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ESTIMATING EFFICIENCY OF ADVERTISING IN A DIFFERENTIATED PRODUCTS INDUSTRY

Increased competition between producers in Ukraine has led many firms to increase their advertising efforts. According to the data of State Statistics Committee of Ukraine, total advertising expenditures in Ukraine in year 2007 amounted to 3 billion 893,8 million hryvnas [1]. However, how to measure the economic effect of advertising precisely remains unclear. Hence, a model for quantifying the impact of advertising on profits, outputs, and prices would be of considerable theoretical and practical interest.

The role of advertising in the competition between firms has always been a matter of scientific interest. Economists have developed quantitative models to study the impact of advertising. Stigler (1961), Grossman and Shapiro (1984) examine models with informative advertising messages [2]. Nelson (1974), Schmalensee (1977), analyze models where firms use signaling advertising [3], etc.

We investigate the impact of advertising in a oligopolistic competition within the multinomial logit framework, pioneered by McFadden (1973) [4]. There exist N firms, each controlling a single product. Products, indexed by $j=1, \dots, N$ are differentiated by consumers' perception of its quality u_j , which can be affected by advertising. Consumers also differ by their preferences for product's design, color, brand name, etc. (stochastic component of the utility function). More precisely, consumer's utility from choosing a product j is given by this utility function:

$$U_j = u_j + v_j, \quad (1)$$

where v_j is a stochastic component of consumer's utility, described by extreme value distribution with a cdf: