The Impact of Population Income Growth on Bread Consumption

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Abstract

The income of the population is the main decision-making factor of consumption, being the main source through which the goods intended for consumption are purchased. This paper analyzes the influence of income growth on the consumption of bread and loaf products, considered basic foods in the diet of Romanians. With the help of the Data Analysis program, Pearson correlation coefficient will be determined, based on income and consumption data for 2016-2020, provided by the National Institute of Statistics. The direction and intensity of the influence of income on consumption will be identified. The results will show that as the income values of a household increase, the consumption of bread and bread products decreases, one reason being the replacement of bread with other foods, the transition to a more balanced diet, in which bread is consumed in a well-defined quantity.

Key words: bread consumption, people's income, income-consumption correlation, market
J.E.L. classification: D1, D16, E01

1. Introduction

Bread and loaf products are the basis of the population's diet, regardless of social or economic status, but differences in the proportion of consumption can be observed, often compared to consumers' income. Thus, bread and loaf products are consumed in small or large sizes in all countries, representing the most essential food, but it will be assumed that as the level of household income increases, the amount of bread consumption decreases, as expected. A possible cause is the replacement of bread with other foods, the migration to a more balanced diet with a reduced, well-determined amount of bread. Bread is a cheap food, it gives satiety but does not present rich nutritional qualities such as dairy products or meat. Based on the data provided by the National Institute of Statistics for 2016-2020 it will be noted whether the consumption of bread is higher in low income households comparable to that of high incomes and what is the relationship between income and consumption between these categories.

2. Literature review

About the consumption of bread it is worth mentioning that bread is a rich source of starch and complex carbohydrates and hence an important part of a balanced diet with a stable consumption in Western Europe (FoB, 2007). However, the consumption of bread has declined, possibly due to factors such as changing eating patterns and an increasing choice of substitutes such as breakfast cereals and fast foods (Prättälä et al., 2001).Bread production is not constant – it is variable and persistently adapts to consumer wishes, which are not always understandable and – what is even more important – are difficult to predict (Bread ..., 2013; World ..., 2009). The consumption of bread and bakery products steadily increases in the world (Market ..., 2008; AIBI, 2015).

3. Research methodology

This paper will use comparative methods with the Pearson correlation. Based on the data available for 2016-2020 provided by the National Institute of Statistics regarding the values of average income per household and consumption of loaf products, the link between the two indicators will be established using the Pearson coefficient model.

The main objective of this study is to identify the relationship between the indicators mentioned above and to answer the question: Is there a relationship between the average household income and consumption of loaf and bread products? To identify the answer to this question, the specific tools used to calculate the indicators were established based on the Data Analysis software in the Microsoft Office package.

4. Findings

4.1. Analysis of data on consumption of bread and loaf products and income per household

The data necessary for the analysis of the influence of income on the consumption of bread and loaf products are centralized in Table 1. The income is taken from the databases of the National Institute of Statistics, are expressed in RON, the indicator being the average monthly income per household. The reference period is 2016-2020, in the mentioned period the revenues evolved from RON 2944.6 to RON 5220.43.

Table no. 1. Average total income per household and the average amount of bread and loaf products consumed by a person monthly in the period 2016-2020

Year	Average amount of bread and bread products consumed by a person monthly (kg)	Average total income per household (ron)
2016	7,414	2944,6
2017	7,348	3391,67
2018	7,305	4251,26
2019	7,176	4789,83
2020	7,073	5220,43

Source: National Institute of Statistics

As can be seen in Table 1, as income values increased, the amount of bread consumed decreased, resulting in a substitution of this food. This result is shown graphically in the figure 1 in which the downward trend of consumption of loaf products is observed.

Figure no. 1. Downward trend of consumption of loaf products in relation to income
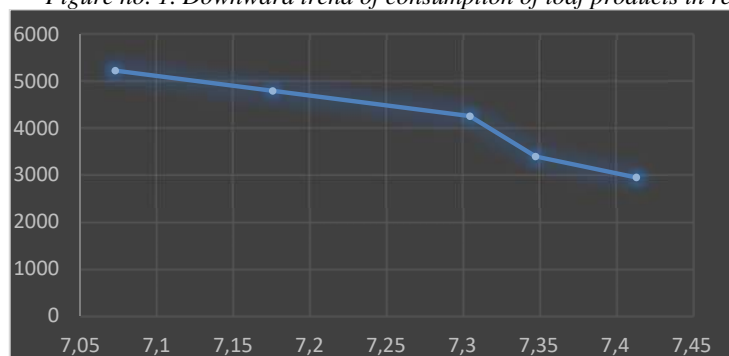
Source: data taken from National Institute of Statistics and processed

4.2. Determination of Pearson's correlation coefficients between consumption of bread and loaf products and income per household

In order to establish the influence that the average household income can have on the consumption of bread and loaf products, the Pearson correlation coefficient (rxy) will be determined by which an analysis will be carried out. Thus, the connection level as well as the intensity between the two variables will be established. The correlation coefficient is calculated by the ratio of the sum of the products of the deviations to the product of the standard deviations where the coefficient sign indicates the direction. In this way we will know whether the two variables are reported directly proportionally or inversely proportionally, and the value of the coefficient indicates the intensity, the closer the value is to 1 (in the absolute value), the higher the intensity. The Pearson correlation coefficient is calculated by the formula:

Figure no. 2 Correlation Coefficient Formula

$$r_{xy} = \frac{cov(x, y)}{s_x s_y} = \frac{s_{xy}}{s_x \cdot s_y} = \frac{\sum_{i=1}^{n}(x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\left[\sum_{i=1}^{n}(x_i - \bar{x})^2\right]\left[\sum_{i=1}^{n}(y_i - \bar{y})^2\right]}}$$

Source: Own processing

where:
rxy - Pearson correlation coefficient
xi — individual values of the variable
$\bar{x}$— the average of individual values of x
yi — individual values of the variable y
$\bar{y}$— the average of the individual values of y

With MS Excel's optional Data Analysis program, the correlation coefficients were determined between consumption of bread and loaf products and income per household. They are shown in Table 2:

Table no. 2. Coefficient of correlation between Average amount of bread and loaf products and Average total income

	Average amount of bread and loaf products	Average total income
Average amount of bread and loaf products	1	
Average total income	-0,96318	1

Source: Own processing using Ms Excel's Data Analasys

It is noticeable that there is a direct link between the average amount of bread and bread products consumed by a person monthly (kg) and the average total income per household (ron), the correlation coefficient is negative with the value of - 0,96 which suggests a reverse correlation, the two variables correlated varies in the opposite direction. Thus, as income values increase, the amount of bread consumed decreases.

5. Conclusions

Healthy nutrition is one of the major challenges facing the food industry today and is one of the main drivers of innovation in this area. Many consumers are looking for healthy alternatives with higher nutritional value, so in some cases it is recommended to consume a well-defined amount of bread.

The most consumed product on the Romanian market is white flour bread, but if we relate to the benefits of consumption, it is a poor product in terms of content in nutrients important for health, such as vitamins, minerals and fiber. As seen in the analysis, over the last 5 years bread consumption has decreased and consumer preferences have changed starting to attach importance to a healthier diet. There is an increase in consumption of other varieties of bread such as rye flour bread, black flour, graham bread and wholemeal bread with a higher content of dietary fiber and vitamins, especially those of complex B.

Moreover, depending on the income held per household, the options regarding the consumption of bread change. As can be seen in the analysis above, as incomes grew, consumption of bread and loaf products decreased. The reverse correlation relationship is explained by replacement of bread with other foods, the transition to a more balanced diet, in which bread is consumed in a well-defined quantity.

6. References

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