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Analysis related To International Trade Barriers of Monopolistic Competition in the fields of Computer Software and Operating Systems in South-East Europe

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Abstract

Using econometrics method, this paper discusses how to find the survival of a necessary number of firms in the field of Computer Software beside of the effects of a larger market. Also the paper shows a monopolist tendency to domestic software sales, which can also sell as much as they prefer at the export price.

Paper also shows how to find the static efficiency related of net benefits for international trades, with the focus in South-East Europe (SEE).

As the result it discusses how to determine the maximum value for monopoly profits. In favor of this results, in the paper are given original expressions with the original graphical presentation..

Key words: Information Technology, Operating System, Computer Software, Econometric Analysis, International Trade, Barriers, Monopoly Profits, Efficiency

Trade barriers related to number of firms in SEE

Monopolistic competition (MC) means identical products are sold, but brand loyalty is created so the consumer will keep on buying the product. For example, there are loads of Operating Systems available to use as the System Platform in the Personal Computer (PC), but the user from SEE will usually select an updated version of MS Windows. This is brand loyalty in this moment at the Region.Model of Monopolistic competition in trading is the idea that trade increases market size. The monopolistic competition model can be used to show how trade improves the trade-trend between scale and variety that faces the individual nation. It shows how a larger market leads in the monopolistic competition model to both a lower average price and the availability of a greater variety of goods.

Applying of this result to international trade, it can be observed that trade creates a world market that is larger than any of the national markets that comprise it.

The Integration of markets through international trade has the same effects as growth of a market within a single country.

There are six characteristics of monopolistic competition:

- Product differentiation
- Number of firms (to many firms)
- Free entry and exit in the long run
- Independent decision making
- Market Power
- Buyers and Sellers do not have perfect information (Imperfect Information)

Related to effects of increased market size, the number of firms in a monopolistically competitive industry and the prices they charge are effected by the size of the market.

Beside of *the number of firms and average cost*, it needs to find how the average cost (AC) depends on the number of firms (n) in the industry (for typical firm). In that aspect respectively given:

$$AC = \frac{F}{Q} + c = \frac{n \cdot F}{S} + c \qquad (1),$$

where is: S – the total sales of the industry, n – number of firms, P – the price that a firm charges, C – cost in firm charges, F – fixed cost, c – marginal cost.

In this aspect, given:

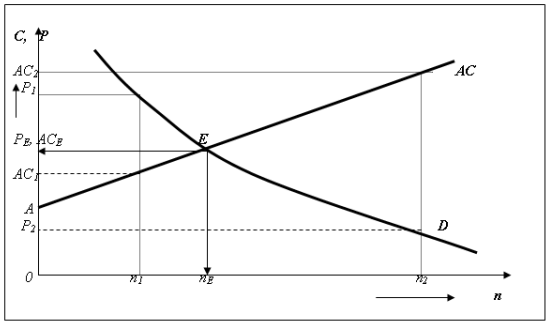

Figure 1: Equilibrium in a Monopolistically Competitive Market.

$$E\left(n_E=\frac{S.(AC_1n_2-AC_2.n_1+n_1c)}{S(AC_1-AC_2)+F(n_2-n_1)};AC_E=\frac{F(n_2AC_1-n_1AC_2)+Sc(AC_1--AC_2))}{S(AC_1-AC_2)+F(n_2-n_1)}\right);$$

$$MP=\frac{S[F(AC_1n_2-AC_2n_2)+Sc(AC_1-AC_2)]\cdot[n_2(AC_1-c)-n_1(AC_2-c)]}{[S(AC_1-AC_2)+F(n_2-n_1)]^2}$$

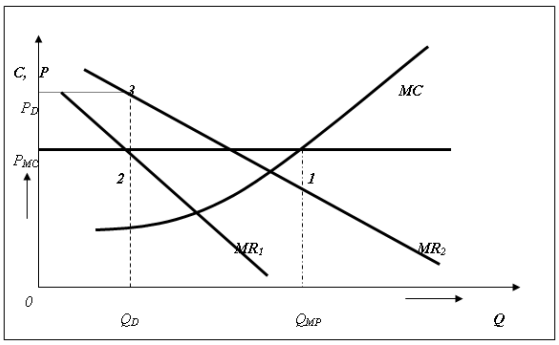

Figure 2: Monopoly difference in the responsiveness ofsales to price in the export and domestic markets.

Monopoly difference in the responsiveness of sales to price in the export and domestic markets (Q_D; P_D), graphically is represented in the Figure 2.

For marginal revenue (MR) to a typical firm it's given:

$$MR=P-\frac{Q}{S\cdot b}=c \quad (3),$$

where Q – is a quantity produced, b – is a constant term representing the responsiveness of a firm's sales to it's price (P).

Now it can be found:

$$1\left(Q_1=b_1S_1(P_1-MR);c\right)\ ;\quad 2\left(Q_2=b_2S_2(P_2-MR);MR\right)\ ;$$

$$c_e=\frac{S_2b_2P_2-S_1b_1P_1}{2(S_2b_2-S_1b_1)}\ ;\quad MP_{\exp ort(\max)}=\frac{(S_1b_1P_1-S_2b_2P_2)^2}{S_2b_2-S_1b_1}\ \bullet \quad (4).$$

With $MP_{export(max)}$ given maximal value of Monopoly Profit for this case.

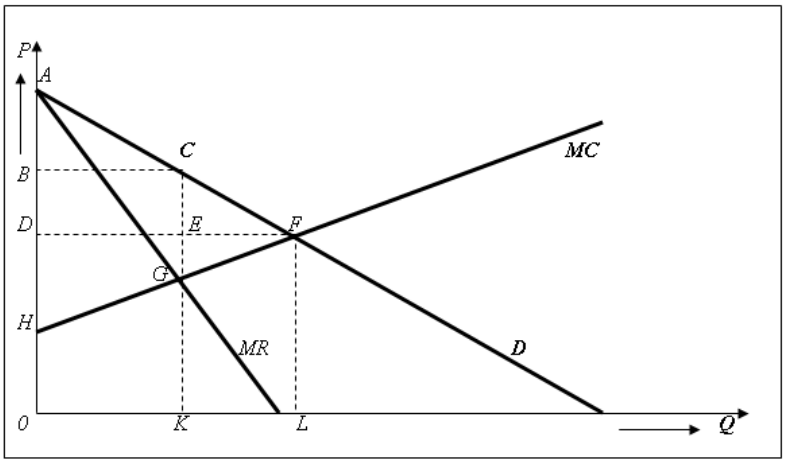

Figure 3: Relation of determination to static efficiency.

Beside of determination of Static Efficiency for imperfect Market Structures, it's also given the graphical representation in the Figure 3;

Now, it can be found:

$$F\left(Q_F=b_2S_2(P_2-c);P_F=\frac{F+b_2S_2(P_2c-c^2)}{b_2S_2(P_2-c)}\right)\ ;$$

$$G\left(Q_G=b_1S_1(P_1-c);P_G=\frac{F+b_1S_1(P_1c-c^2)}{b_1S_1(P_1-c)}\right)\ ;$$

(5).

For the Benefit Profits against of Static Efficiency, it is given:

$$SE_{AHF}=\frac{1}{2}.(c-P_0)S_2b_2(P_2-c);c_e=\frac{P_A+P_2}{2}=\frac{P_0+P_2}{2};$$

$$SE_{AHF(\max)}=\frac{1}{8}.S_2b_2.(P_0-P_2)^2\ \bullet$$

(6).

The theory of imperfect competition in the field of Software related to international trade

Monopolistic competition in Software is a type of imperfect competition such that one or more producers sell products that are differentiated from one another as goods but not perfect substitutes (such as from branding, quality, or location). In the conditions of monopolistic competition in Computer Software, a firm takes the prices charged by its rivals as given and ignores the impact of its own prices on the prices of other firms

Models of comparative advantages already presented were based on the assumption of constant returns to scale. From that, we have assumed that if inputs to an industry were doubled, industry output would double as well. In practice, however many industries are characterized by economics of scale (also referred to as increasing returns), so that if production is more efficient, the larger will be the scale at which it takes place. Whenever the economics of scale is used, doubling the inputs to an industry will more than double the industry production.

Proposed Model of Graphical Presentation for determining of maximum value of the monopoly profits

Let us discuss monopolistic pricing and production decisions (Figure 4).

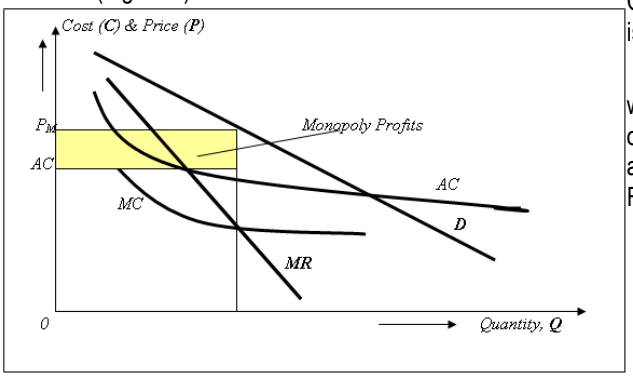

Figure 4: Monopolistic Pricing and Production Decision.

A monopolistic firm chooses an output at which for reaching the marginal revenue, the increase in revenue from selling of an additional unit, is equal to the marginal cost and the cost of production of an additional unit. This profit-maximizing output is shown as Q_M, the price at which this output is demanded is P_M. The marginal revenue curve MR lies below the demand curve D, because, for a monopoly, marginal revenue is always less than the price. The monopoly's profit is equal to the area of the shaded rectangle, the difference between price and average cost times Q_M.

The marginal revenue is given in the form:

$$Marginal\,Revenue = MR = P - Q/B \quad \bullet$$

Corresponding formula relating average and marginal cost is:

$$C = F + c \cdot Q \quad ,$$

where F - is a fixed cost that is independent of a firm's output, c – is the firm's marginal cost, and Q – is a once again the firm's output.

For Average Cost given:

$$AverageCost = AC = C/Q = F/Q + c \quad \bullet$$

In the Figure 5 is given graphical presentation of Monopoly's Profit, where it can be calculated with:

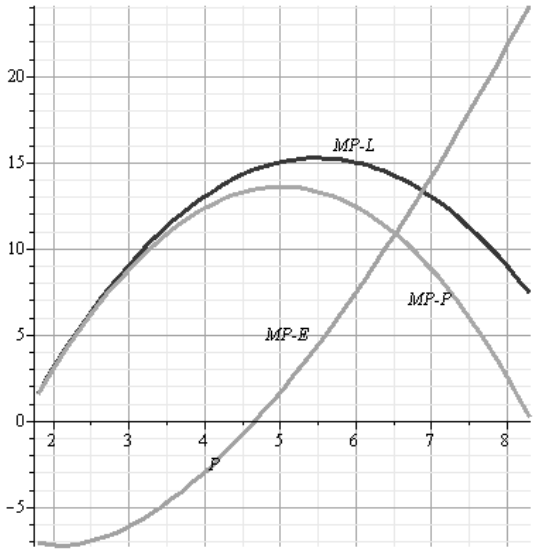

Figure5: Graphical presentation of Monopoly's Profit.

$$MP_{L(\max)} = -\frac{1}{4}\cdot\frac{A^2 + 2ABc + B^2c^2 + 4BF}{B};\ P_M = -\frac{1}{2}\cdot\frac{A - Bc}{B};\ Q = A + B\cdot P$$

respectively for Linear Trend of function, Q = Q(P) ►

$$MP_{P(\max)} = -\frac{1}{27C^2}\left(-3BCc\sqrt{\Phi} + 9AC\sqrt{\Phi} + 3BC^2c^2 + 9AC + 18AC^2c - 3C^2c^2\sqrt{\Phi} - \right.$$

$$\left. - 3B^2CC + 27C^2F - 3B^2\sqrt{\Phi} + 2C^3c^3 - 2B^3 + \Phi^{3/2}\right);\ P_{Me} = -\frac{1}{3}\cdot\frac{B - Cc - \sqrt{\Phi}}{C};\ Q = A + BP + CP^2$$

respectively for Parabolic Trend of function, Q = Q (P) ►

$$MP_{E(\max)} = -\frac{1}{\Re}\cdot\left[A\ln\left(\frac{B_1+C_1c}{\Re}\right)B_1\Re\right] - A\ln\left(\frac{B_1+C_1c}{\Re}\right)B_1 - A\ln\left(\frac{B_1+C_1c}{\Re}\right)C_1c +$$

$$+ FC_1\Re + cA\ln\left(\frac{B_1+C_1c}{\Re}\right)C_1\Re\,;\ \Re = LambertW\left[(B_1+C_1c)e\right];\ P_{Me} = -\frac{(\Re-1)B_1 - C_1e}{C_1\Re}\,;$$

$$Q = A\ln(B_1+C_1P)\quad;\quad LambertW(x).\exp\left[LambertW(x)\right] = x\quad,$$

respectively for Exponential (Logarithm's) Trend of function, Q = Q (P) ►

Graphical representation related of Figure 5 given for projecting parameters:

A=10, B=-1, F=5, c=1, C=-1/70, B_1=1/7, C_1=1/4 ►

Conclussions

In many South-East European. markets, producers practice product differentiation by altering the physical composition of products, using special packaging, or simply claiming to have superior products based on brand images or advertising. Computer software and operating systems are examples of differentiated products.

The usual concern of critics in SEE of monopolistic competition is that it fosters advertising and the creation of brand names. Critics argue that advertising induces customers into spending more on products because of the name associated with them rather than because of rational factors. On the other hand, brand names in the field of Computer Software can represent a guarantee of quality and that advertising helps reduce the cost to consumers of weighing the tradeoffs of numerous competing brands.

In a monopolistically competitive market, the consumer must collect and process information on a large number of different brands to be able to select the best of them. In many cases, the cost of gathering information necessary to selecting the best brand can exceed the benefit of consuming the best brand instead of a randomly selected brand.

The results of this Paper suggests that consumers use information obtained from advertising not only to assess the single brand advertised, but also to infer the possible existence of brands that the consumer has.

The Proposed econometric model, can be used as the best model for determining of maximum value of the monopoly profits and the static efficiency related to the benefit profits. It can be used for International Markets, beside barriers and for the different projecting parameters..

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