ANALYSIS OF PRICE ELASTICITY OF FOOD PRODUCTS (FOR THE PERIOD 1999-2009)

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ABSTRACT

Elasticity is a measure that economists use quite often to measure the variation of such variables as price, supply and demand of certain product groups.

Knowledge of managers on the elasticity of demand for its products on the market and the factors that influence it would give her enough great competitive advantage, and hence profits, the company will be financially stable and profitable, while those who do not handle this analysis will suffer continuous losses and eventually fail.

In this regard, the survey analysis is the elasticity of demand for certain food products (macro level) and are themselves subject to the consumer market in Bulgaria, which determine the demand for these goods.

Key words: price elasticity, food products, demand for food product, consumer market in Bulgaria

INTRODUCTION

The purpose of the report is to analyze the elasticity of certain food products for the period 1999 2009.

Basic assumptions of the study:
1. Coefficients of price elasticity of food will be high.
2. Higher elastic demand will have products which are likely easier to find substitutes and that a high proportion of income spent on food (as in Bulgaria) coefficients of elasticity will be high.

MATERIALS AND METHODS

Price elasticity of demand (PED) is a measure of the sensitivity (or responsiveness) of the quantity of a good or service demanded to changes in its price. The formula for the coefficient of price elasticity of demand for a good is:

E_d= % change in quality demanded / % change in price

The above formula usually yields a negative value, due to the inverse nature of the relationship between price and quantity

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demanded, as described by the "law of demand" [1]

This measure of elasticity is sometimes referred to as the own-price elasticity of demand for a good, i.e., the elasticity of demand with respect to the good's own price, in order to distinguish it from the elasticity of demand for that good with respect to the change in the price of some other good, i.e., a complementary or substitute good. The latter type of elasticity measure is called a cross-price elasticity of demand. Elasticity is not the same thing as the slope of the demand curve, which is dependent on the units used for both price and quantity. Two alternative elasticity measures avoid or minimise these shortcomings of the basic elasticity formula: point-price elasticity and arc elasticity.

A) Point-price elasticity
One way to avoid the accuracy problem described above is to minimise the difference between the starting and ending prices and quantities. This is the approach taken in the definition of point-price elasticity, which uses differential calculus to calculate the elasticity for an infinitesimal change in price and quantity at any given point on the demand curve [2]:

$$E_d = P/Q_d \times dQ_d/dP_d$$

In other words, it is equal to the absolute value of the first derivative of quantity with respect to price (dQ_d/dP) multiplied by the point's price (P) divided by its quantity (Q_d). However, the point-price elasticity can be computed only if the formula for the demand function, $Q_d = f(P)$, is known so its derivative with respect to price, dQ_d / dP, can be determined.

B) Arc elasticity
A second solution to the asymmetry problem of having a PED dependent on which of the two given points on a demand curve is chosen as the "original" point and which as the "new" one is to compute the percentage change in P and Q relative to the average of the two prices and the average of the two quantities, rather than just the change relative to one point or the other. Loosely speaking, this gives an "average" elasticity for the section of the actual

demand curve—i.e., the arc of the curve— between the two points. As a result, this measure is known as the arc elasticity, in this case with respect to the price of the good. The arc elasticity is defined mathematically as [3]

$$E_d = (P_1+P_2)/(Qd_1+Qd_2) \times \Delta Qd/\Delta Pd$$

This method for computing the price elasticity is also known as the "midpoints formula", because the average price and average quantity are the coordinates of the midpoint of the straight line between the two given points.However, because this formula implicitly assumes the section of the demand curve between those points is linear, the greater the curvature of the actual demand curve is over that range, the worse this approximation of its elasticity will be.
Interpreting values of price elasticity coefficients
Elasticities of demand are interpreted as follows [4]:

Table 1.

Value	Descriptive Terms
$E_d = 0$	Perfectly inelastic demand
$-1 < E_d < 0$	Inelastic or relatively inelastic demand
$E_d = -1$	Unit elastic, unit elasticity, unitary elasticity, or unitarily elastic demand
$-\infty < E_d < -1$	Elastic or relatively elastic demand
$E_d = -\infty$	Perfectly elastic demand

RESULTS
The methodology will be used in the calculations of the price elasticity of demand borrowed from textbook Angelova, Georgiev et al. [5]

For the period 1999 to 2009, it is too great divide 5 subperiods respectively from 1999 to 2001 ... and 2007-2009. Thus calculate the price elasticity of demand for food products (for which the National Statistical Institute maintains a database) [6].

So you can calculate the price elasticity of demand for certain food products. Which will be presented in **Table 2**.

From the data in **Table 2** shows that for almost all food products (22 out of 23 or 95,7%) by seeking a "Rapid reaction" of price changes. It is striking that the products have elastic demand, which is easily possible to find substitutes. Price increases in goods and services may induce consumers to substitute cheaper products for more expensive—but perhaps higher quality—products that they feel they can no longer afford.

Close values of the coefficients of price elasticity are confirmed in other studies. [7]
To illustrate the existence of three types of price elasticity of demand we can get the data from **Table 2** and **Table 3** the composite.

Table 2. *Coefficients of price elasticity of demand for certain food products*

Types of food	Average coefficient of price elasticity (E_d) 1999 / 2009	Standard deviation of coefficient of price elasticity (E_d) 1999 / 2009	Coefficient of variation of the average price elasticity (in %)
Rice	-8,75	20,98	-240
White bread	-5,89	8,49	-144
Pasta	-0,52	1,25	-241
Other bakery products	2,50	3,11	124
Lamb and kid	1,58	3,82	242
Mince	-2,36	4,46	-189
Fish- fresh or frozen	-4,13	7,75	-188
Milk	-3,35	5,81	-173
Cheese	-1,19	2,86	-241
Eggs	-5,3	12,2	231
Cooking oil	2,57	6,04	235
Butter	4,16	9,96	239
Apples	-7,73	8,96	116
Grapes	-4,87	4,69	96
Watermelons and melons	-1,17	2,33	200
Dried fruit	5,94	10,42	175
Cucumbers	-1,98	3,21	162
Beans mature	1,52	2,87	189
Lens	2,29	4,27	186
Vegatabe preserves	7,4	12,08	163
Sugar	-2,22	3,27	-148
Coffee	6,22	13,14	211
Concentrates	4,40	5,84	132
Total	-0,47	-	-

Table 3. *Types of price elasticity of demand*

Type of elasticity	For all subperiods	About four out of five subperiods
Inelastic demand	-	Lens, Beans mature, Pasta
Unit elastic, unit elasticity, or unitarily elastic demand	-	Watermelons and melons
Elastic or relatively elastic demand	Sugar, Appels, Lamb and kid	Grapes, Vegatabe preserves

The product groups that have elastic demand to price in both subperiods are sugar, lamb and kid and apples. Where goods have inelastic demand in terms of price about four out of five subperiods are lens, beans mature and pasta.

It is difficult to find goods in which a certain percentage change in price creates the same percentage change in the quantity demanded have so unit elastic or unitarily elastic demand. For this reason, we'll list those who have close to unit price elasticity of demand - watermelons and melons.

DISCUSSION
The results of studies of price elasticity of food would be very useful for managers of companies producing such products. They could provide very useful guidelines for deciding on the pricing strategies of companies managed by them. Especially important, it would be for companies produces products with high price elasticity as sugar, vegetable cans, etc.

- The price elasticity of demand for food products in Bulgaria for the period 1999-2009 is high.

- Average coefficient of price elasticity analyzed for the period was negative (-0.47)

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