

Marina Lolić Čipčić, PhD<sup>1</sup>  
Doris Cvitković, MEcon.<sup>2</sup>

## ANALYSIS OF THE ELASTICITY OF DEMAND FOR BREAD

*Review paper / Pregledni rad*

*UDC / UDK: 338.5:664.661*

*DOI: 10.51650/ezrvs.17.3-4.4*

*Received / Primljeno: 30/06/2023*

*Accepted / Prihvaćeno: 15/07/2023*

*Measures of demand elasticity indicate the direction and intensity of the reaction of the quantity of demand for a good or service due to a change in the determinants of demand. Among them, the price elasticity of demand stands out because it measures the reaction of customers to price changes. Price elasticity is therefore important for management in making pricing decisions because it answers the question of how raising or lowering prices will affect sales revenue and, consequently, the company's financial results. In this paper, the elasticity of demand for selected types of bread from the company Bobis d.o.o. was empirically tested. The listed company is the leader in the production of bread, fresh pastries, confectionery products, and cakes (NKD 2007 10.71) in County of Split-Dalmatia, and, at the same time, one of the top ten entrepreneurs in the same industry at the national level. For the analysis, data on sales volumes and associated prices of bread in forty-four branches within County of Split-Dalmatia in 2022 were used. In the empirical part of the paper, the coefficients of price and income elasticity of demand for selected types of bread were estimated. By comparing the calculated coefficients of price elasticity of demand for selected types of bread before and after the introduction of the pricing campaign, the results point to the conclusion that the demand for bread is price elastic. The range of the calculated coefficients of price elasticity of demand is significantly higher when the campaign is introduced, in other words, the introduction of the pricing campaign reduced the sensitivity of customers to price changes in the short term, i.e. after the end of the pricing campaign sales increase despite the return of prices to the levels that preceded the campaign. Finally, the calculation of the coefficients of income elasticity of demand implies that, for all selected types, bread is considered to be a normal good.*

**Keywords:** demand, bread, price elasticity, income elasticity.

---

<sup>1</sup> University of Split, University Department of Professional Studies, Kopilica 5, Split, Croatia; e-mail: mlolic@oss.unist.hr

<sup>2</sup> OTP bank dd; e-mail: doris.cvitkovic@hotmail.com

<sup>\*</sup> The paper was presented at the 6<sup>th</sup> International Conference "Challenges of Today", Šibenik, Croatia (October 2023).

## 1 Introduction

Bread is one of the oldest food products and has been part of the daily diet of people all over the world for centuries, regardless of the level of development of the observed economy. In less developed countries, bread is especially important because of its affordability. Nowadays, the bread production process is automated thanks to the development of technology. Due to such progress and the growth in the size of factories and machines, large companies can today produce exceptional amounts of bread daily, which was impossible in history.

Microeconomic theory is based on the assumption that the producer's primary goal of business is to maximize one's profit. To succeed in this, the company, among other things, must know how an increase or decrease in price will affect the quantity that consumers are willing to buy, that is, what is the price elasticity of demand for the goods it produces and/or sells. The importance of measuring the price elasticity of demand is that it provides a concise prediction for the movement of the change in total revenue from the sale of a particular product with a change in its price. It is the importance of making decisions about prices that has stimulated several types of research on price elasticity (Bijmolt et al., 2005). The company almost exclusively defines only the price and quality of its product, as well as, possibly, marketing expenses. On the other hand, it has no control over consumers' incomes, their price expectations, as well as the price and quality of competing products, and the level of their marketing expenditures.

This paper aims to analyze the demand for bread from the company Bobis d.o.o. The reason why bread was chosen as a product of interest lies in the fact that it is an important food item and an integral part of the daily diet of almost all individuals in society. Also, as it belongs to the category of more affordable food products and is relatively available to everyone, regardless of the amount of disposable income, the influence of income on the demand for the observed product is specific. The latter was also examined to categorize the selected types of bread concerning the reaction of demand for them concerning the change in the level of disposable income.

The work is structured through four chapters. After the first, introductory part, in which the subject of the research and the purpose and goal of the work are described, the second part gives a theoretical overview of the concept, importance, and practical applicability of the concept of elasticity in economics. Special emphasis is placed on, primarily, the price elasticity of demand, and then the income elasticity of demand. The third, empirical part of the paper, after a brief definition of the research sample, provides an analysis of the price and income elasticity of demand for different types of bread from the company Bobis d.o.o. and conclusions resulting from the conducted analysis. Based on everything that has been presented, concluding considerations are presented in the fourth chapter.

## 2 Elasticity of demand

Given that people try to extract the greatest amount of benefits (goods/services) from their rational intentions with the least expenditure, they tend to make rational decisions when buying goods, i.e. they are ready to buy a larger quantity at a lower price of a good and a smaller quantity at a higher price of the same good (Pavić et al., 2006). The aforementioned rule of demand therefore implies, keeping everything else unchanged (lat. *ceteris paribus*), an inverse relationship between price and quantity demanded. In other words, as the price rises, the quantity demanded decreases. The reverse is also true.

Although the most important, price is not the only determinant of demand. Several factors determine the demand for the observed product at a given price, namely: average income level, number of inhabitants, prices and availability of related goods (substitutes and complements), individual and social tastes, as well as special influences (Samuelson & Nordhaus, 2005).

The aforementioned factors determine the direction in which the requested quantity moves, but not the size of the change itself. To measure or give a conclusion on how consumers react to changes in variables, the concept of elasticity is used, one of the most important concepts of quantitative economic analysis (Babić, 2000) which, concerning the qualitative aspect, has a significant contribution to business decision-making. The elasticity gives information by what percentage the dependent variable will change if the independent variable changes by 1% (Pavić et al., 2009). The demand for the observed good is elastic if the demanded quantity (dependent - endogenous variable) reacts significantly to changes in the selected factor (independent - exogenous variable), and vice versa.

Price elasticity of demand is the most important and widespread measure of demand sensitivity in the function of demand for many goods. It shows the percentage change in the demanded quantity of a good as a result of a change in its price (Stipić & Jurić, 2020).

To be able to conclude based on the obtained (calculated) price elasticity coefficients whether demand is sensitive to price changes or not (and to what extent), the absolute value of the calculated coefficients is taken into account. As a rule, price and quantity of demand are in a negative relationship, the coefficient of price elasticity of demand has a negative sign, which reflects the negative (inverse) nature of their relationship (Bernheim & Whinston, 2008).

Depending on the amount of the absolute value for the coefficients of price elasticity, the demand at a certain price (or price range, if we are talking about the arc price elasticity of demand) can be in terms of price; inelastic, unit elastic and elastic, as shown in Table 1. From the point of view of the consumer, it is also true that as a result of the increase in the price of the product, expenditure on its consumption increases if the demand is price inelastic, that is, expenditure on consumption decreases with the price increase if the demand is price elastic (Pindyck & Rubinfeld, 2005). The reverse is also true.

Table 1 The relationship between price elasticity and changes in quantity demanded

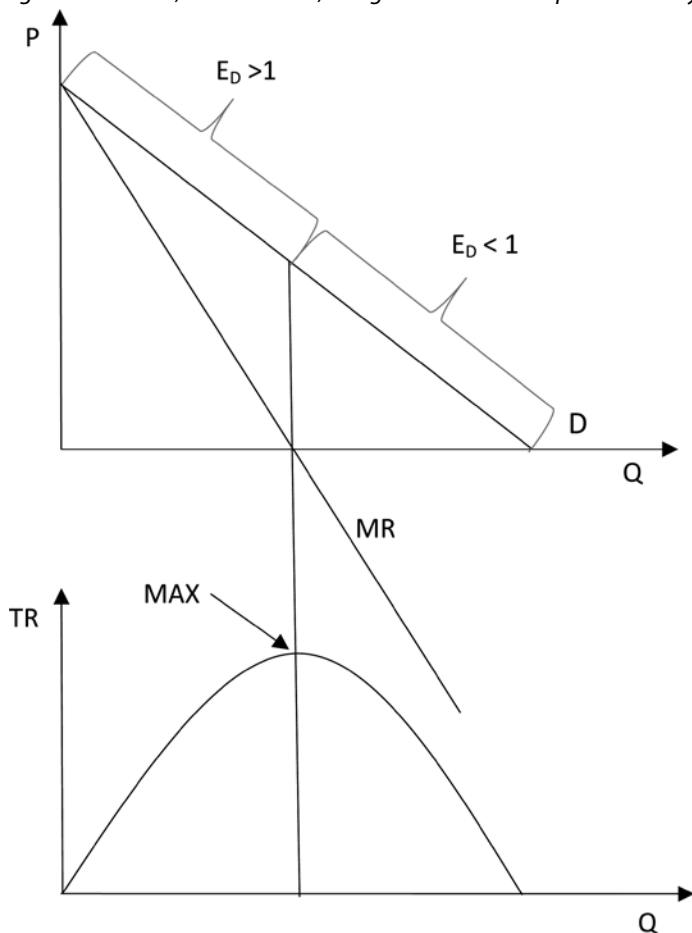
| Price elasticity of demand |             | The demanded quantity due to |                          |
|----------------------------|-------------|------------------------------|--------------------------|
| Type                       | Value of    | Price drop                   | Price increase           |
| Elastic demand             | $ E_D  > 1$ | growing by more than 1%      | dropping by more than 1% |
| Unit elastic demand        | $ E_D  = 1$ | no changes                   | no changes               |
| Inelastic demand           | $ E_D  < 1$ | growing by less than 1%      | dropping by less than 1% |

Source: author's work according to McConnell & Brue (2002, p. 122)

Between the price elasticity of demand, total revenue (Total Revenue - TR), and marginal revenue (Marginal Revenue - MR) there is a very important connection, from which comes the significance of knowing the price elasticity of demand (Salvatore, 1993). A reduction in the selling price will result in: an increase in sales revenue if demand is price elastic, unchanged sales revenue if

demand is unit elastic, or a decrease in sales revenue if demand is price inelastic. The reverse is also true. The mentioned relationship is shown graphically in Figure 1, where it is evident that the company should strive to maximize sales revenue, and it will achieve the same by reducing prices if it faces price-elastic demand or by increasing prices if it faces price-inelastic demand. It is also evident that unit elasticity implies income maximization, that is, marginal income equals zero (0).

Figure 1 Demand, total revenue, marginal revenue and price elasticity



Source: author's work according to Salvatore (1993, p. 90)

Finally, it is necessary to point out that the price elasticity of demand is not invariable. Three main factors determine the price elasticity of demand (Frank & Bernanke, 2001); the degree of substitution with other goods, the share of consumption in the customer's income, and the time frame within which customers adjust to the price change.

Income is also considered one of the most important variables in the demand function, in other words, the quantity demanded depends largely on the level of the consumer's income. Income elasticity of demand is a measure of the sensitivity of changes in the demanded quantity of a good to changes in consumer income. It shows the reaction of the consumer, or demand if

one's income changes (Grubišić, 2004). As a rule, the increase in income indeed leads to an increase in the demand for a good. The reverse is also true. For this type of goods, the quantity demanded reacts positively to changes in income. This reaction of demand is to some extent expected, which is why the mentioned type of goods is called normal goods. On the other hand, an inferior good is a good whose demand is affected by a change in income inversely proportionally, which would mean that when income increases, that good is replaced by a higher-quality product that satisfies the same need. The reverse is also true (O'Sullivan & Sheffrin, 2006).

Depending on the level and sign of the calculated coefficient of income elasticity, the observed goods are divided into groups as shown in Table 2. The impact of changes in income on the demanded quantity of a good divides such goods into two main groups: normal goods that have a positive income elasticity of demand, and inferior goods that have a negative income elasticity of demand. The category of normal goods includes essential (indispensable) and luxury goods, depending on the level of the income elasticity coefficient. Essential goods are normal goods with a coefficient of income elasticity of demand. Essential goods, such as food, generally have low-income elasticity because consumers, no matter how low their incomes are, choose to buy a certain amount of these goods (Mankiw, 2006).

Table 2 Types of products with regard to the coefficient of income elasticity of demand

| Product type              | Income elasticity of demand ( $E_I$ ) |
|---------------------------|---------------------------------------|
| Normal                    | $E_I > 0$                             |
| Essential (indispensable) | $1 > E_I > 0$                         |
| Luxury                    | $E_I > 1$                             |
| Inferior                  | $E_I < 0$                             |

Source: author's work

It is important to note that the income elasticity of demand is not as precise a measure of elasticity as the price elasticity of demand (Salvatore, 1993). Namely, income can be expressed as, for example, gross domestic product, national income, personal disposable income, etc. At the same time, an individual product can be a luxury for one group of consumers and a necessity for another. The income elasticity of demand on the example of individual goods often varies in different countries because living standards change the structure of consumption of goods. Likewise, no two families spend their income in the same way (Benić, 2017). Nevertheless, although companies that observe the reactions of demand for their products concerning its determinants, most of the time cannot influence the majority of them, they can profit from the knowledge of the level of income elasticity of demand for their products, primarily by anticipating future levels of demand.

### 3 Elasticity of demand for bread analysis on the example of the products from the company Bobis d.o.o.

This chapter presents the empirical part of the work in which the calculation of the price and income elasticity of demand for bread from the company Bobis d.o.o. is presented, as well as the conclusions resulting from the conducted analysis. Immediately before the actual analysis, the research sample was defined.

### **3.1 Definition of the research sample**

Data on the sale of selected types of bread from the company Bobis d.o.o. were used for the research in the territory of County of Split-Dalmatia in 2022. According to the data of the Financial Agency (FINA, 2022) on the business operations of entrepreneurs by county in the activity of bread production; production of fresh pastries, confectionery products, and cakes (NKD 2007 10.71) in 2021, Bobis d.o.o. according to the sales revenue criterion has a market share of 27% in the County of Split-Dalmatia, which is an adequate indicator of the company's size in relation to the local market and competitors. Furthermore, according to the data of the Agency for the Protection of Market Competition (AZTN, 2022), the company Bobis d.o.o. is the eighth company in terms of income from this activity in the Republic of Croatia. For this research the company Bobis d.o.o. provided data on sales, i.e., on sold quantities, prices, and income in 2022 in forty-four (44) branches in the County of Split-Dalmatia, excluding the retail chain Tommy, which also markets bakery products by Bobis d.o.o. within its sales units but has the right to form their prices independently.

To calculate the price elasticity of demand, data were used for the best-selling types of bread that were sold at promotional prices within a period of one week in 2022. Given that the data contains retail prices and sales volumes seven days before, seven days during, and seven days after the sales promotion, this is the best way to observe the reaction of customers to price changes because it is a relatively short period during which no significant changes should be expected in other determinants of demand for bread. In this way, the sale at the promotional price was observed as an experiment that in real circumstances best corresponds to the *ceteris paribus* assumption.

Data from the Croatian Bureau of Statistics (CBS, 2023) on the average salary for January and April 2022 in County of Split-Dalmatia, as well as data on sales volumes of selected types of bread in the observed period, were used to calculate the corresponding coefficients of income elasticity of demand. The price of the selected types of bread did not change within the observed period (January-April 2022) and, just as importantly, the seasonal nature of sales was taken into account, which (according to the provided data) was only expressed from May onwards. To avoid the influence of demand from tourists, whose income is in no way reflected by the CBS data on the average salary, sales volumes, and income levels before the season was taken into account. In this way, as with the calculation of the price elasticity of demand for bread, an effort was made to include realistic circumstances that optimally satisfy the *ceteris paribus* assumption.

### **3.2 Analysis of the price elasticity of demand for bread from the company Bobis d.o.o.**

Table 3 shows the calculated coefficients of price elasticity of demand for selected types of bread, which, according to the obtained data, generate the highest revenues from sales. The data shows the duration of the sales promotion i.e. the time of product price fluctuations, the price before (both at the same time and after), and the price during the promotion. The price elasticity of demand ( $E_{D_i}$ ) was calculated using the formula for calculating the price elasticity of demand at one point (Pavić, 2015, p. 113):

$$E_{DL} = \frac{Q_2 - Q_1}{P_2 - P_1} \cdot \frac{P_1}{Q_1} \quad 1)$$

where P1 is the initial price and Q1 is the quantity demanded at that price, P2 is the new (higher/lower) price and Q2 is the quantity demanded at the price P2. P1 and Q1 define the point or price level for which the price elasticity of demand is calculated.

Table 3 Coefficients of price elasticity of demand

| Type of bread                 | Promotion period | MPC   | A-MPC | Quantity sold in pieces: |                     |                        |                 |                 |
|-------------------------------|------------------|-------|-------|--------------------------|---------------------|------------------------|-----------------|-----------------|
|                               |                  |       |       | 7 days before promotion  | 7 days of promotion | 7 days after promotion | E <sub>D1</sub> | E <sub>D2</sub> |
| Domaća peka s kukuruzom       | 13.01. - 19.01.  | 14,99 | 10,99 | 3.234,50                 | 4.502,01            | 3.288,25               | <b>-1,47</b>    | <b>-0,74</b>    |
| Didova rustika bijela         | 10.02. - 16.02.  | 8,49  | 6,49  | 2.675,00                 | 4.756,03            | 3.079,35               | -3,30           | -1,14           |
| Baget s dodatkom kukuruza     | 10.03. - 16.03.  | 6,49  | 4,99  | 869,50                   | 3.128,50            | 1.078,50               | <b>-11,24</b>   | -2,18           |
| Škrovada s dodatkom kukuruza  | 14.04. - 20.04.  | 9,99  | 7,49  | 1.038,00                 | 2.504,00            | 1.196,00               | -5,64           | -1,57           |
| Natur                         | 12.05. - 18.05.  | 11,99 | 8,99  | 554,5                    | 1.665,00            | 655,00                 | -8,00           | -1,82           |
| Škrovada s bučinim sjemenkama | 16.06. - 22.06.  | 12,49 | 9,99  | 903,5                    | 2.142,00            | 1.124,00               | -6,85           | -1,90           |
| Francuski baget               | 14.07. - 20.07.  | 7,29  | 5,49  | 4.284,00                 | 7.326,00            | 4.984,00               | -2,88           | -0,98           |
| Sovital                       | 11.08. - 17.08   | 15,99 | 11,99 | 683,50                   | 1.703,50            | 765,00                 | -5,97           | -1,65           |
| Didova peka mala              | 08.09. - 14.09.  | 10,99 | 8,49  | 1.282,50                 | 2.567,75            | 1.354,50               | -4,41           | -1,60           |
| Didov kruh                    | 29.09. - 05.10.  | 12,49 | 9,49  | 4.182,00                 | 6.230,25            | 4.344,25               | -2,04           | -0,96           |
| Jadran                        | 03.11. - 09.11.  | 12,49 | 9,99  | 3.256,75                 | 5.180,50            | 3.357,50               | -2,95           | -1,41           |
| Bakina pogača                 | 17.11. - 23.11.  | 13,99 | 10,99 | 449,00                   | 1.412,50            | 541,00                 | -10,01          | <b>-2,26</b>    |
| <b>TOTAL</b>                  |                  |       |       | <b>23.412,75</b>         | <b>43.118,04</b>    | <b>25.767,35</b>       |                 |                 |

Source: author's creation based on data obtained from the company Bobis d.o.o.

\*MPC- retail price; A-MPC- special retail price

For each product, the price elasticity of demand before the introduction of the promotion (ED<sub>1</sub>) was calculated, where Q<sub>1</sub> represents the amount of sales seven days before the promotion, and Q<sub>2</sub> the amount of sales seven days during the promotion. P<sub>1</sub> stands for pre-discount retail price (MPC) and P<sub>2</sub> stands for promotional retail price (A-MPC). The coefficients of the price elasticity of demand (ED<sub>2</sub>) due to the end of the promotion, that is, the reaction of customers to the return of prices to the levels before the introduction of the promotion, are shown in the last column of Table 3. Q<sub>2</sub> here represents the quantities sold after the promotion, and Q<sub>1</sub>

is the quantity sold during the seven days of the promotion.  $P_1$  here represents the promotional retail price (A-MPC) and  $P_2$  is the retail price of the product (MPC) at the end of the promotion. A higher absolute value of the calculated coefficient of price elasticity of demand indicates a stronger reaction of customers to price changes. The reverse is also true.

By observing the results of the analysis, it can be concluded that all the calculated coefficients of the price elasticity of demand are negative, which is typical for the price elasticity of demand of any product because by decreasing the price, the demand increases (and vice versa). According to the calculated coefficients, it is evident that the absolute values of  $E_{D1}$  are greater than one (1), which means that a 1% price reduction resulted in an increase in demand by more than 1%, from which it follows that the price reduction has a positive effect on the company's income. However, there are noticeable differences in the calculated coefficients. Bread "Domaća peka" has the lowest ( $E_{D1}=-1.47$ ), and "Baget" the highest ( $E_{D1}=-11.24$ ) price elasticity of demand, therefore, with the introduction of the promotion, sales increased by as much as 360%, and for "Domaća peka", by the lowest, 140%. Considering the observed reactions of customers to the introduction of special prices, it is recommended to put on sale the products with the highest absolute values of the calculated coefficients, namely; "Baget" ( $E_{D1}=-11.24$ ), "Natur" ( $E_{D1}=-8.0$ ), "Bakine pogače" ( $E_{D1}=-10.01$ ) and "Škrovada" ( $E_{D1}=-6.85$ ). The mentioned products most significantly change the amount of sales during the promotion, therefore, by reducing the price of these types of bread, the company Bobis d.o.o. can significantly increase sales revenue.

Observing the results of the calculated coefficients of  $E_{D2}$ , it can be noted that, in general, their absolute amounts are lower compared to  $E_{D1}$ , which implies a reduction in the sensitivity of customers to price changes and thus justifies the introduction of promotions. It is evident, therefore, that all types of bread are sold more after the promotion, although the price returns to the level before the introduction of the promotion. Here it is necessary to indicate that the absolute values obtained for three types of bread are less than one (1), which means that the re-increased price of the mentioned types of bread (namely: "Domaća peka", "Baget" and "Didov kruh") has led to a below-proportional drop in demand for them. In other words, the demand for them is not price elastic, so the income from the sale of the mentioned types of bread increased despite the increase in their prices. Also, the calculated price elasticity of demand for "Domaća peka" bread is the lowest both before and on the eve of the promotion's introduction. Finally, it is worth indicating the range of movement of the calculated coefficients ( $E_{D1}$  and  $E_{D2}$ ), where a larger range implies stronger effects of the introduction of the promotion/campaign. Thus, the largest range of absolute values of the calculated coefficients ( $E_{D1} - E_{D2}$ ) is observed for "Baget" (9.06), "Bakina pogača" (7.75), and "Natur" bread (6.18), and the lowest for "Domaća peka" (0.73).

Although there are visible differences in the increase in sales of all observed types of bread after the end of the promotion (compared to sales before the promotion), there are still variations in the results. For example, the sale of "Francuski baget" increased by 14% after the promotion compared to the period before the promotion (the biggest jump in the observed parameters), and the product "Domaća peka" has the smallest increase in sales within the same reference period of only 1.6%. It is important to emphasize that such a difference in growth does not imply that "Francuski baget" is more popular than, for example, "Domaća peka", the sale of which generates higher sales revenues in all observed intervals, which is shown in Table 4.



Table 4 shows the income from the sale of selected types of bread, ordered from the highest to the lowest. Of the selected types of bread, "Didov kruh" generates the highest sales revenue, followed by "Domaća peka" and "Jadran". By knowing the relationship between the price elasticity of demand for a particular product and revenue, a company can consider increasing or decreasing the price of a particular product and aim for the point where marginal revenue is equal to zero and revenue is maximized. If the price elasticity of demand for a product is less than one, the company can increase its revenue by raising prices. The reverse is also true. Therefore, it can be concluded from this analysis that the price reductions were justified because the demand is price elastic.

Table 4 Ranking of analyzed types of bread according to sales revenue

|                                 | Revenues from sales in HRK: |       |                         |                     |                        |
|---------------------------------|-----------------------------|-------|-------------------------|---------------------|------------------------|
|                                 | MPC                         | A-MPC | 7 days before promotion | 7 days of promotion | 7 days after promotion |
| Didov kruh                      | 12,49                       | 9,49  | 46.833,46               | 55.856,49           | 48.739,86              |
| Domaća peka s dodatkom kukuruza | 14,99                       | 10,99 | 43.159,75               | 47.134,88           | 44.026,29              |
| Jadran                          | 12,49                       | 9,99  | 35.781,70               | 48.466,63           | 37.126,17              |
| Francuski baget                 | 7,29                        | 5,49  | 30.273,34               | 38.310,18           | 35.333,49              |
| Didova rustika bijela           | 8,49                        | 6,49  | 21.632,80               | 29.404,44           | 24.902,92              |
| Didova peka mala                | 10,99                       | 8,49  | 13.499,37               | 20.851,45           | 14.256,62              |
| Škrovada s bučnim sjemenkama    | 12,49                       | 9,99  | 10.749,20               | 20.381,98           | 13.372,30              |
| Škrovada s dodatkom kukuruza    | 9,99                        | 7,49  | 9.876,65                | 17.883,88           | 12.162,37              |
| Sovital                         | 15,99                       | 11,99 | 10.409,74               | 19.456,20           | 11.651,07              |
| Kruh natur                      | 11,99                       | 8,99  | 6.332,72                | 14.256,73           | 7.480,47               |
| Bakina pogača                   | 13,99                       | 10,99 | 5.982,95                | 13.440,46           | 7.208,88               |
| Baget s dodatkom kukuruza       | 6,49                        | 4,99  | 5.374,60                | 14.869,19           | 6.666,69               |

Source: created by the authors according to the data of the company Bobis d.o.o.

According to the data shown in Table 4, it is also evident that, before, during, and after the promotion, "Didov kruh" contributes the most to the total income from the sale of bread. It is also visible that the product "Baget" with the addition of corn contributes the least to sales revenue. Thus relationship between the price elasticity of demand and the total income of the company Bobis d.o.o. defined in this way signals which products and to what extent are sensitive to price changes. If the products are price elastic and have a high share in sales revenue, then the company knows that reducing the price of these products, can significantly increase sales revenue.

### 3.3 Analysis of the income elasticity of demand for bread from the company Bobis d.o.o.

Table 5 includes the calculated coefficients of income elasticity of demand for five (5) types of bread whose price did not change within the observed period, from January to April 2022. The income elasticity of demand ( $E_i$ ) is calculated using the formula for calculating the income elasticity of demand at one point (Tironi, 1979, p. 408):

$$E_i = \frac{Q_2 - Q_1}{I_2 - I_1} \cdot \frac{I_1}{Q_1} \quad (2)$$

where  $I_1$  is the initial level of income, and  $Q_1$  is the quantity demanded at  $I_1$ ,  $I_2$  is the new level of income and  $Q_2$  is the quantity demanded at  $I_2$ .  $I_1$  and  $Q_1$  define the point, that is, the income level for which the price elasticity of demand is calculated.

According to data from the CBS, the average monthly net salary in County of Split-Dalmatia in January 2022 was HRK 6,938.00, and in April of the same year HRK 7,092.00.

Table 5 Coefficients of income elasticity of demand for selected types of bread from the company Bobis d.o.o. in the County of Split-Dalmatia

| Product                           | January 2022 (Q) | April 2022. (Q) | $E_i$ |
|-----------------------------------|------------------|-----------------|-------|
| Škrovada s dodatkom kukuruza 450g | 5 804            | 5 865           | 0,47  |
| Marinero 500 g                    | 5 724            | 5 820           | 0,76  |
| Baget s dodatkom kukuruza 250 g   | 4 050            | 4 550           | 5,56  |
| Domaća peka 700 g                 | 1 938            | 2 494           | 12,93 |
| Finac 500 g                       | 1 602            | 1 802           | 5,62  |
| Vital kruh 500 g                  | 150              | 164             | 4,2   |

Source: author's calculations based on data from the company Bobis d.o.o. and the CBS (2023)

All calculated coefficients of income elasticity of demand (EI) for the selected types of bread are positive, so the results point to a positive relationship between income and sales volume. In other words, the increase in income also increases the amount of demand for the observed types of bread, which means that the selected products behave as normal good.

The calculated values of the income elasticity of demand coefficients range from 0.47 to 12.93. This means that the types of bread observed, such as "Škrovada" and "Marinero", belong to the category of essential (indispensable) products because the obtained coefficient is positive, but less than one. Other types of bread analyzed belong to the category of luxury products because the obtained coefficients are positive and greater than one. The product "Domaća peka" has the highest value of the coefficient of income elasticity of demand of 12.93. In general, it can be observed that the two types of bread with the lowest calculated coefficient have the highest sales volume. It is evident that these are popular products, regardless of income level, and it can also be concluded that types of bread with the value of the calculated coefficients above one (1) are specific and, therefore, more luxurious types of bread.

## 4 Conclusion

An analysis of the price elasticity of demand for selected types of bread from the company Bobis d.o.o. was carried out as part of this article. If the price elasticity of demand for a product is less than one, the company can increase its revenue by raising prices. The reverse is also true. Data on prices and sales volumes within seven (7) days before, during, and after the promotion were analyzed. From the obtained analysis, it can be concluded that each observed product is price elastic, although the range of obtained coefficients is considerable (from a minimum of -1.47 to a maximum of -11.24). This concludes that the introduction of the action has a positive effect on the company's income and that to increase income, the company should reduce the prices of those products whose coefficients of price elasticity of demand are higher in absolute terms. Also, the analysis showed that all types of bread are sold more after the promotion, although the price returns to the level before the introduction of the promotion.

The analysis of income elasticity of demand compared the average net salary in County of Split-Dalmatia in January and April 2022 and the sales volume of selected types of bread from the company Bobis d.o.o. whose price did not change in the selected period. The calculated coefficients of income elasticity of demand show that the selected types of bread behave as normal good, although the products can be classified into two subgroups. According to the obtained results, the selected types of bread are essential and luxury products, whereby four of the six analyzed types of bread behave as luxury goods, implying a higher quality compared to the remaining two, for which the amount of demand is higher and more stable.

## LITERATURE

1. APMC (2022). The Agency for the Protection of Market Competition, *Market research*, Retrieved from <https://www.aztn.hr/istrazivanja-trzista/> (accessed 01.12.2022)
2. Babić, M. (2000). *Mikroekonomska analiza*. 5<sup>th</sup> amended and supplemented edition, Zagreb: Official Gazette.
3. Benić, Đ. (2017). *Mikroekonomija: menadžmentski pristup*. 2nd edition, Zagreb, Školska knjiga.
4. Bernheim, B.D., Whinston, M.D. (2008). *Microeconomics*, McGraw-Hill/Irwin, New York.
5. Bijmolt, T. H., Van Heerde, H. J., & Pieters, R. G. (2005). New empirical generalizations on the determinants of price elasticity. *Journal of marketing research*, 42(2), 141-156.
6. CBS (2023). Croatian Bureau of Statistics. *Average Monthly Net and Gross Earnings of Persons in Paid Employment, by Counties*. Retrieved from <https://podaci.dzs.hr/2022/hr/31507> (accessed 09.02.2023)
7. FINA (2022). Financial Agency. *Poslovanje poduzetnika u djelatnosti proizvodnje kruha*. Retrieved from <https://www.fina.hr/-/poslovanje-poduzetnika-u-djelatnosti-proizvodnje-kruha-proizvodnje-svjezih-peciva-slasticarskih-proizvoda-i-kolaca-u-2021.-godini> (accessed 01.12.2022)
8. Frank, R.H., Bernanke, B.S. (2001). *Principles of Economics*. New York, Mc-Graw Hill/Irwin.
9. Grubišić, D. (2004). *Poslovna ekonomija*. Split: University of Split, Faculty of Economics, Business, and Tourism.

10. McConnell, C.R., Brue, S.L. (2002). *Microeconomics: Principles, Problems and Policies*. New York, McGraw-Hill.
11. Pavić, I. (2015). *Mikroekonomija: teorija i praksa*. Split: University of Split, Faculty of Economics, Business, and Tourism.
12. Pavić, I., Benić, Đ., Hashi, I. (2006). *Mikroekonomija*. Split: University of Split, Faculty of Economics, Business, and Tourism.
13. Pavić, I., Benić, Đ., Hashi, I. (2009). *Mikroekonomija*. 3<sup>rd</sup> edition. Split: University of Split, Faculty of Economics, Business, and Tourism.
14. O'Sullivan, A., Sheffrin, S. M. (2006). *Economics. Principles and Tools*. New Jersey, Pearson Education. Inc. Upper Saddle River.
15. Pindyck, R. S. i Rubinfeld, D. L. (2005). *Mikroekonomija*. 5<sup>th</sup> edition, Zagreb, MATE d.o.o.
16. Salvatore, D. (1993). *Ekonomija za menadžere u svjetskoj privredi*. Zagreb, MATE d.o.o.
17. Samuelson, P.A., Nordhaus, W.D. (2005). *Ekonomija*. 18<sup>th</sup> edition, Zagreb, MATE d.o.o.
18. Stipić, M., Jurić, S. (2020). *Osnove ekonomije – Zbirka zadataka*. Knin: Marko Marulić Polytechnic.
19. Tironi, J. (1979). *Politička ekonomija*. 7<sup>th</sup> edition. Zagreb: Official Gazette.

### Summary

#### **ANALIZA ELASTIČNOSTI POTRAŽNJE ZA KRUHOM**

Mjere elastičnosti potražnje ukazuju na smjer i intenzitet reakcije količine potražnje za nekim dobrom ili uslugom uslijed promjene determinanti potražnje. Među istima, posebno se ističe cjenovna elastičnost potražnje jer mjeri reakciju kupaca na promjene cijena. Cjenovna je elastičnost stoga menadžmentu važna za donošenje odluka o cijenama jer odgovara na pitanje kako će podizanje ili snižavanje cijena utjecati na prihode od prodaje i, posljedično, na financijski rezultat tvrtke. U ovom je radu empirijski testirana elastičnost potražnje za odabranim vrstama kruha tvrtke Bobis d.o.o. Navedena je tvrtka vodeća u djelatnosti proizvodnje kruha, svježih peciva, slastičarskih proizvoda i kolača (NKD 2007 10.71) u Splitsko-dalmatinskoj županiji, a ujedno i jedan od top deset poduzetnika u istoimenoj djelatnosti na nacionalnoj razini. Za potrebe analize korišteni su podaci o količinama prodaje i pripadajućim cijenama kruha u četrdeset četiri poslovnice unutar Splitsko-dalmatinske županije u 2022. godini. U empirijskom dijelu rada izvršene su procjene koeficijena cjenovne i dohodovne elastičnosti potražnje za odabranim vrstama kruha. Usporedbom izračunatih koeficijena cjenovne elastičnosti potražnje za odabranim vrstama kruha prije i nakon akcije, rezultati upućuju na zaključak da je potražnja za kruhom cjenovno elastična. Raspon kretanja izračunatih koeficijena cjenovne elastičnosti potražnje znatno je veći prilikom uvođenja akcije, drugim riječima, uvođenjem akcije kratkoročno je smanjena osjetljivost kupaca na promjene cijena, odnosno prihodi od prodaje nakon prestanka akcijske prodaje rastu unatoč vraćanju cijena na razine koje su prethodile akciji. Konačno, izračun koeficijena dohodovne elastičnosti potražnje implicira da se, kod svih odabranih vrsta, kruh ponaša kao normalno dobro.

**Ključne riječi:** potražnja, kruh, cjenovna elastičnost, dohodovna elastičnost.