence, imports will be equal to the line segment $0-q_{free}$ in the figure below.

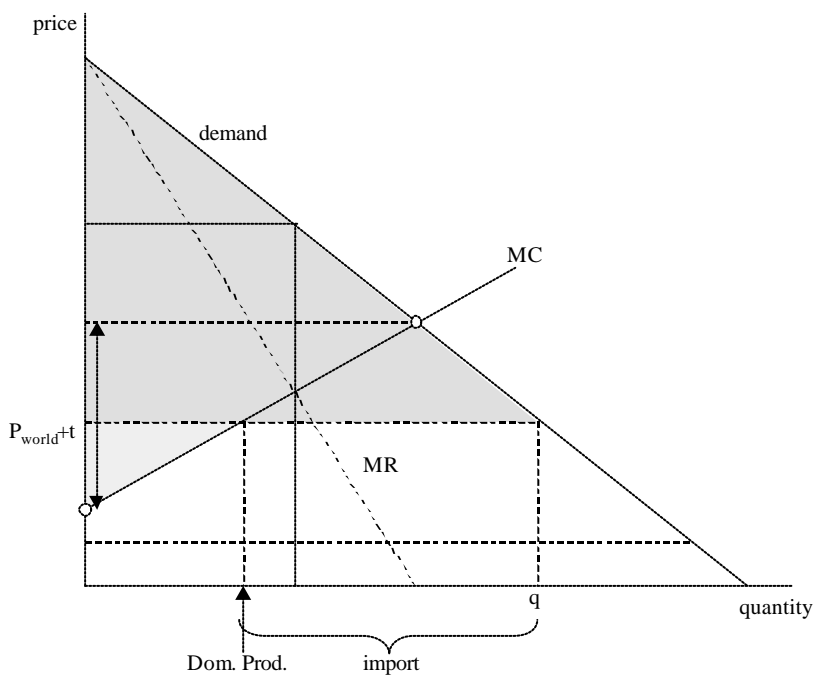


11.1C.

Just like in chapter 11, we will divide the vertical axis in different sections that indicate the level of the world price plus tariff.

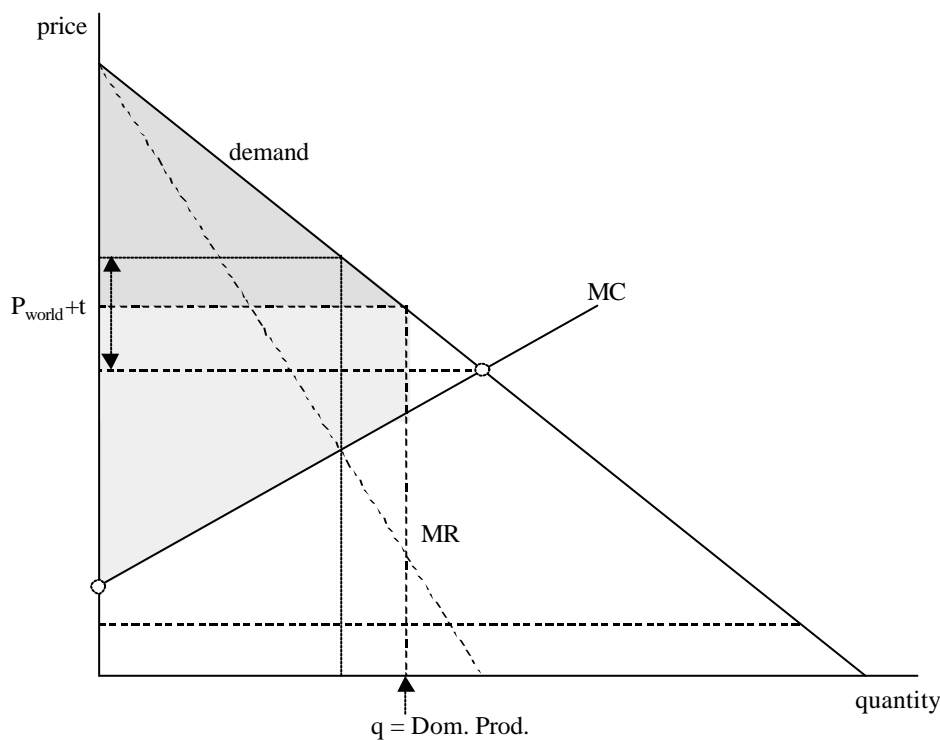


As illustrated in the figure above, between p_{world} and the intersection of the MC-curve with the vertical axis, the domestic price for olive oil is equal to the world price plus the tariff. Domestic production is not profitable and therefore equal to zero. Imports are therefore equal to the line segment 0-q.

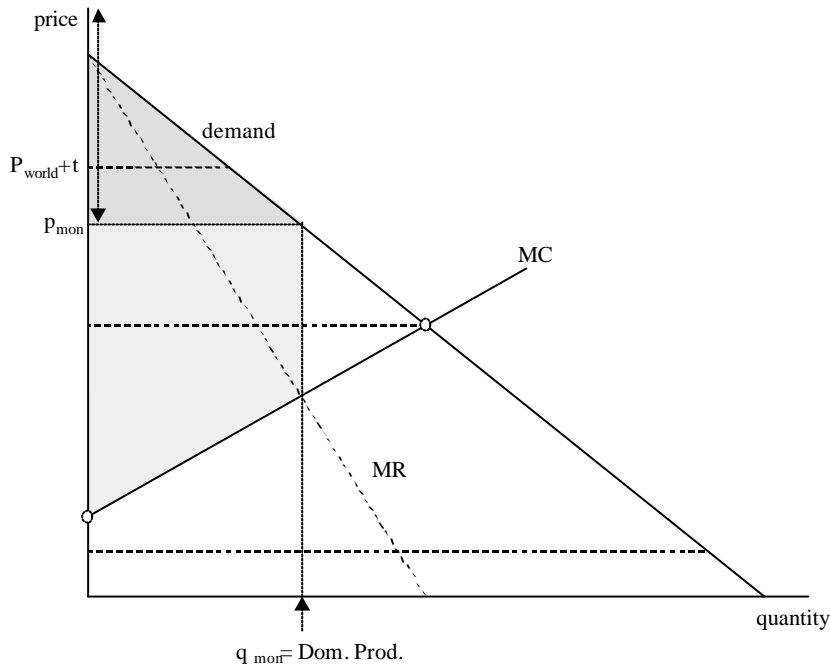


As illustrated in the figure above, between p_{world} and p_{comp} the domestic price remains equal to the world price plus the tariff. The monopolist will again equalise marginal revenue (now equal to the world price plus the tariff) and marginal cost. Domestic supply is therefore indicated by the marginal cost curve. Domestic demand is larger than domestic supply. Imports make up this difference and are indicated by the line segment “Dom. Prod. – q”.

As illustrated in the figure below, between p_{comp} and p_{mon} the price is equal to the world price plus the tariff. In this price section the monopolist will supply the full domestic demand. Hence, imports are zero.





As illustrated in the figure below, when the world price plus tariff is above p_{mon} , it is not in the interest of the monopolist to demand a price equal to the world price and tariff. Monopoly profits are maximised at p_{mon} and therefore the domestic price is equal to p_{mon} . Also at this price the monopolist will supply the full domestic demand and imports are equal to zero.



11.1D.

The figures in 11.1C also indicate the consumer surplus and the producer surplus

( and  respectively) for different values of t .

11.1E.

If the objective of the government is to maximise the total surplus, the government should set the tariff equal to zero. It can easily be seen in the figures above that at this tariff the total surplus is maximised.

Question 11.11

11.11A

A quota lowers the demand for the product of the monopolist. The demand function becomes:

$$p = a - b(q_m + q_q)$$

where q_m is the output of the monopolist and q_q the quota that is fixed from the monopolist's perspective.

11.11B.

Using the demand function of 11.11A, the monopolist outcome can be calculated in the usual way. The monopolist's profit is:

$$\mathbf{p}_m = (p - c)q_m = (a - bq_m - bq_q - c)q_m$$

Equating the first derivative of this profit function with respect to q_m to zero and rewriting determines the optimal output level for the monopolist given the quota q_q .

$$\frac{d\mathbf{p}_m}{dq_m} = a - 2bq_m - bq_q - c = 0$$

$$q_m = \frac{a - bq_q - c}{2b}$$

The optimal price is therefore:

$$\begin{aligned} p &= a - b(q_m + q_q) \\ &= a - b\left(\frac{a - bq_q - c}{2b} + q_q\right) \\ &= \frac{1}{2}(a + c - bq_q) \end{aligned}$$