

## **Indebtedness of low-income households in Poland. A comparative analysis for the period 2000-2010**

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### **Abstract**

Recent years have witnessed an unprecedented increase of household indebtedness in Poland. However, the process has not affected all groups of households equally. The group which is especially prone to going into debt are people who are forced by their low income to finance consumption with loans.

The aim of this article is to examine the degree to which low-income consumers use loans. An attempt was made to identify factors which affect the probability of indebtedness. In addition, the loan repayment burden on low-income households was analysed. The author makes use of unidentifiable data collected during a study of household budgets in 2000, 2005 and 2010. In order to verify research problems, statistical poverty identification methods and regression modelling methods, with account taken of models for binomial quality variables, were applied.

*Keywords:* credit, low-income households, household budget survey

*JEL Classification:* D12, R20, C25

### **1. Introduction**

An analysis of the first decade of the 21<sup>st</sup> century reveals two major processes related to households. These processes are connected with the accession of Poland to the European Union and accelerated implementation of consumption plans, in particular with reference to durable and luxury goods. On the one hand, affluence of consumers has been growing systematically, which is reflected in their real disposable income; on the other hand, the disparity between different groups of households has been growing concurrently (Wałęga, 2013). Another noticeable trend is a considerable increase in household indebtedness (Wałęga, 2013). However, these processes have not affected all groups of households equally.

The aim of this article is to examine whether low-income consumers use loans. An attempt will be made to address the question of whether the increase of household indebtedness results from poverty and the necessity to finance basic needs; or, rather, the dynamics of the retail lending market result from a change in households' perception of indebtedness and their desire to use loans for long-term financing of consumption.

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## 2. Role of income in consumer lending

According to the permanent income hypothesis (PIH), households use loans to close the gap between their permanent income and their temporary income. Empirical studies (Park and Rodrigues, 2000; Cox and Jappelli, 1993) confirm that the bigger the gap, the bigger households' borrowings. In addition, if households' income drops, at first they are trying to keep their consumption level unchanged<sup>3</sup> (Duesenberry, 1949). Such attempts are made at the expense of smaller savings or, more frequently, using loans to finance the excess of consumption over temporary income. There is one more group of households which makes use of external financing, namely the poor who live on credit to secure (maintain) an appropriate standard of living (Reifner et al., 2003).

In turn, if temporary income increases, on the assumption of steady permanent income, households are less inclined to go into debt. Research into the relationship between households' permanent income and assets and their demand for loans reveals a positive correlation between these two categories. This relationship may be explained – firstly – by households' desire to take a higher consumption path, and – secondly – by the availability of mortgage loans (Grant, 2007). It is generally believed that households with higher permanent income are more certain of employment stability, so they can keep their savings at a higher level and, at the same time, are more inclined to go into debt (Duca and Rosenthal, 1993). However, some researchers point out that households with considerable assets may satisfy their consumption needs without taking a loan (Vandone, 2009).

## 3. Data and research methods

The analysis of indebtedness of low-income households is based on individual data derived from a household budget survey conducted by the Central Statistical Office in Poland in 2000, 2005 and 2010.

The study focuses on low-income households and their share in the lending market. It is assumed that low-income households are those households which are considered to be poor. In order to determine which households are considered to be poor, the percentage-of-the-median method was used. In this method, a household is considered to be poor if its income is lower than a certain percentage of the median calculated for income of the entire population of households. Assuming that the average income of a household is determined with the use of households' income distribution median  $\mu_y$ , the poverty threshold, with an arbitrarily set

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<sup>3</sup> In economic theory, this phenomenon is known as the ratchet effect.

critical value  $\tau_o (0 < \tau_o < 1)$ , may be calculated using the following equation:  $y^*(\tau_o) = \tau_o \mu_y$ . In this study it is assumed that  $\tau_o = 0,6$ . Due to the fact that the same satisfaction level of needs of households with different demographic compositions requires a different level of income, the distribution of income per household or per capita should not be the basis for calculating the poverty threshold using this method. Therefore, this study makes use of equivalent income distribution.

The study takes into account income and expenses per equivalent unit, which allows for a comparison between households, regardless of their demographic composition. However, in order to take such an approach, one needs to select an equivalence scale<sup>4</sup>.

The selection made for this study was to use the scale determined with the use of the normative method<sup>5</sup>. The OECD-modified 50/30 scale was used which assigns the value of 0.5 to each adult and of 0.3 to each child (DeVos and Zaidi, 1997).

Poverty analysis is a major issue concerning households. The basic measure to assess the extent of poverty is the head count ratio (HCR), i.e. the percentage of households living below the poverty line<sup>6</sup> (Foster et al., 1984):

$$HCR = \frac{q}{n}, \quad (1)$$

where  $q$  – number of poor households (people) in a given community,  $n$  – total number of households (people) in a given community.

Apart from characterising the community of indebted households, an attempt was made to assess the impact of their socio-economic features on their decisions regarding using loans. In such a case, the dependent variable identifying an indebted household is binary. It reflects the fact of using (or not using) loans by a household and may be defined as “inclination” or “ability” to take such steps.

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<sup>4</sup> An equivalence scale is a measure of influence exerted by the composition of a household over its maintenance costs (consumption level). An equivalence scale determined for a household of a particular demographic composition informs how many times should its income be changed (decreased or increased) in order for this household to reach the same consumption level as that of a reference household (whose scale = 1). Equivalence scales are used, *inter alia*, to determine equivalent income (Ulman, 2011).

<sup>5</sup> The problem of equivalence scales is discussed, *inter alia*, in the following Polish publications: (Szulc, 1995; Kot, 2000; Ulman, 2011).

<sup>6</sup> However, it should be noted that the percentage of the poor does not tell anything about the depth (intensity) of poverty in the population of the poor. It assumes the same value, regardless of whether their income is close to the poverty line or close to zero (Panek, 2011).

If the dependent variable is a dichotomy, the probability of assuming a certain value is determined. If one assumes that the probability of using loans by a particular household depends on certain socio-economic features, such features may be expressed by the following model (Maddala, 2006)<sup>7</sup>:

$$P(Y = 1) = \frac{\exp(\beta_0 + \sum_{j=1}^k \beta_j x_{ij})}{1 + \exp(\beta_0 + \sum_{j=1}^k \beta_j x_{ij})} \quad (2)$$

In equation (2), the following notation was used:  $\beta_j$  – parameter at the explanatory variable  $j$ -th,  $x_{ij}$  – value of the explanatory variable  $j$ -th for household  $i$ -th.

#### 4. Empirical results

In the analysed period (2000-2010), a general improvement in the financial standing of Polish households may be observed – both in the case of total households and households considered to be poor<sup>8</sup> (Table 1). As far as poor households are concerned, their real income per equivalent unit went up by nearly 52%. This income increase was coupled with a decreasing share of expenditures on food in the total expenditure, which may indicate an improvement in the financial standing.

The fact that the Polish society has been growing wealthy in the recent years did not translate into a significant drop in the number of households living below the poverty line. The poverty rate remains at a similar level (Table 2). What is more, one can observe that income disparity has been gradually rising, which suggests an increasing stratification of the society despite a better income status (real income increase).

In Poland, the first decade of the 20<sup>th</sup> century was the time of an unprecedented lending boom (in terms of value) – see Fig. 1. However, this process has not affected all groups of households equally. A comparison of the share of borrowing households in total households and in households considered to be poor reveals that low-income households use loans less often than total households (Table 3).

<sup>7</sup> In such a case, a probit model could also be used: (Vandone and Ottaviana, 2011).

<sup>8</sup> Due to the fact that the analysis covers a period of 11 years, in order to determine the actual changes in households' income and expenses, consumer price indices were taken into account. As a result, income and expenses from different years were made comparable.

Specification	2000		2005		2010	
	households					
	poor	total	poor	total	poor	total
real income	442.02	1293.54	458.55	1363.38	670.44	1898.89
Expenditures	682.99	1237.23	650.03	1235.93	868.66	1578.19
expenditures on consumer goods and services	671.56	1190.88	635.64	1182.88	844.04	1505.56
share of food expenditure	49.73%	36.96%	45.04%	32.88%	39.24%	29.29%

**Table 1** Real income and expenses (in PLN, prices from 2010) per equivalent unit, and share of food expenditure in total households and households considered to be poor in the years 2000, 2005 and 2010.

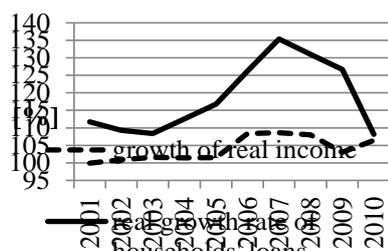
specification	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
poverty rate (%)	14.07	13.77	14.32	14.72	16.79	14.31	14.19	14.02	14.79	15.08	14.87
Gini index	0.302	0.300	0.308	0.313	0.317	0.317	0.314	0.319	0.318	0.319	0.322

**Table 2** Poverty rate and the Gini index in Poland in the years 2000–2010.

year	percentage of borrowing households	
	among total households	among poor households
2000	38.42	36.62
2005	33.84	26.45
2010	34.23	22.17

**Table 3** Percentage of borrowing households among total households and poor households in the years 2000, 2005 and 2010.

In addition, in the analysed years, the share of poor borrowing households has been falling. In 2000, nearly 37% of poor households used loans, whereas in 2010 – only approx. 23% (Table 3). This is primarily caused by more stringent criteria for granting loans applied by financial institutions – people with low income find it difficult to access the lending market. Another cause is a change in consumers' perception of indebtedness. More and more often, a loan is considered to be one of many instruments for managing household budgets.



**Fig. 1.** Growth of real income of households and loans granted to households in the years 2000-2010.

To paint a full picture of indebted households, the fact of using loans needs to be complemented by an analysis of loan repayment burden on their budgets. An analysis of the share of loan repayment in disposable income<sup>9</sup> (Table 4) of total households and households considered to be poor reveals a significant rise of this ratio, especially in the case of poor households. An increase in loan repayment burden not only limits purchasing abilities of households, but it may also lead, in the long run, to the loss of liquidity or to the spiral of indebtedness. In the recent years, this has been particularly noticeable among poor households – they spend more than PLN 11 of each PLN 100 of their disposable income on the repayment of indebtedness.

year	households	
	grand total	poor
2000	4.92%	4.41%
2005	4.54%	2.21%
2010	6.30%	11.28%

**Table 4** Loan repayment burden on disposable income of total households and households considered to be poor in the years 2000, 2005 and 2010.

<sup>9</sup> Disposable income is discretionary income less any other expenses. Disposable income is used to pay for consumer goods and services and to accumulate savings.

specification	parameter	standard error	Walds' statistics	p-value
constant	-0.207	0.087	5.65	0.017
poor	-0.538	0.041	171.11	0.000
basic vocational education	0.402	0.040	102.42	0.000
secondary vocational education	0.402	0.055	52.82	0.000
upper secondary school	0.518	0.042	149.11	0.000
higher education	0.868	0.046	351.71	0.000
“bad”	0.106	0.098	1.15	0.283
“rather bad”	-0.140	0.089	2.50	0.114
“average”	-0.237	0.081	8.45	0.004
“rather good”	-0.171	0.083	4.27	0.039
Chi <sup>2</sup> (8)=779.75; p=0.0000				

**Table 5** Results of the estimation of logit model parameters for the dichotomic variable of using loans.

In order to explain the probability of using loans by a household, logit model parameters were estimated. For the analysis, selected socio-economic variables related to the financial standing of households were proposed:

- subjective assessment of the household’s financial standing (five groups: “bad”, “rather bad”, “average”, “rather good”, and “very good”, whereas households which assessed their financial standing as “very good” were the points of reference);
- education of the household’s head – five levels of education were distinguished: up to lower secondary school, basic vocational education, upper secondary school, secondary vocational education, and higher education (households whose head was educated up to lower secondary school were the points of reference);
- “poor” – binary variable identifying households considered to be poor.

Variables were selected with the use of the stepwise regression method, and then logit model parameters were estimated (Table 5).

A negative value of the parameter at variable “poor” means a drop in the probability of using loans if the household is classified as poor as compared to other households (*ceteris paribus*). Similarly, the probability of using loans may be expected to drop in the case of households which assess their financial standing as “rather good” and “average” as compared

to households which assess their financial standing as “very good” (*ceteris paribus*). Furthermore, this probability is stimulated by the level of education of the household’s head.

### **Conclusions**

In the analysed period, the affluence of households has been growing systematically, in real terms, while their indebtedness has been growing at the same time. However, these general processes have not affected all groups of households equally.

An analysis of income disparity revealed a gradual increase of the Gini index. Despite the real income increase, the extent of poverty in Poland has not decreased. Although more and more popular, in principle loans are used by people with a higher income. Poor households find it more and more difficult to access the lending market and interim consumption substitutes. The study revealed a deteriorating situation of low-income households – in the case of this group the loan repayment burden ratio has been growing rapidly, especially in the last analysed year.

The foregoing observations are confirmed by the model calculating the probability of using loans. The fact of being a low-income household entails a drop in the probability of using loans. A similarly negative impact on using loans is exerted by a changeable subjective assessment of the financial standing. Loans are mostly used by best educated individuals. The reasons behind this fact include their better knowledge of the workings of contemporary financial markets and their better financial standing, on average.

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