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INTERNATIONAL ECONOMICS

INTERNATIONAL TRADE IN THE PRESENCE OF ECONOMIES OF SCALE AND IMPERFECT COMPETITION

THE THEORY OF IMPERFECT COMPETITION: A REVIEW

1. *Monopoly*

Demand curve $Q = A - B \times P$ (1)

Marginal Revenue $MR = P - Q/B \quad \rightarrow \quad P - MR = Q/B$ [see Appendix] (2)

Total costs $C = F + c \times Q$ (3)

Average cost $AC = C/Q = F/Q + c$ (4)

2. *Monopolistic Competition*

Demand curve facing a firm $Q = S \times [1/n - b \times (P - \overline{P})]$ (5)

2.1 *The number of firms and average cost:* In equilibrium, when $P = \overline{P}$, from (5) we have

$$Q = S/n \tag{6}$$

Therefore, from (4) $AC = F/Q + c = n \times (F/S) + c$ (7)

2.2 *The number of firms and the price:* Each firm treats $\overline{P}$ as given, therefore from (5),

$$Q = (S/n + S \times b \times \overline{P}) - S \times b \times P \tag{8}$$

Compare (8) with (1), and look at (2). Therefore, the *MR* for a typical firm is,

$$MR = P - Q/(S \times b) \tag{9}$$

For a profit-maximizing firm we have,

$$MR = P - Q/(S \times b) = c \tag{10}$$

Therefore, the price charged by a typical firm is:

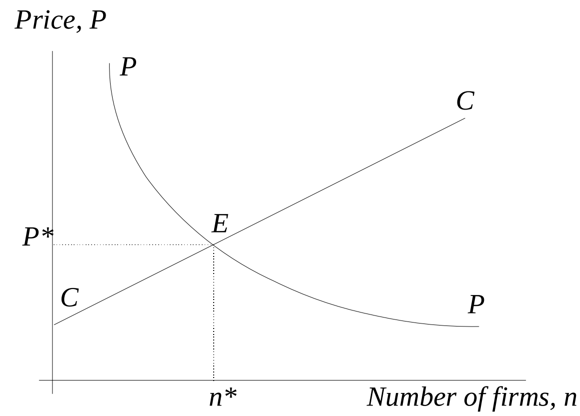
$$P = c + Q/(S \times b) \tag{11}$$

If all firms charge the same price, from (6) we see that $Q = S/n$. Therefore, (11) becomes,

$$P = c + \frac{1}{bn} \quad (12)$$

2.3 *The equilibrium number of firms*

The equilibrium price and quantity is represented by point *E* in the graph below.



2.4 *A Numerical Example*

Let $S_1 = 450$, and $S_2 = 128$, where S_1 stands for total sales of a particular industry (say, soft drinks) in one country (say the U.S.), and S_2 stands for the total sales of the same industry in another country (say Canada). Also, let $F = 400$, and $b = 1/200$, for any firm in this industry in either country.

Now, we know that in equilibrium in the case of monopolistic competition $P = AC$. From (7) and (12) above we get:

$$c + \frac{1}{bn} = n\frac{F}{S} + c \quad (13)$$

When we solve the above for *n* we get:

$$n = \sqrt{\frac{S}{bF}} \quad (14)$$

Now, here is the situation, for each country, before trade (plug in the appropriate numbers in each case): [Assume that $c = 80$.]

	U.S.	*Canada*
Equilibrium *n*	15	8
Market share (*S*/*n*)	30	16
Price	93.33	105.00

The situation after these two countries= markets are integrated; that is, after we set $S = S_1 + S_2$ is:

	Integrated market
Equilibrium *n*	17
Market share	34
Price	91.76

Note that as a result of integration consumers in both countries gain.

Appendix: Derivation of (2).

Re-write (1) as:

$$BP = A - Q \qquad \text{(A1)}$$

Isolating P we get:

$$P = \frac{A}{B} - \frac{Q}{B}. \qquad \text{(A2)}$$

Write the formula for Total Revenue (TR):

$$TR = \frac{A}{B}Q - \frac{Q^2}{B}. \qquad \text{(A3)}$$

Taking the derivative of TR with respect to Q we get:

$$MR = \frac{A}{B} - 2\frac{Q}{B}. \qquad \text{(A4)}$$

Substituting from (A2) into (A4) for $\frac{A}{B} - \frac{Q}{B}$ we get:

$$MR = P - \frac{Q}{B}. \qquad \text{(A5)}$$

Now go back to (2) above.