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ANALYSIS RELATED TO INTERNATIONAL TRADE BARRIERS IN THE MONOPOLISTIC COMPETITION

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SUMMARY
Using econometric method, this paper discusses how to find the survival of a necessary number of firms beside of the effects of a larger market. Also the paper shows a monopolistic tendence to domestic sales, which can also sell as much as they prefer at the export price. Paper also shows how to find the static efficiency related to net benefits for international trades. 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: Econometric Analysis, International Trade, Barriers, Monopoly Profits, Efficiency

TRADE BARRIERS RELATED TO NUMBER OF FIRMS

Model of Monopolistic competition (MC) 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:

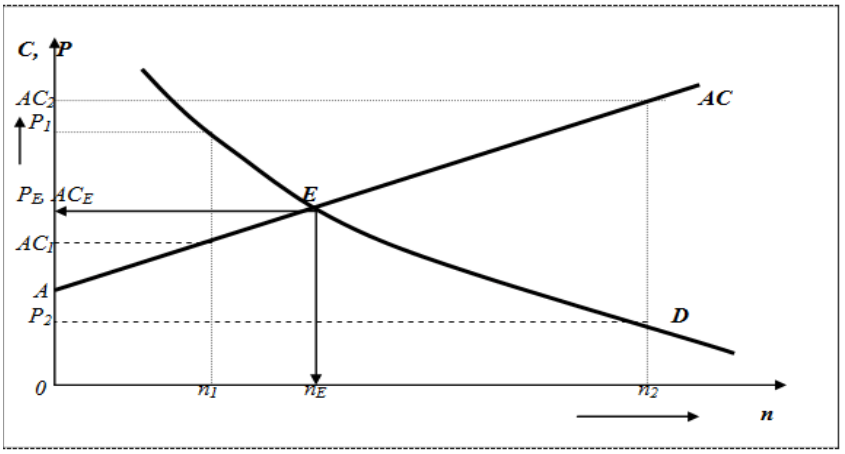

Figure 1: Equilibrium in a Monopolistically Competitive Market.

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

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

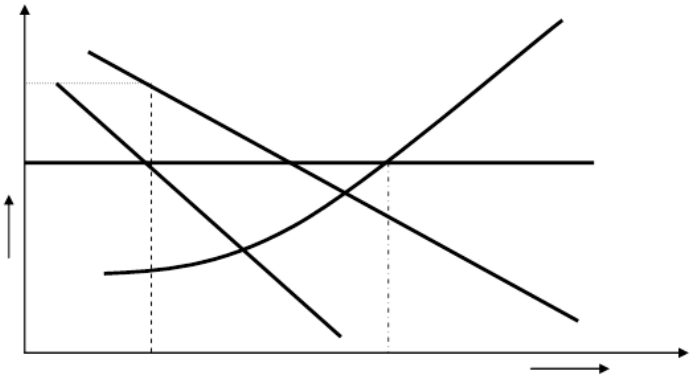

Figure 2: Monopoly difference in the responsiveness of sales to price in the export and domestic markets.

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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:

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

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

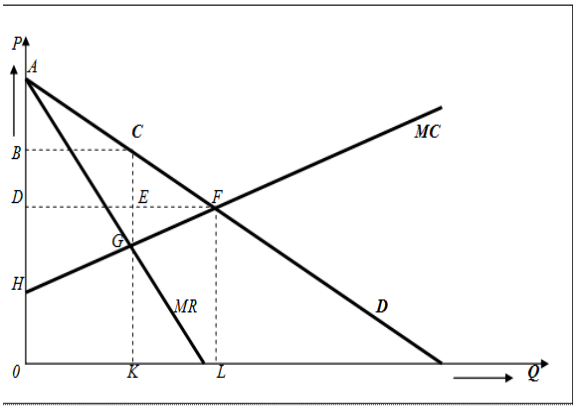

Figure 3: Relation of determination to static efficiency.

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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:

$$1(Q_1 = b_1 S_1 (P_1 - MR); c) \;;$$
$$2(Q_2 = b_2 S_2 (P_2 - MR); MR) \;;$$
$$c_e = \frac{S_2 b_2 P_2 - S_1 b_1 P_1}{2(S_2 b_2 - S_1 b_1)} \;; \qquad (4).$$
$$MP_{export(max)} = \frac{(S_1 b_1 P_1 - S_2 b_2 P_2)^2}{S_2 b_2 - S_1 b_1} \bullet$$

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

$$F\left(Q_F = b_2 S_2 (P_2 - c); P_F = \frac{F + b_2 S_2 (P_2 c - c^2)}{b_2 S_2 (P_2 - c)}\right) \;;$$
$$G\left(Q_G = b_1 S_1 (P_1 - c); P_G = \frac{F + b_1 S_1 (P_1 c - c^2)}{b_1 S_1 (P_1 - c)}\right) \;; \qquad (5)$$

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

$$SE_{AHF} = \frac{1}{2}.(c - P_0) S_2 b_2 (P_2 - c); c_e = \frac{P_A + P_2}{2} = \frac{P_0 + P_2}{2};$$
$$SE_{AHF(max)} = \frac{1}{8}.S_2 b_2 .(P_0 - P_2)^2 \bullet$$

(6).

The theory of imperfect competition related to international trade

Monopolistic competition is a type of imperfect competition such that one or m producers sell products that are differentiated from one another as goods but not perfect substitutes (such as from branding, quality, or location). In monopolistic competition, 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.

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

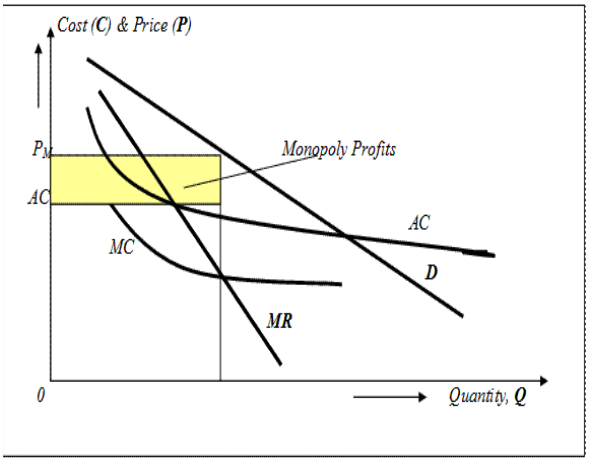

Figure 4: Monopolistic Pricing and Production Decision.

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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:

$$Average\,Cost = AC = C/Q = F/Q + c \quad \bullet$$

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

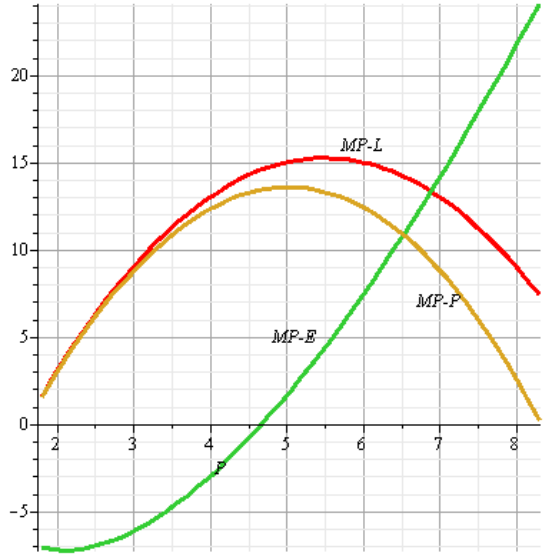

Figure5: Graphical presentation of Monopoly's Profit.

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

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) ►

$$MP_{E(max)} = -\frac{1}{\Re}\cdot\left[A\ln\left(\frac{B_1 + C_1 c}{\Re}\right)B_1\Re\right] - A\ln\left(\frac{B_1 + C_1 c}{\Re}\right)B_1 - A\ln\left(\frac{B_1 + C_1 c}{\Re}\right)C_1 c +$$

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

$$Q = A\ln(B_1 + C_1 P)\ \ ;\ \ \text{LambertW}(x).\exp\left[\text{LambertW}(x)\right] = x\ \ ,$$

respectively for Exponential (Logarithm's) Trend of function, Q = Q (P) ►
Graphical representation related of Figure 7 given for projecting parameters:

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

RESULT

The Proposed econometric model in this paper, 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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