Income Elasticity of Demand for Food in the Households of Retired and Pensioners in Poland

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Abstract - **Elasticity of demand is one of most often used indicators in socio-economic analysis. An analysis of income elasticity of demand for food in the households of retired and pensioners in Poland in the light of demographics forecasts is of particular importance. The research indicated that the demand of food products in the households of retired and pensioners is less sensitive to changes in income than demand in other types of households. The strongest reaction of demand to changes in incomes the author observed in the households with low incomes while the weakest in the richest ones. Bread and cereal products as well as dairy products were the least sensitive to changing incomes. The change in demand versus changes in incomes in pensioners and retired households is the strongest in the case of fresh fruits and fish.**

INTRODUCTION

There is plenty of research on the impact of changes in incomes on the demand but they are mainly focused on other types of households than those of retired and pensioners.

Since the proportion of income spent on food in these households is the highest of all households in Poland the research interest here is quite vital. Moreover demographic forecasts indicate the share of people retired and on a pension in Poland will be constantly increasing. According to EUROSTAT the proportion of people over 65 years old in 2060 would increase from 13.5% (2010) to 34.6% i.e. by 21.1 percentage points (European Commission, 2012). The coefficient of income elasticity of demand is a measures of economic availability of food in the context of food security (Thomson A., Metz M. 1998). It allows for defining a saturation level and hierarchy of nutrition needs in households (Szwacka-Salmonowicz, 2003).

Considerable changes of demographic structure in Poland will be reflected in a change of food demand and its structure. The research will define the scope and magnitude of reaction as regards demand for food to changes in incomes within concerned groups of households which finally may indicated further development of overall demand for food.

DATA AND METHODOLOGY

Income elasticity of demand is expressed by the below formula [Varian H. R.,2002]:

$$E_i = \frac{\%\Delta Q}{\%\Delta I}$$

Where:
% Q - % change in demand
% I - % change in income.
Coefficients of income elasticity have often been estimated on the basis of Working function which is considered best suitable for the description of changes in demand for food resulting from changes in households' incomes [Wysocki, Kurzawa, 2009]:

$$q = e^{a+\frac{b}{i}} + \varepsilon$$

where:
e- Eulera number,
a, b – function parameters
q – consumption one food category in natural units
i- monthly average disposable income per capita in the household of retired and pensioners.
ε- stochastic factor
On the basis of estimated parameters elasticity coefficients were calculated according to the bellows formula:

$$E_I = \frac{-b}{i}$$

Income elasticity of demand is investigated with the assumption that other factors in particular prices are constant. Data concerning income groups are collected in a same period make this condition fulfilled.

The data used for the analysis are derived from the research on household budgets conducted by CSO in 2012. This research is based upon a representative sample method which allows for extrapolation of the results for the whole country. In 2012 the sample concerned 37427 households in Poland including 13141 households of retired and pensioners. The data on incomes and consumption were subdivided into quintile groups.

Calculations of income elasticity coefficients was conducted with STATISTICA software.
The degree empirical data coherence with estimated function was defined by R2 coefficient which for analysed models exceeded 0,85 i.e. the models were well fitted to empirical data.

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RESULTS

According to conducted research the consumption of analysed group of products increased along with the increase in incomes (coefficients above zero). The author calculated also coefficients of income elasticity of demand for food and non-alcohol beverages (entire group) which amounted to 0.21. Therefore if average disposable income rises by 1% the expenditure on food grows by 0.21%. The value of the income elasticity of demand coefficients declines as the income rises in the case of all food groups specified in the research which is in line with the Engel's Law. The level of change in particular groups of products in reaction to changes in incomes presents Figure 1, which also shows the hierarchy of food needs in the households of retired and pensioners. The demand for bread, cereal products and dairy products (constituting the base of diets) was least sensitive to the changes in incomes. The most sensitive in this respect were fresh fruits and fish.

DISCUSSION

The demand for food in the households of retired and pensioners is less sensitive to the changes in incomes than the average for all households. According to the research conducted by Kwasek the coefficient of income elasticity of demand for food and non-alcohol beverages in Polish households totalled 0.29 with the lowest values for bread, cereal products and dairy products – similarly to the results of the author's research for the households of retired and pensioners (Kwasek et.al., 2012). The demand for sugar in these households is less sensitive to changing incomes than in average for all households. A reverse situation concerns fresh fruits and fish (Stanislawksa and Wysocki, 2009).

The research on income elasticity of demand for food indicated that the coefficients decline as income rises which in line with the results of this study (Kurmar et al., 2008).

Forecast unfavourable changes in Polish demography may cause a decline in the incomes of the households of pensioners and retired.

According to EUROSTAT forecast the ratio of average pension to average salary in Poland would decline from 47% (2010) to 22% in 2060 (Aging Report, 2012). Pronounced growing share of retired and pensioners in population of confronted with relevant values of income elasticity coefficients give a robust base to draw a conclusion that major changes in demand for food would concern the market of fruits and fish.

However this conclusion needs to be supported with additional research on further changes in incomes of Polish households as well as with more detailed analysis of income elasticity of demand for food.
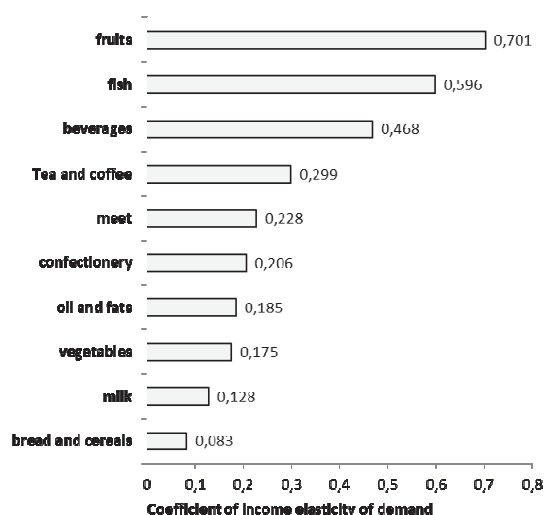

Figure 1. Coefficients of Income elasticity of demand for food in the hou8seholds of retired and pensioners in Poland (2012).

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