

LINKING HOUSEHOLD DEBT AND HEALTH: SOME EMPIRICAL EVIDENCE FROM POLAND

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Abstract

Debt is an inherent feature of modern economy. Households in all developed and developing countries finance consumption and purchases of durable goods on credit. This involves not only the burden of repayments on the household budget, but also has psychological costs (or, more broadly, health costs). The possible difficulty with debt repayment or even in extreme cases the potential loss of property affect psychological well-being and general satisfaction with health. The investigation of a relationship between household debt and selected health outcomes is the main purpose of the article. The impact of debt burden and other socio-economic variables on the satisfaction with health is also examined. The ordered probit model has been implemented as a research method. The analysis uses micro-level panel data for Polish households from the “Social Diagnosis” survey. Our principal finding is that those household members who have mortgage debt are less satisfied with their health.

Key words: household debt, health outcomes, ordered probit model

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Introduction

The rapid increase in household debt in highly developed countries is associated with greater access to credit institutions, gradual relaxation of credit constraints and greater availability of a wide range of credit products. Households can benefit not only from mortgages but also unsecured debt. The way to distribute credit products has changed in the last decade – now they are available not only in banks, but also in supermarkets, over the telephone and on the Internet. Moreover, technological progress reduces time which is needed to grant loan contracts. Similar processes are also observed in developing countries.

The problem of growing household indebtedness is a concern for policy makers as it affects the economic growth and stability of the economy. With the widespread use of loans by households, excessive debts and problems with timely repayments arise. Financial difficulties

or insolvency are also non-economic dimensions. The need to repay credit for even up to several decades may be a source of stress, anxiety and chronic illness for borrowers.

Since 2004 many households in Poland have gained greater opportunities for access to loans or credits. The enlargement of the European Union has increased individual consumption and improved the ability of households to equalise it. The understanding of the potential health costs of the increase in debt level should be considered important. The reason for undertaking research on the debt-health relationship is the still low interest in these issues in countries of moderate or low income levels (Clayton et al., 2015) where the dynamics of indebtedness processes is of the greatest value.

In this paper, the impact of the debt on psychological well-being and satisfaction with health of household members is examined. The study will verify the hypothesis that impaired loan repayments accompany intensified psychological and health problems. The strength of the impact on health can also be linked to debt type. It can be assumed that unsecured loans (consumer credit, credit card) have a more negative influence on well-being than secured loans (mortgages).

1 Indebtedness and health issues

The possibility of taking loans may bring potential benefits to households. These benefits include, for example, inter-period substitution of consumption – indebtedness allows for increasing consumption over the current level of income during a given period. The desynchronisation of costs and income results not only from the life cycle of a household but also from the need to incur expenses related, for instance, to investments in human capital (raising one's qualifications through private education). In the macroeconomic dimension, the availability of credits to households enables an increase in GDP dynamics, yet the high level of consumption leverage with debt may cause financial instability in case of decreased income.

Not only does indebtedness have a strictly economic dimension but it also affects the mental state of the borrower. In economic psychology, the indebtedness process is presented as a struggle of an internal strategist with an internal hedonist (Thaler & Shefrin, 1981).

Indebtedness may have diverse impacts on health outcomes. Clayton et al. (2015) claim that in the short- and medium-term perspective, indebtedness will affect health favourably as it helps households alleviate the effects of unpredictable shocks and, consequently, allows for enjoying better health. The absence of negative consequences of indebtedness in a short term is also confirmed by Białowolski & Węziak-Białowolska (2016). It is quite the opposite in case

of long-term indebtedness on account of consumer loans and mortgages, which appear to lead to deterioration in health outcomes. Such households are more exposed to negative consequences of decreased income and this increases the risk of health problems.

Studies conducted in recent years indicate that indebtedness is an important socio-economic determinant of physical and mental health (Brown, Taylor & Wheatley Price, 2005). Permanent burden on the household budget related to debt repayment is associated with increased stress levels, it arouses anxiety and may contribute to psychological changes (Hojman, Miranda & Ruiz-Tagle, 2016; Sweet et al., 2013). It is pointed out that the very awareness that interest must be paid may cause stress. Researchers note that financial difficulties resulting from excessive debt may lead to depression (Drentea & Lavrakas, 2000; Bridges & Disney, 2010; Gathergood, 2012; Sweet et al., 2013; Keese and Schmitz, 2014). It is also stressed that households with excessive debts are often stigmatised by the society.

The correlation between stress level and the state of health has been thoroughly researched by experts in health psychology. Financial problems of those in debt may not only cause sleeplessness, headache, loss of weight but they also have a negative impact on interpersonal relations in private life (problems in marriage or with raising children) and career (absenteeism, decreased work performance) (Jacoby 2002). Negative behaviours in the sphere of health also include alcohol or drug problems, or improper diet (Gathergood, 2012; Zalega, 2014). Similar conclusions are formulated with regard to students who take loans. Other negative consequences of excessive debt may be the reduction of expenses on health-related prevention, medical check-ups and failing to cover all necessary health costs, e.g. purchase of drugs or rehabilitation (Melzer, 2011). In the long term, this may have serious health consequences.

Health issues related to loans or credits may have much further reaching consequences. Indebted households experiencing deteriorated health have lower income. This leads to the intensified downward spiral (Lyons & Yilmazer, 2005).

It should be pointed out that the assessment of the impact of loans on psychological well-being need not be clearly negative. If purchases of consumer goods are financed with credits and loans, this may cause greater life satisfaction. It is argued that expenses on durable goods are more usable than income. In this context, the controlling of “benefits” of possessing and using goods in relation to deficits in usability and debt-related deterioration of mental state is important for life quality.

The analysis of the impact of debt on borrowers' health entails several methodological problems. The identification of links between the occurrence of financial problems and health may be hindered and this is related to the ways of measuring such phenomena as they are based on subjective measures (Bridges & Disney, 2010). For example, individuals in a poor mental state may subjectively perceive debt as excessive even though people with no mental problems consider the same situation as not problematic at all (Gathergood 2012). Furthermore, the use of credits is only one factor, which along with individual tendencies, medical history, family and personal background, should be considered in research. Hojman, Miranda & Ruiz-Tagle (2016) point out that also the value and kind of debt may be significant for results. Generally, it is assumed that unsecured credits are more burdensome to health as they are not repaid in a timely fashion more frequently. Another issue is the possible occurrence of reverse causation – the indebtedness of some households may be related to illnesses of household members and the need to finance treatment. However, it seems that whereas the factor is significant in the USA, it is of no considerable significance in European countries of non-market financial system [see (Jacoby, 2002; O'Neill et al., 2005)]. Richardson, Elliott, & Roberts (2013), in turn, stress the possibility of falling into a spiral of debt – the likelihood of falling into or deepening financial problems is on the increase among those exposed to stress.

2 Data, methods and empirical results

In order to verify the impact of debt on the assessment of health of household members, data from “Diagnoza Społeczna” (Social Diagnosis) study, which was conducted in 2015 in Poland, were used. Study subjects were members of households but only individuals aged at least 18 who took part in the research both in 2009 and in 2015 were taken into account. The final set comprised 11,051 observations.

When analysing the level of satisfaction with the health condition of those who repay credits or loans and those who are not in debt, a higher percentage of those satisfied and highly satisfied with their health state among those in debt can be noted (tab. 1). Members of households which are not in debt are more satisfied with the financial situation of their family. When considering the relation between debt and selected variables related to the state of health, it can be noted that members of indebted households consulted psychiatrists more often and were more keen on consuming alcohol. They also experienced strong headaches slightly more frequently and had problems with rapid blood pressure increase more seldom.

Tab. 1: The percentage of household members according to loan repayment and selected variables in 2015

Specification	Loan repayment			
	yes	no	yes	no
	satisfaction with health		satisfaction with the financial situation	
Very dissatisfied	4,84	5,95	8,43	6,62
Dissatisfied	11,47	11,99	14,81	10,34
Quite dissatisfied	14,59	14,43	16,72	16,12
Quite satisfied	32,59	34,20	34,25	34,67
Satisfied	31,27	28,74	22,10	27,63
Very satisfied	5,24	4,69	3,68	4,62
	consulted psychiatrists		consuming alcohol	
Yes	5,74	3,78	5,39	2,65
No	94,26	96,22	94,61	97,35
	strong headaches		rapid blood pressure increase	
Not observed	57,92	59,35	74,03	70,07
Observed less than 15 days per month	36,80	35,69	20,32	24,30
Observed for at least half a month	5,28	4,96	5,65	5,62

Source: own calculations based on “Social Diagnosis” survey: (www.diagnoza.com [15.03.2017]).

When verifying the impact of debt on health, the “satisfaction with health” variable was used and it took the form of five variants: 1 – very dissatisfied, 2 – dissatisfied, 3 – quite dissatisfied, 4 – quite satisfied, 5 – satisfied, 6 – very satisfied.

Considering the nature of the dependent variable, the ordered probit model has been used. In the case of the probit model for many ordered categories, the likelihood of the existence of a given value of a discrete variable is specified with the use of the distribution function of standardised normal distribution in the following manner [see (Greene 2008, p. 832)]:

$$\begin{aligned}
 P(Y = 1) &= \Phi(\beta'x + \beta_1) \\
 P(Y = 2) &= \Phi(\beta'x + \beta_2) - \Phi(\beta'x + \beta_1) \\
 &\vdots \\
 P(Y = j) &= 1 - \Phi(\beta'x + \beta_{j-1})
 \end{aligned}$$

where: Φ – means the distribution function of standard normal distribution, β – vector of estimated parameters, β_1, \dots, β_j – estimated constant. Positive value of parameter β for a given independent variable x (with increasing values) causes increased likelihood of the occurrence of the first value of dependent variable Y and reduced likelihood for the latter j . In the case of medium value of the dependent variable, the changes in the likelihood of the occurrence of these values are not unequivocal. We are unable to ascertain (having the estimated parameter) in which direction the change of likelihood goes in these classes.

The set of independent variables also includes both variables related to indebtedness and economic situation of a household as well as health and socio-demographic characteristics of household members:

- education: 1 – at least lower secondary school, 2 – basic vocational, 3 – general secondary, 4 – vocational secondary, 5 – higher,
- gender: 1 – male, 0 – female,
- age: 1 – up to 24 years old, 2 – 25-34 years old, 3 – 35-44 years old, 4 – 45-59 years old, 5 – 60-64 years old, 6 – 65 or over,
- ln income: natural logarithm of household income,
- place of residence: 1 – cities with a population of 500 thousand and more, 2 – cities with a population of 200-500 thousand, 3 – towns with a population of 100-200 thousand, 4 – towns with a population of 20-100 thousand, 5 – towns with a population of less than 20 thousand, 6 – countryside,
- full-time work: 1 – yes, 0 – no,
- financial satisfaction of a family: 1 – very dissatisfied, 2 – dissatisfied, 3 – quite dissatisfied, 4 – quite satisfied, 5 – satisfied, 6 – very satisfied,
- better financial situation of a household than two years earlier: 1 – yes, 0 – no,,
- income versus current needs: 1 – yes, 0 – no,,
- investment: 1 – yes, 0 – no,
- credit or loan being repaid by the household: 1 – yes, 0 – no,
- mortgage being repaid by the household: 1 – yes, 0 – no,
- parabank credit: 1 – yes, 0 – no,
- consultations with a psychiatrist: 1 – yes, 0 – no,
- during the previous month, I experienced the following problems: heavy headache, chest pain or heartache, sudden blood pressure changes: 1 – I had none, 2 – I had some but less frequently than for 15 days, 3 – I had these problems for at least half a month.

Tab. 2: Results of the estimation of the parameters of the ordered probit model

Specification	Parameter	Standard error	Wald statistics
Constant 1	-3,6122***	0,2500	208,78
Constant 2	-2,7774***	0,2441	129,44
Constant 3	-2,1896***	0,2424	81,57
Constant 4	-0,9556***	0,2408	15,76
Constant 5	0,6528***	0,2413	7,32
Education	-0,0201	0,0161	1,56
Gender	-0,1022***	0,0391	6,83

Age	0,2541***	0,0202	158,85
Ln income	0,0027	0,0212	0,02
Place of residence	-0,0055	0,0121	0,21
Full time work	-0,1058	0,0718	2,17
Financial satisfaction	-0,2928***	0,0176	277,63
Better financial situation	0,1666***	0,0475	12,31
Income versus current needs	0,0528	0,0631	0,70
Investment	0,1297**	0,0577	5,05
Credit	0,0201	0,0420	0,23
Mortgage	0,1493**	0,0700	4,56
Parabank credit	-0,2026*	0,1157	3,07
Psychiatrist	0,3545***	0,0951	13,90
Headache	0,3200***	0,0358	80,03
Heartache	0,4635***	0,0453	104,87
Blood pressure	0,3532***	0,0431	67,11
AIC	8297,05		
Log likelihood	-4126,53		

*, ** and *** indicate statistical significance at the 10%, 5% and 1% levels, respectively.

Source: own calculations based on "Social Diagnosis" survey (www.diagnoza.com [15.03.2017]).

Not all independent variables turned out to affect the satisfaction with health in a statistically significant way (tab. 2). When it comes to variables related to the indebtedness of households, it is only the mortgage which determines in a considerable way the assessment of health. The repayment of mortgages increases the likelihood of dissatisfaction with health. The experiencing of such problems as headache, chest pain or heartache or sudden blood pressure changes and consultations with a psychologist increases the likelihood of dissatisfaction with health. The assessment of health depends also on gender as males tend to have better evaluation of their health than females. Greater satisfaction with health is also related to younger age. Greater satisfaction with health is also related to younger age. The greater the satisfaction with the family's financial situation, the greater the probability of better health assessment.

The likelihood of dissatisfaction with health is greater in case a household has invested in a bank deposit or when the financial situation has improved in comparison to the one two years earlier.

Conclusions

An enormous number of publications are focused on the associations between individual well-being and indebtedness. This study has investigated the relationship between the debt problem and satisfaction with health. Research results indicate that members of indebted households experience greater subjective satisfaction with their health but are less satisfied with their financial situation. If household members who repay mortgages are taken into account, the results of the estimation of model parameters indicate that they are definitely less satisfied with their health. This confirms conclusions of other research according to which negative effects of

the impact of credits on health may emerge in the long term. Other observed negative impacts of debt on health include more frequent consultations with a psychiatrist or consumption of alcohol by members of indebted households. In order to distinguish the impact of debt on health, further in-depth studies are required as when constructing the general model, the variable related to the repayment of credits may be “deafened” by other variables (such as income, lifestyle, profession or gender).

Research conclusions may be used as a basis for formulating the directions of health policy with regard to individuals with mental problems and for assisting those who face difficulty repaying their debt. Preventive actions will help improve the life quality of household members.

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