ORIGINAL PAPER

THE DETERMINANTS OF HOUSEHOLD SAVINGS IN POLAND

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ABSTRACT

The relevant literature provides an array of factors determining the propensity of households to save. There is no unanimity among researchers as to the direction of statistical relationships among some variables such as, e.g. household income, the place of residence or concerns regarding the worsening of financial circumstances, and a household's propensity to save. The aim of this article is to verify the statistical relationships between the amount of savings of Polish households and their attributes, such as: income, biological type of the family, and the size of the place of residence. The author of the article analyses the responses provided by Polish households with regard to the size of their savings measured as a multiple of their income. The data under analysis were collected during a panel study *Diagnoza społeczna 2015* (ang. *Social Diagnosis 2015*). Higher earnings were accompanied by higher levels of savings. It was more common for households from bigger cities to have higher earnings. Taking into consideration the biological type of the family, childless marriages and people, who lived alone, declared having the highest savings.

Key words: savings, household income, size of the place of residence

INTRODUCTION

Cultural factors can largely influence the propensity to save [Carroll et al. 1994, 1999]. This causes people from various nations in the same environment to have a different propensity to accumulate savings [Carroll et al. 1994]. Different nations may behave dissimilarly depending on whether there are factors encouraging saving or spending money, e.g. high versus low urbanization of a region [Grigoli et al. 2014]. Therefore, statistical relationships found in one country may not be projected onto another. In the literature, there is no consensus about the direction of the relationship between some demographic variables and the amount of savings held by households. Income is most commonly provided in the relevant literature among the economic variables determining the propensity of households to save [Loayza et al. 2000, Dynan et al. 2004, Devaney et al. 2007, Garcia et al. 2011, Traut-Mattausch and Jonas 2011, Beckmann et al. 2013, Nalın 2013, Kolasa and Liberda 2014, Le Blanc 2015, Kostakis 2015]. The purpose of this article is to verify the statistical relationships between the size of savings and the selected attributes of Polish households. In the course of the study, the following hypotheses were put forward:
- H_1: There is a statistically significant relationship between household income and the size of their savings.
- H_2: There is a statistically significant relationship between the biological type of the family and the size of their savings.
- H_3: There is a statistically significant relationship between the size of the place of residence and the size of savings.

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In order to identify the statistical relationships, the non-parametric chi-square test of independence was used; whereas correlation analysis with the use of the V-Cramer coefficient was adopted to quantify the relations. The author of the article analyses the responses provided by Polish households, which were collected during a panel study *Diagnoza społeczna 2015* (ang. *Social Diagnosis 2015*). The paper starts with a review of the literature elaborating on the factors determining savings in households. Next, the methodology section offers a description of the research sample. Subsequently, the research results are presented. The next part contains conclusions drawn from the analyses that the author has carried out.

LITERATURE REVIEW

The author of the pioneer concept concerning the propensity of households to save was J.M. Keynes. He defined savings as the difference between income and consumption expenditure [Keynes 2003]. According to Keynes, the percentage share of savings in income increases along with the increase in income. A rise in real income does not contribute to a rise in consumption by the same absolute amount. Taking into consideration the ceteris paribus rule, an increase in real income results in an increase in an absolute sum of savings. Whereas a sudden drop in income may cause consumption to exceed income [Keynes 2003]. Another key theory concerning household savings is the relative income hypothesis proposed by J.S. Duesenberry who turned his attention to the phenomenon of competition in a society, which is aimed at reaching a higher standard of living. In contrast to Keynes's hypothesis, Duesenberry claims that the propensity to save is not dependent on the level of absolute household income but on the standard of living in a given environment [Duesenberry 1949]. A slightly different concept was offered by M. Friedman [1957]. He formulated the hypothesis of permanent income assuming that certain part of households' consumption is not dependent on current income but on the income expected to be received in the future. Behaviors related to consumption and saving may also depend on the life cycle [Modigliani and Ando 1957, Ando and Modigliani 1963]. The theory of the life cycle claims that people strive to even out the level of consumption throughout their whole life. Thus people usually save money during the period of being professionally active in order to be able to use savings to compensate for a decrease in income during retirement and maintain the standard of living at a similar level as the one enjoyed during the period of being professionally active [Modigliani and Ando 1957, Ando and Modigliani 1963].

The direction of the relationship between the size of income and savings is dubious. Some researchers have found a one-way relationship between the size of income and the propensity to save [Beckmann et al. 2013, Kostakis 2015]. Whereas Le Blanc et al. [2015] have discovered a reverse relationship between the size of income and the probability of having no savings as well as between the size of income and a higher risk of having unpaid bills. Dynan et al. [2004] have found a strong positive relationship between the savings rate and life income. Simultaneously, they have discovered a weak but still positive relationship between marginal propensity to save and life income. Traut-Mattausch and Jonas [2011] studied the relationships between financial satisfaction, income, and behaviors related to saving. The results show that higher income and financial satisfaction have a positive influence on saving. The statistical relationship between financial satisfaction and behaviors related to saving is stronger in people with lower savings than in those with higher ones [Traut-Mattausch and Jonas 2011]. According to Le Blanc et al. [2015], higher income is connected with a higher probability of taking on new financial liabilities, such as, e.g. loans. According to Loayza et al. [2000], the influence of the level of income on the propensity to save is higher in developing countries than in the developed ones. Whereas, Salotti [2010] claims that an increase in wealth in the developed countries had a negative influence on the propensity to save between 1980 and 2005.

In some countries, there is a tendency among households to reduce the proportion of savings in disposable income [Larionova et al. 2014]. Possession of real estate does not exert influence over the propensity to save. While having durable goods, such as a car, negatively influences the propensity to save [Kulikov and Staehr

2015]. Rószkiewicz [2014], who studied the determinants of saving among Polish households, found that the perception of income and the financial circumstances are the fundamental factors influencing saving and creating financial reserves. Attanasio and Brugiavini [2003] discovered that the rate of saving grows, if people are worried that their standard of living is going to slump during retirement. Mody et al. [2012] concluded that in developed economies, uncertainty regarding income earned from work is significantly correlated with greater households' savings. Whereas according to Fisher and Montalto [2011], uncertainty regarding income and the propensity to save are negativity correlated. Other factors offered as determinants of the propensity to save are: wealth, proximity of financial institutions, and financial stimuli [Chowa et al. 2012]. Economic uncertainty results from the perception of various types of risk. One of the factors exerting influence on the propensity to save is the risk of unemployment [Adema and Pozzi 2015]. Another psychological variable determining the propensity to save, which is often cited in the relevant literature, is the perceived life expectancy [Garcia et al. 2011]. Certain behaviors in childhood, e.g. saving or earning money, positively influence the propensity to save in adulthood [Brown and Taylor 2016].

Other factors that are commonly cited in the relevant literature, which exert influence on household savings, are the type of the family (the civil status of the party saving money); having kids [Glazer 2008, Kostakis 2015]; or family size [Nalın 2013]. Glazer [2008] analyses the possibilities in terms of saving among single people and married ones. He suggests that single people are able to save the amounts they want to save more commonly than married people [Glazer 2008]. Spouses often have different propensities to save. Hence it is more difficult for them to save the amount they want to save than it is for single people. An exception is a situation where a given person finds a partner who has the same propensity to save. Kostakis [2015] draws similar conclusions. According to him, married people save less. Another demographic factor determining the propensity to save is the level of urbanization. However, the direction of this relationship is not clear-cut [Grigoli et al. 2014].

The analysis carried out by Canova et al. [2005] demonstrates that at the very bottom of the hierarchy of motives for saving, there are specific motives, such as: saving for a better home, new car or holidays. At the very top, there are psychological purposes which are highly abstract, such as self-assessment, self-satisfaction. As we move towards the higher positions in the hierarchy of saving goals, particular aims gradually turn into more abstract ones. Whereas analysis of the perception map of saving goals reconstructed by Szopiński shows that Poles consciously or subconsciously define their investment aims bearing in mind the time criterion as well as the character of events that they are financially securing against. In turn, when choosing the form of saving, Poles use the criteria of risk and time for which they need to allocate their funds for [Szopiński 2012]. Another dimension of making a decision with regard to saving goals may be concerned with, e.g. the allocation of funds for savings or health care. Examples of such decisions concerning allocation of resources are available in the relevant literature.

MATERIAL AND METHODS

The empirical material employed for the purposes of the present study was obtained within the framework of a research project *Diagnoza społeczna* (ang. *Social Diagnosis*) carried out in 2015 by the Council of Social Monitoring operating at the University of Finance and Management in Warsaw. It was a panel study which made use of two questionnaires. The first served as a source of information about the composition of households and the living conditions in which they operate; it was completed by an interviewer during an interview with a representative of a household who possessed the largest amount of information on its condition and members. The questionnaire provided the researchers with data on the composition of households and the conditions in which they operate as well as on the socio-economic characteristics of the individual members. Another questionnaire, which was interned to be filled out independently by all the available members of a household under examination, who were at least 16 years old, served to collect information on the quality of life of the particular person. For the purposes of the analyses presented in this article, only responses to selected questions provided

by individuals were used. The data were collected in March and April 2015 for the Council of Social Monitoring by professional interviewers from the Central Statistical Office of Poland (GUS). The number of households that underwent analysis amounted to 26,766 and the number of household members was 84,478. Households were selected on the basis of two-stage stratified sampling. Before sampling, the households were stratified according to voivodeships and next within the voivodeship-based category, they were stratified further according to the class of the place of residence, i.e. a large city (with a population of over 100 thousand residents), small town (with a population of less than 100 thousand residents), and a village. First-stage sampling units in the urban strata in individual voivodeships were statistical regions (encompassing at least 250 apartments) and in the rural strata, these were statistical circuits. In the second stage, two apartments were systematically drawn from a randomly arranged list of apartments, independently from each strata established in the first stage. In order to carry out analysis of the factors determining saving, the following variables were selected: household's monthly net income, biological type of the family, and the size of the place of residence (Table 1). Analysis does not take into account the responses of the respondents who did not provide answers to questions about income, biological type of the family, and the amount of savings. Analysis was conducted on the answers provided by 4,125 respondents.

Table 1. Description of the research sample

Specification	Value (%)
Place of residence	
City with over 500 thousand residents	10.0
City with over 200 thousand residents but no more than 500 thousand	10.1
Town with over 100 thousand residents but no more than 200 thousand	7.9
Town with over 20 thousand residents but no more than 100 thousand	19.5
Town with up to 20 thousand residents	12.4
Village	40.1
Available household income	
up to 2 000 PLN	12.1
2 001–3 000 PLN	18.2
3 001–4 000 PLN	21.1
4 001–5 000 PLN	18.9
above 5 000 PLN	29.8
Biological type of the family	
Childless marriage	26.2
Marriage with 1 child	17.2
Marriage with 2 children	15.2
Marriage with 3+ children	6.0
Single-parent family	9.0
Multifamily	8.1
Single-person, non-family	18.3

Source: Personal calculations based on Council for Social Monitoring [2015].

Over 30% of the respondents declared having savings of up to the monthly income of the household (29.2%); above the monthly income but no more than the total three-month income (27.1%); higher than three-month income – up to half-year income (17.9%), above the half-year income – smaller than one-year income (11.0%), higher than one-year income of a household (3.7%), and three-year income (1.7%). People, who declared having savings higher than three-year income, were included in the group declaring savings higher than one-year income. Information about the amount of savings was not provided by 9.4% of the respondents.

RESULTS

Table 2 presents a juxtaposition of the relationships and the strength of the relationships between the family and financial circumstances of a household and the size of savings that they had in 2015. Hypothesis 1 has been supported. Since $P < \alpha$, there is a statistically

significant relationship between income and the size of savings. The same is the case with hypotheses H_2 and H_3 that have been confirmed as well. In the case of relationships identified with the chi-square test, it has turned out that none of the attributes has a decisive effect without the involvement of the others. In each case under analysis, the V-Cramer coefficient has reached lower limits. None of the attributes was strongly correlated. The size of savings is influenced by a set of attributes. The socio-economic attributes considered separately, assuming that no other socio-economic attributes exist, have a negligible influence over the size of savings.

Table 2. Juxtaposition of the statistical relationships between selected socio-economic variables of households and the size of savings that they had in 2015

Variables	Chi-square test value	Critical level of significance (P)	df	V-Cramer coefficient	Outcome of verification of hypotheses
Income	250.549	0.000	20	0.123	supported
Biological type of the family	72.229	0.000	30	0.059	supported
Size of the place of residence	100.121	0.000	25	0.070	supported

Source: Personal calculations based on Council for Social Monitoring [2015].

Analyzing the statistical relationship discovered between income and savings, it is visible that the highest percentage of people, who declared having savings of up to the monthly income was in the group of people earning up to 2,000 PLN (Table 3). The situation is different in groups declaring higher levels of savings measured as a multiple of monthly income. A one-way relationship between declarations of the size of income and declarations of a higher level of savings measured as a multiple of monthly income is observable. People belonging to the groups declaring the possession of savings equal to a six-month income or more dominate in the group of households with an income exceeding 5,000 PLN monthly.

Table 3. Percentage distribution of the responses regarding the size of savings in each income group

Size of savings	Available household income				
	up to 2 000 PLN	2 001–3 000 PLN	3 001–4 000 PLN	4 001–5 000 PLN	above 5 000 PLN
Up to one-month income	41.8a	31.9b	29.9b	22.8c	20.1c
Above one-month but below three-month income	27.8a	27.4a	28.4a	28.1a	24.5a
Above three-month but below half-year income	12.8a	15.6b	19.3b,c	21.9c	20.2b,c
Above half-year but below one-year income	6.1a	9.0b	7.8a	12.9b,c	17.9c
Above one-year income	1.9a	4.0b	5.2b	5.9b,c	9.4c
It's hard to say	9.6a,b	12.1b	9.4b	8.3a,b	7.9a
Total	100	100	100	100	100

Each letter denotes a subset of the category of income group in which the proportions of the columns are not much different from one another at the level 0.05.

Source: Personal calculations based on Council for Social Monitoring [2015].

Analyzing the relationship between the size of savings and the biological type of the family, one can notice that the biggest differences in the percentage of the respondents are present in the group declaring the possession of savings of up to one-month household income and in the group declaring having savings higher than a yearly household income. In these groups, the proportions of columns are significantly different from each other at the level 0.05 (Table 4). In the remaining groups, the proportions of the respondents are not significantly different from each other. Marriages with three or more children dominated in the group of people who declared the possession of savings of up to one-month income. Whereas the smallest percentage in this group was represented by childless marriages. In the group of people declaring that they had savings higher than yearly income, the dominant portion was comprised of childless marriages and one-person households.

Table 4. Percentage distribution of the responses regarding the size of savings, taking into consideration the biological type of the family in the household

Size of savings	Type of family						
	childless marriage	marriage with 1 child	marriage with 2 children	marriage with 3+ children	single-parent family	multifamily	single--person, non-family
Up to one-month income	25.4a	27.3a,b	28.1a,b,c	38.8c	35.4b,c	33.3a,b,c	29.4a,b,c
Above one-month but below three-month income	27.0a	28.2a	26.2a	26.7a	31.2a	28.8a	25.2a
Above three-month but below half-year income	19.1a	18.1a	16.7a	15.1a	15.0a	19.3a	18.4a
Above half-year but below one-year income	12.1a	10.8a	12.9a	9.5a	7.0a	9.1a	11.3a
Above one-year income	6.9a	5.8a,b	5.3a,b	5.2a,b,c	1.1b,c	1.4b,c	6.4a
It is hard to say	9.4a	9.8a	10.8a	4.7a	10.3a	8.1a	9.3a
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Each letter denotes a subset of the category of income group in which the proportions of the columns are not much different from one another at the level 0.05.

Source: Personal calculations based on Council for Social Monitoring [2015].

Households residing in villages and in small towns with fewer than 20 thousand residents dominate among the households that declare the possession of savings of up to one-month income (Table 5). Households residing in villages dominate among the ones declaring having savings higher than one-month income but smaller than three-month income. Among the households with savings exceeding one-year income, the dominant group was comprised of residents of cities with the population of over 500 thousand.

Table 5. Percentage distribution of the responses regarding the size of savings, taking into consideration the size of the household's place of residence

Size of savings	Type of place of residences					
	city with over 500 thousand residents	city with over 200 thousand residents but no more than 500 thousand	town with over 100 thousand residents but no more than 200 thousand	town with over 20 thousand residents but no more than 100 thousand	town with up to 20 thousand residents	village
Up to one-month income	24.0a	28.3a,b	30.2a,b	26.7a,b	33.0b	32.3b
Above one-month but below three-month income	23.1a	21.8a	28.1a,b	27.9a,b	25.8b	31.0b
Above three-month but below half-year income	20.9a	18.3a	18.4a	18.2a	18.1a	15.7a
Above half-year but below one-year income	13.1a,b	16.4b	11.5a,b,c	11.1a,b,c	8.2a,c	8.4c
Above one-year income	9.0a	6.6a,b	5.4a,b	4.3b	5.2a,b	3.9b
It is hard to say	10.0a,b	8.7a,b	6.4b	11.8a	9.7a,b	8.6b
Total	100.0	100.0	100.0	100.0	100.0	100.0

Each letter denotes a subset of the category of income group in which the proportions of the columns are not much different from one another at the level 0.05.

Source: Personal calculations based on Council for Social Monitoring [2015].

CONCLUSIONS

The obtained results concerning the influence of income on household savings are consistent with the results of other researchers [Dynan et al. 2004, Beckmann et al. 2013, Kostakis 2015]. They do not, however, confirm the results of Le Blanc et al. (2015). Author's analysis confirms that income exerts a positive influence on savings. Whereas analyzing the size of savings from the perspective of the biological type of the family, it turns out that the highest savings (measured as a multiple of income) were declared by childless marriages and single people, which does not confirm the observation of Kostakis [2015], who claims, that married people save less than single ones. The conducted analysis confirms the findings of research that states that the direction of statistical relationship between the size of the place of residence and the size of savings is dependent on time and place [Grigoli et al. 2014]. In the case under examination, the size of the place of residence has a positive influence over the size of savings. The presented findings provide information for people responsible for banks' deposit policies. The conducted analyses demonstrate that residents of smaller towns declare the possession of lower savings. Additional analyses of data obtained in the study *Social Diagnosis 2015*, which were performed by the author of this article, show that in smaller towns it is less common for people to have current saving and checking accounts or saving accounts in banks. A deposit is the most frequently selected method of allocating savings of Polish households [Council for Social Monitoring 2015].

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CZYNNIKI DETERMINUJĄCE OSZCZĘDNOŚCI POLSKICH GOSPODARSTW DOMOWYCH

STRESZCZENIE

W literaturze podawane są różne czynniki determinujące skłonność gospodarstw domowych do oszczędności. Pośród badaczy nie ma zgodności dotyczącej kierunku wpływu zależności między czynnikami takimi jak np. dochód, miejsce zamieszkania lub obawy dotyczące pogorszenia sytuacji finansowej a skłonnością gospodarstwa domowego do konsumpcji. Celem artykułu jest weryfikacja zależności między wielkością oszczędności polskich gospodarstw domowych a zmiennymi: dochód, typ biologiczny rodziny oraz wielkość miejsca zamieszkania. Autor artykułu poddaje analizie odpowiedzi polskich gospodarstw domowych dotyczące wielkości ich oszczędności mierzonych jako wielokrotność ich dochodu. Dane do analizy były zebrane w ramach badania panelowego *Diagnoza społeczna 2015*. Wyższym zarobkom towarzyszyły wyższe poziomy oszczędności. Gospodarstwa z większych miast deklarowały większe oszczędności. Biorąc pod uwagę typ biologiczny rodziny, najwyższe zarobki deklarowały bezdzietne małżeństwa oraz osoby żyjące samotnie.

Słowa kluczowe: oszczędności, dochód gospodarstwa domowego, wielkość miejsca zamieszkania