SHARE OF FOOD EXPENDITURE IN ROMANIA COMPARED TO OTHER EU COUNTRIES AND THE ESTIMATES OF ITS EVOLUTION UNTIL YEAR 2035

UDEO TROŠKOVA HRANE U RUMUNIJI U ODNOSU NA DRUGE ZEMLJE EU I PROCENA NJEGOVOG RAZVOJA DO 2035. GODINE

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ABSTRACT

Food consumption is an element that directly reflect the living conditions of the population, so the proportion spent on food consumption of the total expenses of a person can be an indicator of standard of living in that country.

The present work performed a comparative study between food spending as a share in Romania and several EU countries. Also, it is performed an estimate of future development thereof, until the year 2035. Using Pearson correlation between total income as the independent variable and the share of food products expenditures from total consumption expenditure (%) as the dependent variable, results an inverse correlation between the two variables, rising incomes decrease the share of food expenditure. France in 1960 had values close of Bulgaria in 2015, decreasing at present day to 20.4% and Germany in 1950 was situated close to the value of today's Romania (44%), in 2015 decreasing to 13.6%.

Considering the current trend of revenue growth, we estimate a decrease in the share of expenses for food around 39% by the year 2035. This decrease is not enough, so we made several scenarios for revenue growth, the 7- 8% bringing with them a decrease in the share spent on food to values of 30-33%.

Key words: Food consumption, food expenditure, estimates of food expenditure.

REZIME

Potrošnja hrane je element koji direktno odražava životne uslove stanovništva, tako da udeo potrošnje hrane u ukupnim troškovima osobe može biti pokazatelj životnog standarda u toj zemlji.

U ovom radu je obavljena komparativna studija udela potrošnje hrane u Rumuniji i nekoliko zemalja EU. Takođe, obavljena je procena njegovog budućeg trenda do 2035. godine. Koristeći Pearsonovu korelaciju između ukupnog prihoda kao nezavisne promenljive i udela troškova prehrambenih proizvoda od ukupne potrošnje (%) kao zavisne promenljive, rezultira inverznom korelacijom između ove dve promenljive. Povećanje prihoda smanjuje udeo potrošnje hrane. Francuska je 1960. godine imala ovaj udeo slično kao Bugarska u 2015, s obzirom da je u ovom trenutku smanjena na 20,4%, a Njemačka 1950. bila je blizu vrednosti današnje Rumunije (44%), u 2015. godini je 13,6%.

S obzirom na trenutni trend rasta prihoda, procenjuje se smanjenje učešća troškova hrane za oko 39% do 2035. godine. Ovo smanjenje nije dovoljno, tako da je napravljeno nekoliko scenarija za rast prihoda, 7-8% koji će doneti smanjenje udela potrošnje na hranu na vrijednosti od 30-33%.

Ključne reči: Potrošnja hrane, troškovi hrane, procena troškova hrane.

INTRODUCTION

Food consumption is an element that reflects the living conditions of the population, so that the proportion spent on food consumption may be an indicator of quality of life in that country. In support of the above, the author Cătălin Avramescu states: "Starting from Engel's Law, we can estimate the degree of development of an economy. Where we see only a small proportion of that income is swallowed up by food costs that mean that the economy is performing and generating significant revenues." (<http://www.bursa.ro>, Avramescu C., 2015). This paper presents results of research conducted in order to find opportunities to near Romania's living standards to that of developed countries of Europe in a time horizon of 20 years (the initial year is 2015), according to a project developed by the Romanian Academy on Security and food safety, with direct reference to spending food consumption. A fair number of authors have dealt with the forecast in agriculture, analyzing the time series of the production and the price (Mutavdžić et al, 2016). This approach, in our view, can be achieved by increasing individual population income, which draws implicitly diminishing share of food consumption expenditures.

MATERIAL AND METHOD

In the nineteenth century, Ernst Engel, found a rule that now bears his name (Engel's law) and showing that when household income increases, the share of food expenditure in these revenue decreases (Rujescu et al, 2016). To carry out research, we analyzed the monthly revenues, total expenditures, consumer spending, consumer spending for food consumption and share of food expenses in total consumption expenditure of the population. The period under consideration varied according to data provided by websites with statistical data, but in all cases was at least 5 years. The data used were taken from international and national statistics, as well as from various national and international publications, on which we made own calculations and interpretations (tables 1, 2, 3 and 4). The available hard data have been verified through the Pearson correlation results corresponding to the law formulated by Engel. Next, using regression functions we simulated different patterns of variation of the above indicators, which were compared with the level achieved or envisaged of same indicators in Germany and France. The methods used in the preparation of the work were: analysis, synthesis, comparison and forecast based on regression functions.

Table 1. Structure of incomes and expenditure in Romania, per capita

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Total Income, €	69,5	73,2	75,6	90,8	113,9	134,3	173,1	198,6	188,2	188,9	198,1	193,3	202,7	211,0	227,4
Total consumption expenditure, €	50	53	54	63	81	93	113	127	119	122	126	126	132	138	144
Total food expenditures, €	28,0	28,0	28,1	31,2	38,3	42,3	51,0	56,3	52,7	53,8	56,4	56,9	59,5	59,9	60,0
Share of food expenditure from consumption expenditures %	55,8	53,2	52,1	49,6	47,2	45,4	45,0	44,3	44,2	44,1	44,9	45,1	45,0	43,4	41,6

Source: www.insse.ro

Table 2. Structure of food consumption expenditure of households in Bulgaria, %

	2010	2011	2012	2013	2014	2015
Total foods and alcoholic, non-alcoholic beverages and tobacco	40,4	39,6	36,6	36,1	35,5	34,9

Source: <http://www.nsi.bg/en/content/5703/annual-data>

Table 3. Share of food consumption expenditures for household in France, %

	1960	1965	1970	1975	1980	1985	1990	1995	2000	2005	2010	2014
Share of food consumption expenditures for household, France, %	34,6	31,3	27,6	25,5	23,4	22,7	21,7	21,1	20,7	20	19,8	20,4

Source: <https://www.statista.com/statistics/526488/share-food-consumption-disposable-income-france/>

Table 4. Share of food consumption expenditures for household in Germany, %

	1950	1960	1970	1980	1990	2000	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Share of food consumption expenditures for household, Germany, %	44	38	25	20	17,6	14,6	14,3	14,1	14,1	14	13,9	13,5	13,3	13,3	13,4	13,5	13,6

Source: <https://de.statista.com/statistik/daten/studie/75719/umfrage/ausgaben-fuer-nahrungsmittel-in-deutschland-seit-1900/>

RESULTS AND DISCUSSION

According to Engel's law, to have lower food costs, we need more revenue. A link between the two was determined using Pearson correlation, which shows the relationship link, strictly linear, between two variables and the strength of the association between them (Rujescu et al, 2016). Specifically, we examined the correlation between the indicator total income as the independent variable and the indicator expenditure ratio of food in total consumption expenditure as the dependent variable.

From calculations resulted a correlation coefficient of -0.929 (Table 5), which shows that there is a very strong inverse correlation between the two variables, revenue growth lowers the share of food expenditure. Next we searched the most appropriate function to express that correlation. We have tested several functions, logarithmic, exponential and power and because the latter has the highest R^2 coefficient (0.92), was used further to achieve the forecasts until 2035 (table 6).

To achieve future determinations and comparisons, we have taken from existing statistical data the share of food consumption for Romania, Bulgaria, France and Germany. Accordingly, Romania and Bulgaria had similar values and developments, as well as France and Germany, but compared to the first half of the values (figure 1). Next, we determined the potential income growth function in Romania to make further correlation with the share of food expenditures.

Table 5. Pearson correlation table for the two variables

Correlations			
		VAR00001	VAR00002
VAR00001	Pearson Correlation	1	-.929**
	Sig. (2-tailed)		,000
	N	15	15
VAR00002	Pearson Correlation	-.929**	1
	Sig. (2-tailed)	,000	
	N	15	15
** . Correlation is significant at the 0.01 level (2-tailed).			
VAR00001 - Incomes RO, euro			
VAR00002 - Share of food expenditure from consumption expenditures RO, %			

Table 6. The equation calculated for the two variables

Model Summary and Parameter Estimates							
Dependent Variable: VAR00002							
Equation	Model Summary						Parameter Estimates
	R Square	F	df1	df2	Sig.	Constant	b1
Logarithmic	,913	137,198	1	13	,000	91,430	-8,992
Power	,920	149,852	1	13	,000	117,384	-,186
Exponential	,876	91,523	1	13	,000	57,785	-,001
The independent variable is VAR00001.

Fig. 1. The evolution of share of food consumption in Romania, Bulgaria, France and Germany, 2010-2015, %

Fig. 2. The power function, calculated on historical data

We also used a power function, calculated on historical data, with forecast for 20 years, the resulting function having a R^2 coefficient of 0.9014, large enough to be considered (figure 2). From the relationship determined above, we calculate the estimation of income per person by year 2035 and the share of food expenditures. It appears that, the revenue growth in line with the current trend, will lead to a value of food expenditures share of 39.5 %, i.e. a decrease of 3.3 percentage points compared to reference year 2015.

This decrease is quite small, so we created three scenarios for income growth, with average annual growth rates of 3, 5 and 7% more than the current trend. For these three scenarios resulted decreases in expenditure ratios to values of 38.3, 35.7 and 33.3, i.e. differences of 4.5, 7.1 and 9.5 percentage points (figure 3). On the ordinate axes of the two scenarios were represented the income growth in the euro, at the left and versions of diminishing food consumption expenditure weights in %, on the right. In all three scenarios, since 2016 was applied the power function with the coefficients determined above (Table 6), values up there being the historical data.

CONCLUSION

The share of food in total consumer expenditure household consumption expenditure represents the effort made by the population to purchase food and by default, the standard of living of its. To minimize these differences to other developed European countries a solution is the introduction of measures concerning the increase of monthly income per person. This approach, particularly sensitive requires a special ability to avoid skidding that can occur and affect the macroeconomic stability of the country.

On the scenarios presented, it is clear that the first is a variant more pessimistic which does not allow an appropriate decrease of indicator target, an increase in revenues, according to the third scenario (up 7 %), or if possible even more, even if it is less probable, being a variant desirable and would allow a decrease nearly 30 % in the share of food consumption expenditure.

Regression functions used for anticipating the possibilities of reaching targets in correlation with other economic indicators are

Fig. 3. The 3 scenarios for the share of food expenditures (rise of the incomes with 3, 5 and 7%)

useful in predicting trends but do not provide certainty of achieving forecasted indicators.

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