

CONSIDERATIONS ABOUT ECONOMIC CRISIS IMPACT ON AGRO-FOOD PRODUCTS' DEMAND IN ROMANIA¹

Raluca Andreea ION, Mirela STOIAN²

Abstract

Consumption of food products has significant share in total consumption expenditure of a household in Romania. Therefore, how consumer demand for different products reacts according to their price changes and household income is important for food business managers in making decisions about increasing or reducing the prices for their output. In this paper the elasticity coefficients of demand for agricultural products to price and income are measured and the way demand reacts in the context of economic crisis is identified. The economic crisis may manifest as either by increasing prices or reducing real incomes. The results show that demand for food products respond differently to price and income changes: basic food have an inelastic demand and products with a high degree of processing, animal food in general, have elastic demand.

Key words: *agro-food products, demand, elasticity, price, income*

INTRODUCTION

In Romania, the consumption of food is important, because it has a high share in total consumption expenditure: 40.9% in 2009 compared to 16% EU average, 12% in England, 13% in the Netherlands, Austria, 14 % in Denmark, Germany, Ireland, 15% in Sweden, 16% in France (Eurostat, 2009). Consumption of food products on the market manifests itself in the form of demand. This study has focused on

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 - 2 Lecturer Ion Raluca Andreea, Professor Stoian Mirela, Bucharest Academy of Economic Studies, Faculty of Agro-food and Environmental Economics, E-mail: raluca.ion@eam.ase.ro

investigating the complex issue of food demand, trying to answer the question: how consumer demand for food products reacts to price changes and income, in the context of the current economic crisis?

To answer this question, statistics from the Romanian Statistical Yearbook and other publications of the National Institute of Statistics were analyzed. The objectives of this study are to measure the elasticity of demand for food products in relation to price and income, as an expression of its change in response to price and income variation (Manole et.all 2003).

1. MATERIAL AND METHOD

To capture the market trends, the demand for the main agricultural products is analysed, in longitudinal section. The indicator considered is "average monthly purchase" as an expression of demand, representing the monthly average quantity purchased by a person in a month. Statistical data is analyzed over a period of ten years 2000-2009, the main food and drink: bakeries, pork, poultry, meat, fish and fish products, milk, cheese and cream, eggs, oil, fruit, potatoes, vegetables, sugar, honey, soft drinks, wine, beer.

Average monthly purchase of bread and bakery products is 8 kg and has a relatively constant trend, in the period. A person buys, on average, 0.62 kg of pork meat, 1.1 kg poultry meat, 0.87 kg of meat products and 0.57 kg of fish and fish products per month. Demand for meat and fish and processed products increased in the period 2000-2009, the growth rate of purchase of poultry being the highest: 318%.

Purchased quantities of milk, cheese and eggs are increasing in the period. A person buys an average, 4 liters of milk, 0.88 kg cheese and sour cream and 6 pieces of eggs per month.

The amount of fruits bought in the market has doubled in the period 2000-2009, from 1.38 kg to 2.65 kg. Quantities of vegetables, including tomatoes, were halved. Demand for potatoes and sugar has a stable character, and the honey has a slight increase. A person buys 2.5 kilograms of potatoes, 0.8 kg of sugar per month, 0.04 kg of honey and 4.74 kg of vegetables, of which 0.85 kg of tomatoes.

Average purchase of drinks increased in the period. A person buys a quantity of water and soft drinks three times higher in 2009 compared to 2000 (4.3 liters versus 1.5 liters) and a double quantity of beer: 1 liter to 0.57 liters. Demand for wine was relatively constant.

Demand for food products and beverages has a relatively stable trend for some products such as bread and bakery products, pork, milk, cheese, eggs, oil, potatoes, sugar, wine, or even a trend of reduction: vegetables. These products, for which demand does not change significantly depending on changes in the environment (household income, prices and other factors) are considered the basic food products.

Demand for other products: poultry, fish, fruits, soft drinks, beer has increased significantly. Products with elastic demand to price or income are not basic food products.

2. RESULTS AND DISCUSSIONS

To analyse the demand according to changes in economic environment, the price of food products and household income is considered, for a period of 15 years. To determine the extent to which demand for food products is dependent on the income and price changes, the correlation coefficients are calculated (Table 1).

Table 1. The correlation coefficients between demands for food products and prices and households income

GROUP OF PRODUCTS	THE CORRELATION COEFFICIENT BETWEEN DEMAND AND PRICE	THE CORRELATION COEFFICIENT BETWEEN DEMAND AND INCOME
Bread and bakery products	0.7853	0.7522
Meat		0.3955
Meat products		0.8638
Fish and fish products		0.8832
Milk	0.9241	0.3750
Cheese and sour cream		0.8948
Eggs	0.3533	0.7955
Edible oil		0.1819
Fruits		0.9437
Potatoes	0.7367	0.8371
Vegetables		0.2660
Sugar		0.6393
Soft drinks		0.8504
Alcoholic beverages		0.03

Source: own calculation

The coefficients of correlation between demand and price have been calculated only for those products for which statistics exist for prices: milk, eggs, potatoes and wheat (for bread demand). The correlations are strong for bread and bakery products, milk and potatoes, the coefficients being higher than 0.5.

The correlations between demand and income of households are strong for bread and bakery products, fish and fish products, cheese and cream, eggs, fruit, potatoes, sugar and soft drinks, correlation coefficients being higher than 0.5. Demand for meat, milk, oil, vegetables and alcoholic beverages weakly depends on variations of income, the coefficients being smaller than 0.5.

The elasticity coefficients of demand show different responses to price changes (Table 2).

There are four intervals in which the coefficients of elasticity of demand in relation to price have different meanings:

- Values lower than -1
- Values between -1 and 0
- Values between 0 and 1
- Values higher than 1.

Table 2. Elasticity of demand for the main agro-food products in relation to commodity prices and households' income, in the period 2001-2009, in Romania

GROUP OF PRODUCTS	COEFFICIENT OF CORRELATION BETWEEN DEMAND AND PRICE	COEFFICIENT OF CORRELATION BETWEEN DEMAND AND INCOME
Bread and bakeries	-0.207	-0.09
Pork meat	0.129	0.73
Poultry meat	-1.284	3.01
Meat products	0.203	1.11
Fish and fish products		1.62
Milk	-1.193	0.47
Cheese and sour cream		1.07
Eggs	0.389	0.4
Edible oil	-0.047	0.21
Fruits		1.17
Potatoes	0.157	-0.35
Vegetables	-0.407	0.17
Tomatoes	0.368	1.07
Sugar	0.033	0.03
Honey	1.554	0.76
Soft-drinks		2.34
Wine	-0.075	-0.18
Beer		1.4

Source: own calculation

If the coefficient of elasticity is less than -1, the demand for the product is elastic. Poultry meat and milk have elastic demand. A 1% price increase leads to significant reductions in the quantities required: with 1.28% for poultry and 1.193% for milk product.

In general, the coefficient of elasticity of demand for food in relation to price is between -1 and 0, then the demand of the product is rigid and inelastic, or price change does not determine a significant change in demand. This is specific to: bread and bakery products, oil, vegetables and wine, that consumers buy the same amount regardless of price changes. A 1% price increase will lead to insignificant reductions

in the quantities required: 0.20% for bread and loaf products, 0.047% for oil, 0.4% for vegetables and 0.075% for wine.

When the coefficient of elasticity is between 0 and 1, such as for products: pork, eggs, potatoes, tomatoes and sugar, the demand is inelastic and is in a direct relationship with price. A 1% price increase determines an increase of the amount requested, but in lower proportions: 0.12% for pork, 0.38% for eggs, 0.15% for potatoes, 0.36% for tomatoes and 0.03% for sugar. These are considered basic products: those products that buyers consume in approximately the same amount regardless of price changes.

If the coefficient of elasticity is greater than 1, demand is elastic depending on price, but in a positive relationship. A 1% increase in price of honey leads to an increase of 1.55% of the amount requested.

Coefficients of elasticity of demand relative to income indicate that the demand for food products responds differently to revenue growth: for some products demand increases and decreases for others (Table 3).

There are four intervals in which the coefficients of elasticity of demand in relation to income have different meanings:

- Values lower than -1
- Values between -1 and 0
- Values between 0 and 1
- Values higher than 1.

If the coefficient of elasticity is less than -1, the demand for the product is elastic and has an indirect relationship with income: income reduction determines increasing demand. No food item is in this category.

When the coefficient of elasticity of demand for food in relation to income is between -1 and 0, then the demand of the product is rigid and inelastic, meaning that changes in income do not determine a significant change in demand. This is the situation for: bread and bakery products, potatoes and wine, that consumers buy the same amount regardless of income changes. A 1% reduction in income will increase marginal quantities required: with 0.09% for bread and bakery products, 0.35% for potatoes and 0.18% for wine.

When the coefficient of elasticity is between 0 and 1, such as for products: pork, milk, eggs, oil, vegetables, sugar and honey, demand is inelastic and has a direct relationship with income. A reduction in income by 1% reduces the required amount, but in small proportions: with 0.73% for pork, 0.47% for milk, 0.4% for eggs, 0.21% for oil, 0.17% for vegetables, 0.03% for sugar and 0.76% for honey. These are considered basic products, meaning that buyers consume them in approximately the same amount, regardless of variations in income.

If the coefficient of elasticity is greater than 1, demand is elastic depending on income. A reduction in income by 1% leads to reductions in the quantities required:

with 3.01% for poultry, 1.11% for meat products, 1.62% for fish and fish products, 1.07% for cheese and cream, 1.17% for fruits, 1.07% for tomato, 2.34% for water and soft drinks and 1.4% for beer.

CONCLUSION

Demand for food products responds differently to price and income changes. Bread and bakery products, potatoes, pork, eggs, oil, vegetables, sugar and wine have inelastic demand in relation to price and households' income. These products are basic foods that are consumed in about the same amount regardless of price and income changes. Poultry, fish and fish products, fruit, cheese and sour cream, tomatoes, mineral water and other soft drinks and beer have elastic demand in relation to price and / or income.

Milk has elastic demand in relation to price and inelastic in relation to income, which means that the price has a greater influence than income on the demand for milk. One can hypothesize that, regardless of size of income, households consume milk, but the amount required depends greatly on its price. This should be kept relatively constant, because a change in the upward drives to reducing the amount of milk purchased.

Meat products have inelastic demand in relation to price and elastic depending on income, which means that income has a greater influence on demand than price. We expect households with higher incomes to consume meat, regardless of size price.

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