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TRENDS IN THE CHANGES OF CONSUMER NUTRITIONAL NEEDS IN POLAND IN THE YEARS 2003–2015

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ABSTRACT

The article presents main trends in the changes of nutritional needs in Poland over the past dozen years. Main goal of the article is to determine the direction and scope of the changes in consumption patterns of Poles in progress in the first and second decade of the 21st century. Starting point of the analysis consists in presenting the methods for studying the pace of development of food consumption and the changes of its structure. Next, the prioritization of nutritional needs was presented basing on the analysis and assessment of average income elasticity factors for consumption for the years 2003–2015. The conducted analysis of the shaping of nutritional needs of Polish households reflects the growing level of satisfaction of the needs as well as quality changes, together with substitution processes within the analysed food groups.

Key words: nutritional needs, hierarchy of nutritional needs, income elasticity factors for consumption

INTRODUCTION

Within the first and the second decade of the 21st century, the level of satisfaction of nutritional needs in Poland is growing. At the same time, within the analysed period important diversification of household consumption patterns is still visible. The stratification of food consumption patterns in the presented households is not as important as in the 1990s, but the process of consumption models approaching one another within the analysed household range is very slow. Changes in the level and structure of consumption are connected with numerous causative factors, both of economic as well as social origin.

Main goal of the presented article is to determine the direction and scope of the changes in consumption patterns of the Poles in the first and second decade of the 21st century.

RESEARCH METHODOLOGY AND SOURCES OF INFORMATION

As far as the tools for measuring the pace of development of food consumption and the changes of its structure are concerned, econometric analysis methods prevail. They are of quantitative character and they make it possible to conduct analyses on a wide spectrum basing on assessment indicators. The indicators consist of parameters estimated basing on different demand models as well as income elasticity factors determining the force of reaction of demand to the change in consumers' income level. The econometric model the most frequently used for estimating the parameters of food consumption function is the log-hyperbolic model in which the estimated A parameter sets the asymptote, constituting in economic interpretation the level of consumption saturation provided that the income is grow-

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ing without any limits. The works by Zielińska [1978] have pioneering significance in this regard, where basing on empirical analysis of the workers' budgets saturation level was determined for 10 nutrition groups as well as comparative analysis was performed for the dynamics of changes in the years 1966–1976. The presented methodology constituted the basis for further studies created basing on the data from household budgets [Szwacka-Salmonowicz and Zielińska 1996, Szwacka-Salmonowicz 2003, Kwasek 2008, 2012]. The evaluated elasticity factors constituted factual basis for performing quality and quantity assessment of consumption structure expressed in a qualitative and quantitative way as well as for the assessment of the pace of the consumption of different nutrient groups approaching the saturation level. What is more, they were used for determining the hierarchy of nutritional needs in different household types in Poland.

In the present study the level of satisfaction of nutritional needs have been determined basing on the results of food consumption income elasticity in the household perspective. The source of information for conducting this research was the data from household budgets by Central Statistical Office (GUS). The analysis included the years 2003–2015, which made it possible to capture the dynamics of changes in the structure of nutritional needs of Polish households. Comparative analysis of nutritional needs in the year 2015 was performed basing on the modifications shaped in the year 2003.

As far as the method of presenting research results is concerned, it follows the pattern ensuring the comparability of data. All materials were arranged according to the criterion of the value of income elasticity factors for food consumption. Presented factors constitute average values, obtained in the profile of quintile groups in the studied households. At present, Central Statistical Office (GUS) makes available the information on the diversity of income, expenses and consumption according to quintile groups exclusively for the total of households in Poland, employees and pensioners, while for the remaining social groups, i.e. farmers, the self-employed or people living on unearned income, this data is not provided. For this reason, presented research results, starting from the year 2003, are of narrowed character due to limited accessibility of data. What is more, when it comes to the subject-related scope of the analysis, the present study concentrates on product categories without taking into account subsequent items included in them. Nutritional products, exclusive of stimulants, were the only categories taken into account, which constituted the subject of analyses in the previous years. Data concerning the income, expenses and consumption is presented according to its division into five quintile groups with demographical and social characteristics of the people forming a given household as well as the level of monthly income and expenses taken into account. Such division makes it possible to compare the distribution of income in the profile of the wealth level (starting from the poorest 20% – first quintile group, and finishing with 20% of the wealthiest households) taking into account two already mentioned household types, i.e. employees and pensioners.

Prioritization of nutritional needs was performed basing on the analysis and assessment of average income elasticity factors for consumption in the profile of the following groups: general household wealth, employees as well as pensioners. Starting point consisted in dividing the expenses for nutritional products into three groups according to the assessment criterion of income elasticity factors adopted in previous studies. The first group of expenses, including the values of elasticity factors 1.0 and above 1.0 corresponds to satisfying the needs for luxury goods. The next product group includes products with average level of income elasticity factors for expenses below 1.0 to 0.5. They were called basic products. The third group, including products satisfying lower-order needs, included the products characterized by relatively lowest level of income elasticity factors for consumption, i.e. below 0.5.

According to the performed analysis, among the estimated income elasticity factors for consumption, high and very high ones, i.e. those at the level of 1 and above, are absent. It probably results from accepting for analysis a more restricted product portfolio and in majority in the perspective of a category and not subsequent products, as it was the case in the years 1996–2001. What is more, within the years 2000s, the trend consisting in the reduction of average expense elasticity factors has been observed, which opts for the growing level of satisfying nutritional needs.

STUDY RESULTS

In the present study for estimating the parameters of food consumption the log-hyperbolic function model has been applied. The level of satisfaction of nutritional needs have been determined basing on the results of food consumption income elasticity in the general household wealth, employees and pensioners. Prioritization of nutritional needs was performed basing on the analysis and assessment of average income elasticity factors for consumption in the types of households mentioned above. The performed analysis concerning the shaping of nutritional needs of Polish households makes it possible to select three basic change directions. This concerns the level of satisfying the needs, quality changes as well as substitution processes within the analysed groups of nutritional products.

By assessing the level of satisfaction for nutritional needs in the year 2015 in comparison with the year 2003, visible decrease in income elasticity factors for food consumption should be noticed, while the essence of prioritization remained unchanged – Tables 1, 2, 3. In the years 2003–2015, the prioritization concerned only basic and absolutely basic products as the transition to the second group took place for those products which up to that point represented the luxury group and still in the 1990s were characterized by high, i.e. exceeding 1.0, level of income elasticity factors for expenses and consumption [cf. Szwacka-Salmonowicz 2003].

It has been important from the point of view of the conducted deliberations to refer to empirical verification of Engel's law. Basing on Engel's factors, constituting the relation of expenses on food to the total of expenses, the society's standard of living is assessed. The relatively lower the mentioned factor, the higher the standard of living of the studied social group. High share of expenses on food in the total of expenses, in turn, points out to unfavourable economic situation of a given social group. Studies verifying Engel's law constitute the subject of interest of numerous scientists and they have been reflected in many different Polish and foreign studies [Zielińska 1978, Deaton 1998, Szwacka-Salmono-

Table 1. Prioritization of food consumption according to high elasticity factors in the year 2003

Specification	Values of factors	
	from	to
Group II – elasticity factors from 0.5 to 1.0		
Juices total	0.84	0.97
Yoghurts and milk drinks	0.55	0.67
Pastries	0.44	0.64
Fish	0.39	0.56
Sweets	0.43	0.51
Fruit total	0.38	0.54
Cheese total	0.40	0.44
Group III – elasticity factors below 0.5		
Animal fats	0.23	0.34
Meat total	0.15	0.26
Oils and other plant fats	0,05	0.22
Vegetables total	0.04	0.19
Milk	–0.01	0.14
Bread and cereal products	–0.02	0.09

Source: Own study.

wicz 2003, Janoś-Kresło and Mróz 2006, Kwasek 2015, Szwacka-Mokrzycka 2016, 2017].

While performing the assessment concerning the level of satisfaction of nutritional needs in the first and second decade of the 21st century it should be stated that the decrease in consumption elasticity factors took place in each of the analysed groups, while the scope of this decrease is diversified. Relatively most important decrease of factors in the analysed period took place in the expense group corresponding to satisfying lower-order needs [Szwacka-Mokrzycka 2018]. The same change direction could be noticed for income elasticity factors for food consumption for product groups. The noticed regularity, expressed in relative decrease in the level of income elasticity factors for nutritional products, constitutes the expression of changes that nutritional needs have undergone over the last dozen years. What is more, it proves the growing level of satisfaction of nutritional needs starting from the 1990s. What should also be pointed out it is the lasting diversification of household behaviours. These differences include on one hand the households of employees and on the other, of pensioners. In the first household group, relatively low elasticity factors were observed in the years 2003–2015, while in the second group, relatively high income elasticity factors for expenses and consumption were noticed. The diversification of food consumption patterns in presented household is no longer as important as in the 1990s, but it would be difficult to support the thesis on consumption patterns of the households of employees and pensioners getting gradually closer to one another.

The second trend in the analysed period points out to quality changes in food consumption. They have been estimated basing on the elasticity of quality defining the differences between income elasticity factors for expenses and consumption in subsequent product groups. The largest discrepancies were observed in relation to absolutely basic products. For some products in the third group, high differences between income elasticity factors for expenses and consumption were observed [Szwacka-Mokrzycka 2018]. These differences decrease over the years, but quality elasticity for some products still remains at a relatively high level.

Table 2. Prioritization of food consumption according to high elasticity factors in the year 2009

Specification	Values of factors	
	from	to
Group II – elasticity factors from 0.5 to 1.0		
Juices total	0.56	0.84
Yoghurts and milk drinks	0.50	0.63
Pastries	0.43	0.57
Fruit total	0.38	0.59
Fish total	0.39	0.57
Sweets	0.40	0.52
Cheese total	0.40	0.47
Group III – elasticity factors below 0.5		
Animal fats	0.31	0.41
Meat total	0.15	0.26
Oils and other plant fats	0.06	0.21
Vegetables total	0.05	0.21
Milk	–0.01	0.07
Bread and cereal products	0.00	0.07

Source: Own study.

By saying this I refer to such categories as: oils and other plant fats, cereal products, milk, meat, sweets. For these categories, the increase in quality elasticity factors was observed in the second decade of the 21st century. This proves the dynamization of quality changes over the last years in this product group, where substantial changes concerning the increasing of quality parameters are observed. When it comes to products forming group II, as it results from the performed analysis, quality has a fixed position, and for this reason the scale of changes is much lower than in the group of products satisfying lower-order needs. The analysis of quality changes according to the profile of households shows that different meaning is attributed to the quality of nutritional products consumed in the households of employees than of pensioners. In the first group visible quality changes in food consumption have appeared, which is reflected in high discrepancies between income elasticity for expenses and the consumption of nutritional products. In the households of pensioners, in turn, the quality of nutritional products purchased is of much lower importance.

It is confirmed by significantly lower quality elasticity factors. Quality changes result in particular from the transformations in consumers' consciousness. They are expressed in the change of eating habits, and as a result in the transformation of the preference scheme. The changes in consumption model are also promoted by consumer education stimulating the shaping of models based on the rationalization of food consumption. The results obtained for the years 2003––2015 repeat the trend emerged in the 1990s.

Moreover, the analysis of the changes in nutritional needs demonstrates that quality changes result to a large extent from the intensification of substitution processes between nutritional products groups – Tables 1, 2 and 3. It is reflected in relative decrease in income elasticity factors for expenses and consumption. Relative decrease of income elasticity factors for food results on one hand from the ongoing substitution processes between food and other consumer goods and on the other – from those within nutritional products groups. This distribution manifests itself in the shift of many nutritional products from group II (basic products) to group

Table 3. Prioritization of food consumption according to high elasticity factors in the year 2015

Specification	Values of factors	
	from	to
Group II – elasticity factors from 0.5 to 1.0		
Juices total	0.53	0.84
Fruit total	0.38	0.68
Pastries	0.43	0.57
Fish total	0.39	0.61
Yoghurts and milk drinks	0.23	0.59
Cheese total	0.43	0.47
Sweets	0.30	0.45
Group III – elasticity factors below 0.5		
Animal fats	0.38	0.56
Meat total	0.13	0.24
Vegetables total	0.12	0.24
Oils and other vegetable fats	0.07	0.20
Milk	0.01	0.14
Bread and cereal products	0.04	0.10

Source: Own study.

III (lower-order needs). What is more, the regrouping of some categories took place within the groups. It refers in particular to such products as animal and plant fats, milk, bread and cereal products, for which over the years 2000s, the substitution effect became clearly marked. The conducted analysis of changes in nutritional needs in Polish households shows the continuation of the trend which emerged within the period of transformation of Polish economy.

SUMMARY

Econometric studies conducted in the years 2003–2015 clearly show that the level of satisfaction of nutritional needs has been increasing starting from the years 1990s. Persistent diversification of household behaviours should also be emphasized. These differences concern on one hand employees' households and on the other, the households of pensioners. Stratification of food consumption models in the presented households is not as important as in the 1990s, but it would be difficult to support the thesis on consumption models in employees' and pensioners' households gradually approaching one another. Quality changes in consumption result in particular from transitions in consumer's consciousness. They are expressed in the changes of consumption habits, and as a result in the transformation of the preference scheme [Dąbrowska et al. 2015].

Changes in the consumption model are also promoted by consumer education stimulating the shaping of models based on food consumption rationalization. What is more, the analysis of changes in nutritional needs demonstrates that quality changes result to a large extent from the intensification of substitution processes between nutritional products groups. The conducted analysis of changes in nutritional needs of Polish households in the years 2003–2015 demonstrates the continuation of the trend emerged during the period of transformation of Polish economy.

REFERENCES

Dąbrowska, A., Bylok, F., Janoś-Kresło, M., Kiełczewski, D., Ozimek, I. (2015). Kompetencje konsumentów – innowacyjne zachowania –zrównoważona konsumpcja [Consumers' competencies – innovative behaviours – sustainable consumption]. PWE, Warszawa.

Deaton, A. (1998). The analysis of household survey: a microeconometric approach to development policy. Johns Hopkins University Press.

GUS (2018). Niepublikowane dane Departamentu Badań Społecznych i Warunków Życia za lata 2003–2015 [Unpublished data of the Department of Social Studies and Living Conditions for the years 2003–2015]. Warszawa [typescript].

Janoś-Kresło, M., Mróz, B. (2006). Konsument i konsumpcja w gospodarce rynkowej [Consumer and consumption in market economy]. Oficyna Wydawnicza SGH, Warszawa.

Kwasek, M., (2008). Elastyczność dochodowa żywności w Polsce [Income elasticity of food in Poland]. Wiadomości Statystyczne, Warszawa.

Kwasek, M. (2012). Wzorce konsumpcji żywności w Polsce [Consumption models in Poland]. Studia i Monografie IERiGŻ, 153, Warszawa.

Kwasek, M. (Ed.) (2015). Z badań nad rolnictwem społecznie zrównoważonym (33). Analiza bezpieczeństwa żywnościowego Polski [From the studies on socially sustainable agriculture (33). The analysis of nutritional safety of Poland]. Monografie Programu Wieloletniego, 19, Warszawa.

Szwacka-Salmonowicz, J., Zielińska, Z. (1996). Hierarchia potrzeb żywnościowych w 1993 roku na tle 1986 roku. IRWiR PAN, Warszawa.

Szwacka-Mokrzycka, J. (2016). Stimulators and barriers of demand for food (Polish case). Acta Scientiarum Polonorum, Oeconomia, 15 (3), 123–133.

Szwacka-Mokrzycka J. (2017). Changes in food consumption in Poland and other EU countries. Acta Scientiarum Polonorum, Oeconomia, 16 (4), 169–178.

Szwacka-Mokrzycka, J. (2018). Niepublikowane wyniki badań ekonometrycznych. (Unpublished results of econometric studies). Warszawa [typescript].

Szwacka-Salmonowicz, J. (2003). Zmiany zachowań nabywców jako determinanta kształtowania strategii segmentacyjnych przedsiębiorstw przemysłu spożywczego w Polsce [Changes in buyers' behaviours as a determinant of shaping segmentation strategies for food industry enterprises in Poland]. Wydawnictwo SGGW, Warszawa.

Zielińska, Z. (1978). Współczynniki elastyczności dochodowej jako mierniki przemian w strukturze spożycia żywności w Polsce [Income elasticity factors as indicators of the changes in food consumption in Poland]. Handel Wewnętrzny, 5.

Szwacka-Mokrzycka J. (2018). Trends in the changes of consumer nutritional needs in Poland in the years 2003–2015. Acta Sci. Pol. Oeconomia 17 (2) 2018, 117–123, DOI: 10.22630/ASPE.2018.17.2.27

TRENDY W ZMIANACH POTRZEB ŻYWNOŚCIOWYCH KONSUMENTÓW W POLSCE W LATACH 2003–2015

STRESZCZENIE

W artykule przedstawiono główne tendencje zmian w potrzebach żywnościowych konsumentów w Polsce na przestrzeni ostatnich kilkunastu lat. Celem przewodnim artykułu jest ustalenie kierunku i skali dokonujących się zmian we wzorcach konsumpcyjnych Polaków w pierwszej i drugiej dekadzie XXI wieku. Punktem wyjścia rozważań jest przedstawienie metod badań tempa rozwoju konsumpcji żywności i przemian w jej strukturze. Następnie zaprezentowano hierarchizację potrzeb żywnościowych na podstawie analizy i oceny średnich współczynników elastyczności dochodowej spożycia dla lat 2003–2015. Przeprowadzona analiza kształtowania się potrzeb żywnościowych polskich gospodarstw domowych wskazuje na wzrost poziomu zaspokojenia potrzeb, przemiany jakościowe oraz procesy substytucyjne w obrębie analizowanych grup żywności.

Słowa kluczowe: potrzeby żywnościowe, hierarchia potrzeb żywnościowych, współczynniki elastyczności dochodowej spożycia