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IDENTIFYING THE RELATIONSHIP BETWEEN WELLBEING AND FINANCIAL VULNERABILITY

KATARÍNA ILENČÍKOVÁ[1]

Abstract: *Subjective wellbeing is the term used to describe an individual's satisfaction with their life and standard of living. The research in this area is challenging because it is a subjective expression of the respondent's feelings, and individuals may have different ideas or preferences. On the other hand, objectively measured data (e.g., income, wealth, debt) provide unbiased information about an individual's financial situation. This paper examines the relationship between selected financial vulnerability indicators (debt-to-income, debt-to-assets, debt service-to-income, late repayment, expenses exceeding income, rejected loan) and subjective wellbeing. For the testing of the hypothesis, data from the Household Financial Situation and Consumption Survey (HFCS) for Slovakia were taken from the 2021 wave. The results indicate a significant and negative relationship between the financial vulnerability indicators and subjective wellbeing.*

Keywords: *subjective wellbeing, financial vulnerability, household finance, debt indicators*

JEL Classification: D14, I31, G51

[1] Katarína Ilenčíková, Ing., Bratislava University of Economics and Business, Faculty of Economics and Finance, email: katarina.ilencikova@euba.sk, https://orcid.org/0009-0002-1650-8426

1 Introduction

In recent decades, economists have increasingly recognised that traditional economic indicators such as income or GDP provide only a partial view of individual and household welfare. To capture a more holistic picture, the concept of subjective wellbeing (SWB) – defined as individuals' self-assessment of their life satisfaction and standard of living – has gained prominence in both academic research and policy discussions. Subjective wellbeing is particularly important because it reflects not only material conditions but also broader dimensions of life, including mental and physical health, emotional experiences, and social context.

The growing relevance of subjective wellbeing is evidenced by its systematic inclusion in major international surveys, such as the Household Finance and Consumption Survey (HFCS), the OECD wellbeing framework, EU Statistics on Income and Living Conditions (EU-SILC), the Household, Income and Labour Dynamics in Australia (HILDA) survey, and the Health and Retirement Study (HRS). This trend illustrates the increasing demand among researchers and policymakers for data that go beyond objective financial measures, allowing for more nuanced assessments of household welfare and the design of more targeted economic and social policies.

In the literature, subjective wellbeing refers to an individual's own evaluation of their life, expressing their level of life satisfaction based on emotions and past experiences (Diener, 1984; Joo, 2008; Kuykendall et al., 2015; Shim et al., 2009). The main factors influencing subjective wellbeing include income (Clark, 2018), wealth (Brokešová et al., 2021; Headey & Wooden, 2004), financial assets (Brown and Gray, 2016; D'Ambrosio et al., 2009), property ownership (Cheng et al., 2020; Hu, 2013; Zheng et al., 2020; Zumbro, 2011) as well as the size of the dwelling (Bellet et al., 2017), and the amount of debt (Brown and Gray, 2016). Subjective wellbeing is also shaped by individual financial behaviour – such as saving patterns, debt management, and precautionary planning – and may vary considerably among financially vulnerable households. Financial vulnerability, defined as "overcommitment to excess indebtedness and other conditions of financial instability, such as the inability to overcome daily expenses, difficulties in paying utility bills, and inability to pay rent" (Anderloni et al., 2012), can reduce subjective wellbeing by increasing financial stress and perceived insecurity. Households

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that struggle to meet short-term obligations or build financial buffers often experience heightened emotional strain, which in turn negatively affects their wellbeing. Thus, subjective wellbeing not only reflects current economic status but also captures the psychological consequences of financial fragility.

A large portion of the literature links financial vulnerability with poverty (Al-Mamun & Mazumder, 2015; Lewis & A.V. Lewis, 2014), more specifically with income poverty (Albacete & Lindner, 2013; Guarcello et al., 2010; Lewis & A.V. Lewis, 2014). Typically, low-income households face multiple types of vulnerabilities – in health, social, and economic areas. This broad vulnerability undermines their overall wellbeing and financial resilience (Lee & Sabri, 2017). Financially vulnerable households are more likely to default on their loan payments (Jappelli et al., 2008). On the subjective side, there is perceived financial vulnerability, which is influenced by health status, wealth, and demographics (Maynard et al., 2025). Brzozowski and Visano (2023) highlighted the discrepancy between consumers' perceived financial vulnerability and their objective financial vulnerability. Furthermore, they showed that financial vulnerability is strongly tied to low incomes, which are more susceptible to income and expenditure shocks.

In this paper, we test the relationship between financial vulnerability of households and subjective wellbeing of the reference person. Both subjective wellbeing and financial vulnerability are influenced by factors reflecting one's financial situation, such as income, wealth, and debt, though in opposite directions. Our results confirm a negative relationship between financial vulnerability indicators and subjective wellbeing. Nearly all tested financial vulnerability indicators showed a negative and significant relationship. However, we were unable to confirm a relationship for the debt-to-income ratio variable, and the rejected loan variable lacked significance. Our results also suggest that subjective wellbeing is influenced more by the type of debt than by the household's debt-to-income ratio. This means that it matters whether the debt is for wealth accumulation (e.g., a mortgage) or not, as we could not confirm a significant impact for the debt-to-income ratio variable.

Our paper contributes to the literature on subjective wellbeing by testing its relationship with financial vulnerability indicators. We adopt a broader definition of financial vulnerability as proposed by Anderloni et al. (2012), expanding beyond standard debt indicators to include late repayment, expenses

exceeding income, and rejected loan applications.

The paper is structured as follows. In the second section, we define the Methodology and Data. In the next section, we present the Results of identifying the relationship between subjective wellbeing and financial vulnerability. The Conclusion summarises the key findings.

2 Methodology and Data

Following the previous literature on determinants of subjective wellbeing, we formulated the following hypothesis:

H: Financially vulnerable households experience lower subjective wellbeing.

To test the hypothesis, we use data from the 2021 wave of Household Financial Situation and Consumption Survey (HFCS) from Slovakia. The HFCS survey collects micro-level data on the distribution of households' asset and liability portfolios and their consumption decisions. The database contains 2,174 households across all regions of Slovakia, of which 1,246 have debt. In the analysis, individual data weights and multiple imputation approach (M=5) for missing variables was applied.

We estimate the impact of financial vulnerability on subjective wellbeing based on the following model:

$$\widehat{Y}_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i}$$

where Y_i is the subjective wellbeing of the i-th household expressed through the requested life satisfaction variable. The main independent variable X_{1i} is a vector of financial vulnerability – debt-to-asset ratio, debt-to-income ratio, debt service-to-income ratio, late repayment, expenses exceeding income, rejected loan. Variable X_{2i} contains a vector of control variables – gender, degree, financial literacy, number of household members, home ownership, age, perceived health status and financial behaviour (ability to save and income from investment).

Our dependent variable is subjective wellbeing, i.e., the respondent's subjective statement in the HFCS survey about their satisfaction with their standard of living. The subjective wellbeing variable was asked based on the question:

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"On a scale of 0 to 10, how would you express your overall satisfaction with your life?", where 0 means completely dissatisfied and 10 means completely satisfied. We will test the relationship between subjective wellbeing and household financial vulnerability using linear regressions.

Based on a review of the literature examining subjective wellbeing, we included independent variables of financial vulnerability, demographic variables and financial behavior.

Financial vulnerability, as defined in the introduction, reflects two key aspects: on one hand, the breaching of macroprudential financial stability limits set by the National Bank of Slovakia; and on the other hand, households` inability to cover ordinary expenses, falling behind on loan repayments, or being rejected loan. So, variables of financial vulnerability are debt-to-asset ratio (DTA), debt-to-income ratio (DTI), debt service-to-income ratio (DSTI), late repayment, expenses exceeding income and rejected loan. Our control variable are demographics variables and financial behavior.

The *debt-to-asset ratio (DTA)* variable is calculated as the remaining amount of household liabilities, i.e., debt divided by its total assets (financial and real). Vulnerable households are those households whose debt-to-asset ratio exceeds 75%. In our sample, this is approx. 5.8% of households.

The *debt-to-income ratio (DTI)* variable is calculated as the remaining amount of household liabilities, i.e., debt divided by its total income. It is a financial stability tool determined by the NBS and shows the total indebtedness of a household. A vulnerable household is a household whose DTI>=3. A total of 13.3% of households exceeded the set threshold and are considered vulnerable.

The *debt service-to-income ratio (DSTI)* variable is calculated as the ratio of a household's total payments to its monthly income. It represents a reserve in case of an increase in interest rates and reduces the risk of loan default. We will consider a vulnerable household to be one that exceeds the DSTI>=40% indicator, we identified 5.3% of such households.

The variable of *late repayment* represents households that were unable to pay all their instalments on time in the last 12 months. The variable only includes households that had some type of loan and therefore are repaying the instalments. Approximately 8.6% of indebted households reported that

they were unable to pay their instalments on time due to financial difficulties or other reasons, 90.8% of indebted households had no problem repaying on time. Households that were unable to repay regularly will have lower financial wellbeing.

The variable *expenses exceeding income* presents the inability of a household to cover its current household expenses with its income in the last 12 months. In our set, approximately 9% of households reported that they were unable to cover regular household expenses with their income. The inability to cover expenses with income reduces the financial wellbeing of a household.

The variable *rejected loan* presents households that applied for a loan in the last 3 years and were rejected, did not receive a loan in the requested amount, or did not have the opportunity to apply for it because they would have been rejected. This is a variable presenting the credit score of a household or households that are in some way credit constrained (3.4%).

The variable *ability to save* expresses households whose regular expenses are less than their total income, so they have the opportunity to create savings. We have 38% of households in the database that are able to save.

The variable *income from investment* represents households that have positive income from financial investments. Approximately 8.8% of households reported that they have such income.

3 Results

The results of the descriptive analysis are shown in Table 1. The average level of subjective wellbeing in the sample was 7.09.

The results of financially vulnerable households based on selected indicators are as follows. A household that was late with a payment had an average wellbeing score of 6.72, and a household whose expenses exceeded income recorded a level of 6.30. If the household was denied a loan or did not even have the opportunity to apply for one, the average level of subjective wellbeing was 6.85. Households with a debt-to-asset ratio limit exceeded had an average subjective wellbeing of 6.07 and those that exceeded the debt-to-income ratio limit reached 7.84. The indicator of ability to repay the loan affected subjective wellbeing the most, and the decline in the wellbeing of households that were

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marked as vulnerable based on this indicator was the highest and reached the level of 5.84.

Table 1: Subjective Wellbeing

	2021		
	Observation	Mean	Lin. Std. Err.
Subjective wellbeing	2174	7,09	0,0683
FINANCIAL VULNERABILITY			
Debt-to-asset ratio	32	6,07	0,3140
Debt-to-income ratio	76	7,84	0,2363
Debt service-to-income ratio	29	5,84	0,6673
Late repayment	42	6,72	0,4379
Expenses exceeding income	197	6,30	0,2000
Rejected loan	74	6,85	0,2989

Source: HFCS NBS 2021, own processing.

We decided to further test the statistical significance of the results from Table 2 through regression analysis, specifically OLS regression. The results are shown in Table 3.

Table 2 tests the relationship between subjective wellbeing and household financial vulnerability. Model 1 as the baseline without control variables, confirmed the statistical significance of several financial vulnerability indicators (late repayment, expenses exceeding income and debt-to-asset ratio), while its relationship to subjective wellbeing was negative. The results indicate that households struggling with loan repayments (Late repayment) or facing insufficient income to cover expenses (Expenses exceeding income) experience a decrease in subjective wellbeing and are less satisfied with life. If a household is identified as financially vulnerable based on an exceeded debt-to-assets limit (75% threshold), the household experiences significantly lower subjective wellbeing.

Furthermore, we test the robustness of our findings in Model 2. Model 2 contains control variables such as financial behavior, gender, education, financial literacy, number of household members, home ownership, age and perceived health status. It retained the statistical significance of the expenses exceeding income and debt-to-asset ratio found in Model 1. Based on the results, we can deduce that households that incur debt due to asset accumulation, i.e., their

debt-to-asset ratio is at an appropriate level, experience higher wellbeing than households whose debt does not serve to increase assets and are labelled as vulnerable and more at risk. Similarly, households that are vulnerable due to higher expenditures relative to income exhibit lower subjective wellbeing.

Due to multicollinearity, we had to split the debt variables. Therefore, we tested the Debt service-to-income ratio variable in Model 3 and Model 4. Model 3, without control variables, presents a significant negative relationship between financial vulnerability indicators (late repayment, expenses exceeding income and debt service-to-income ratio). The robustness of our results is confirmed by Model 4. In Model 4, which includes control variables, the statistical significance of late repayment disappeared, similar to Model 2. The relationship between the rejected loan variable and subjective wellbeing is not significant in any of the models.

Table 2: Regression of Subjective Wellbeing and Household Financial Vulnerability

Variables	(1)	(2)	(3)	(4)
Late repayment	-0.713*	-0.352	-0.730*	-0.435
	(0.4225)	(0.3610)	(0.3877)	(0.3609)
Expenses exceeding income	-0.703*	-0.685*	-0.727**	-0.674*
	(0.3679)	(0.3983)	(0.3700)	(0.4082)
Debt-to-asset ratio	-1.465***	-1.245**		
	(0.3821)	(0.4341)		
Debt-to-income ratio	0.283	0.024		
	(0.2534)	(0.2716)		
Debt service-to-income ratio			-1.663**	-1.182*
			(0.6490)	(0.6444)
Rejected loan	-0.325	-0.265	-0.369	-0.326
	(0.3799)	(0.2786)	(0.3324)	(0.2834)
Control variables	NO	YES	NO	YES
Constant	7.798***	8.294***	7.857 ***	7.756***
	(0.1170)	(1.2663)	(0.1088)	(1.2235)
Observation	490	477	490	477

Note: Standard errors are given in parentheses. In our own calculations of estimates, we use multiple imputed estimates and survey weights, which are linear regressions.*** p<0.01, ** p<0.05, * p<0.1

Source: HFCS NBS 2021, own processing.

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Through our results, we also managed to confirm the indirect influence of household income on subjective wellbeing, mediated by the *expenses exceeding income* variable. Brzozowski and Visano (2023) reached a similar conclusion, particularly focusing on its impact on low-income households. The negative impact of late loan repayments, consistent with Jappelli et al. (2008), was confirmed; however, its statistical significance disappeared after adding control variables. This loss of effect for late repayments might be related to more robust stability policies that prevent households from accumulating excessive debt beyond their means, thereby offering them a certain degree of protection against financial loss and the reduction in wellbeing.

The negative and significant effects of debt-related financial vulnerability indicators were not confirmed for the debt-to-income ratio variable. Conversely, the relationship with the debt-to-asset ratio variable significantly influences subjective wellbeing. The interpretation of this result is that a household indebted without a corresponding increase in its assets (e.g., through consumer credit or a credit card) experiences lower life satisfaction and reports lower subjective wellbeing compared to a household whose debt also translated into increased assets (e.g., by financing real estate). The positive and insignificant influence of the debt-to-income ratio is linked with the late repayment variable and reflects the fact that households do not experience a decrease in subjective wellbeing due to fear of or actual inability to repay based on income. Instead, we find the relevant relationship for subjective wellbeing with the ratio of assets to debt.

4 Conclusions

In the paper, we test the relationship between financial vulnerability of households and subjective wellbeing of the reference person. We confirm a negative relationship between subjective wellbeing and household financial vulnerability. Specifically, we find that households vulnerable due to high expenditures relative to income exhibit lower subjective wellbeing. An interesting finding is that the type of debt appears to have a greater impact on subjective wellbeing than the debt-to-income ratio itself; this is evidenced by the debt-to-asset ratio proving significant while the debt-to-income ratio did not. Similarly, we were unable to confirm a significant impact of the rejected loan variable on subjective wellbeing. These results underscore the importance of considering qualitative data (e.g., the type of debt) when comprehensively

assessing subjective wellbeing. Our findings expand the scientific literature on subjective wellbeing and highlight that financial vulnerability, which undermines financial stability, is crucial for the overall satisfaction and wellbeing.

Our research faces a limitation in that it primarily uses self-reported survey data. Capturing personal sentiments is crucial, but this methodology can introduce self-report bias, especially when dealing with sensitive financial information. Individuals may adjust their responses due to social desirability or privacy considerations, potentially affecting data precision. For future studies, we suggest using more direct financial information. This could be anonymous data from banks, such as details about people's income, savings, debts, and how well they manage money. The research could be extended to explore the distribution of different debt categories, including mortgages, consumer loans, and credit cards. Furthermore, the findings could be validated by examining causal relationships.

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