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THE FINANCIAL VULNERABILITY OF EUROPEAN HOUSEHOLDS

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Abstract

The main objective of this paper is to analyse the concept of financial vulnerability and to explore the financial vulnerability of European households. Financial vulnerability is associated with debt burden, liquidity, risk management, instability, economic and financial distress. Financial vulnerability is highly complex but relevant because of the close link between the financial stability of households and that of financial institutions, which affects not only the social, financial and psychological well-being of households, but also politics and economics at the macroeconomic level. The paper presents the understanding of financial vulnerability, its structure and the main drivers of household financial vulnerability in the European region. The study is based on data from the Household Finance and Consumption Survey (HFCS). The analysis of the data reveals that household liquidity in the European region is a more important determinant of financial vulnerability than household debt and debt burden.

Keywords: *debt burden, financial vulnerability, household, liquidity. stability.*
JEL Codes: *A14; D12; D14.*

Introduction

Economic growth depends on many factors, but one of the most important is the financial behaviour of households. Households' financial decisions are complex, interconnected and heterogeneous, but are crucial for the functioning of the financial system (Gomes, Haliassos and Ramadorai, 2021). Household debt in the European region has been growing significantly since the mid-1990s (Glassmann and Filsinger, 2021), and the eventual global financial crisis that started in 2007 and the severe recession that followed show that households' financial stability and the evolution of financial behaviour is a key factor influencing economic growth, and the consequences of the recklessness that triggered the crisis have been felt for over a decade (Klopocka, 2017). Financial vulnerability is a hot topic not only for the economy, but also for households themselves, as it has a direct impact on households' well-being, lifestyles and satisfaction.

Thus, research on financial vulnerability can, in the long run, help to reduce the social, financial and psychological distress of households, as well as to strengthen the economy and the financial system, which is why it is relevant to study the financial vulnerability of households.

In order to effectively assess financial vulnerability and its impact, the **objective of this study is** to analyse the concept of financial vulnerability and to empirically evaluate the financial vulnerability of European households. **The object of the study** is household financial vulnerability and the **research problem:** what is household financial vulnerability in Europe and what are its determinants? The **research methods** used are comparative analysis of scientific literature, descriptive statistical methods.

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Theoret cal analysis of financial vulnerability

In the economic sphere, financial vulnerability can be understood in several different ways and is heterogeneous. Brunetti, Giarda and Torricelli (2016) view financial vulnerability as synonymous with financial distress or financial instability. Anderloni, Bacchiocchi and Vandone (2012) relate vulnerability specifically to the level of indebtedness and the financial and economic distress caused by unsustainable debt management. Cateau, Roberts and Zhou (2015) describe it as a condition that has a negative impact on the financial system. Bankowska et al. (2015) argue that financial vulnerability is the likelihood that a household will not be able to repay its debts on time. Cao et al. (2016) perceive financial vulnerability as a degree of risk that affects the quality of living standards and the possibility of asset loss. Thus, financial vulnerability is understood and assessed differently by authors, and there is no single perception. In this study, financial vulnerability is understood as a state of financial instability resulting from an unsustainable level of indebtedness, loss of assets or a reduction in living standards. Financial vulnerability often arises from different causes, such as economic conditions, individual financial behaviour and fluctuations in financial markets (Claessens and Kose, 2013). Poh and Sabri (2017) argue that this topic is of particular relevance and concern, as the financial environment in the modern economy can be extremely complex, and consumers and households are facing an increasing number of financial challenges, which, if not assessed responsibly, can often lead to severe consequences.

Household financial vulnerability is an important topic of research, as households can have social and psychological consequences, and financial vulnerability is not only associated with depression, delinquency or emotional insecurity, but even with higher mortality (French and Vigne, 2019). Household financial vulnerability does not only affect households themselves, but can affect the economy at the macroeconomic level. Dieckelmann and Metzler (2022) highlight that financially vulnerable households may be more likely to default on loans or miss payments, which is threatening and can have a negative impact on the entire financial system. Shkvarchuk and Slav'yuk (2019) consider behavioural finance research to be highly promising, but at the same time very difficult, heterogeneous and complex, as household behaviour is extremely difficult to measure. Financial vulnerability can be influenced by a wide range of factors, and it is therefore relevant to study them in order to help households become more financially resilient and to protect the economy from larger shocks. Thus, household financial vulnerability is not only of interest to households themselves, but is intertwined with a much wider range of issues. Investigating the determinants of financial vulnerability not only helps to uncover the growing number of factors that affect it in different ways, but in the long term it can also help to reduce social problems for households and strengthen the economy.

Financial vulnerability can very often be determined by the various decisions made by households themselves, so it is important to understand and analyse the decisions that households make. Financial behaviour in the context of households can be understood as the specific decisions that households make regarding money management (Chen and Lemieux, 2016). Xiao, and Tao (2021) traditionally break down households' financial decisions as follows: money management, insurance, borrowing, saving and investing. The household financial decisions most closely related to financial vulnerability are borrowing decisions (Sierminska, 2014). Households with high loan or mortgage liabilities often make it more difficult for them to accumulate assets and maintain a stable standard of living, and therefore become more financially vulnerable (Poh and Sabri, 2017). Debt, debt burden and borrowing decisions themselves as a basis for financial vulnerability have been explored by a number of authors such as Sierminska (2014), Muthitacharoen, Nuntram and Chotewattanakul (2015), Giordana and Ziegelmeyer (2017), Cifuentes, Margaretic and Saavedra (2020). All authors confirm a

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significant relationship between debt and financial vulnerability. Liquidity is also a crucial aspect of financial vulnerability. Household liquidity is the liquidity stock of households, measured as the ratio of household liquid assets to household disposable income (Cava and Wang, 2021). Michelangeli and Rampazzi (2016) point out that low liquidity is one indicator of financial vulnerability. Aastveit, Juelsrud and Wold (2020) also refer to the importance of liquidity, linking household liquidity, leverage and financial vulnerability.

Other authors link financial vulnerability to other financial decisions such as saving (Singh and Malik, 2022; Despard, Friedline and Martin-West, 2020), investing (Sabri et al., 2021), insurance (Sabri et al, 2021), but in this paper, for the purpose of assessing financial vulnerability in the European region, it was chosen to analyse debt burden indicators due to their crucial importance for financial vulnerability and liquidity, as there is still a lack of studies linking financial vulnerability to this factor.

Methods and sample for empirical research on financial vulnerability in Europe

The survey to assess households' financial vulnerability employs data from the Household Finance and Consumption Survey (HFCS), produced by the European Central Bank (ECB) (Ecb.europa, 2023). The HFCS collects household-level data on household finances and consumption in the European region, gathering information on households' liabilities, income, assets, consumption patterns, demographic, social and economic background. This paper analyses the financial vulnerability of households in a representative sample in 2010, 2014 and 2017. 68 627 households from 16 countries participated in the 2010 survey (170 089 respondents in total). In 2014, 84 611 households from 20 countries participated (210 346 respondents in total). In 2017, 91 242 households from 22 countries participated in the survey (22 10865 respondents in total). Thus, each year, more and more countries in the European region joined the survey. The survey provides an analysis of the distribution of debt burden and liquidity indicators by socio-economic characteristics of households and explores which of the selected characteristics are closely related to the level of financial vulnerability of households.

In this paper, the financial vulnerability of households is assessed on the basis of debt burden and liquidity ratios. It has been chosen to analyse the debt burden of households and its impact on financial vulnerability through five selected debt burden indicators and one liquidity indicator (Table 1). The set of measure for household financial vulnerability research was constructed based on previous research (Leika and Marchettini, 2017; Giordana and Ziegelmeyer, 2017).

Table 1. Household financial vulnerability measures

Debt burden indicator	Description	Vulnerability threshold
Debt-to-assets ratio (DA)	Total household debt divided by assets.	DA ≥ 75%
Debt-to-income ratio (DI)	Total household debt divided by annual gross income.	DI ≥ 3
Debt service to income ratio (DSI)	Monthly debt payment divided by gross monthly income.	DSI ≥ 40%
Mortgage Debt Service to Income Ratio (MDSI)	The total monthly mortgage repayments divided by the gross monthly income of the household. Calculated only for households with mortgage debt.	MDSI ≥ 40%
Loan-to-value ratio (LTV)	The remaining unpaid part of the mortgage loan is divided by the current market value of the collateral.	LTV >= 75%
Liquidity ratio	**Description**	
Net liquid assets to income ratio (NLAI)	Net liquid assets divided by gross monthly income.	NLAI < 2 months income

Table 1 shows not only the definitions of the selected debt burden and liquidity ratios. For the selected indicators, it is necessary to define a threshold of vulnerability above which a household would be at risk of financial distress. The vulnerability thresholds are derived from an analysis of ECB (2013, 2020) recommendations, as well as research by Albacete and Lindner, (2013), Leika and Marchettini (2017) and Giordana and Ziegelmeyer (2017).

The three selected indicators relate to household leverage. The debt-to-assets (DA) ratio is the most traditional of these leverage indicators. The debt-to-income (DI) ratio measures the ability of households to service debt from income streams rather than by selling their assets.

We also look at two indicators based on the flow of debt service payments. The Debt Service to Income (DSI) indicator focuses on short-term needs, measuring the outflow of current income due to interest and principal payments on debt. The Mortgage Debt Service to Income Ratio (MDSI) shows similar information, but only measures debt with a mortgage on real estate. As these indicators compare flows, they can vary with interest rate changes.

Finally, the liquidity indicator chosen is the Net Liquid Assets to Income Ratio (NLAI). This indicator does not measure the debt burden, but rather the ability of a household to continue servicing its everyday needs including debt by selling liquid assets in the event of a sudden temporary drop in income level. Unlike the debt burden indicators presented above, the NLAI indicator focuses on the liquidity of household balance sheets. More specifically, it shows how many months it takes a household to replace its usual sources of income by selling its liquid assets.

Empirical study on financial vulnerability in Europe

This study focuses on household debt burden and liquidity and their impact on financial vulnerability. The definition of households with debt includes households with various types of outstanding loans from financial institutions (mortgages, consumer loans, leasing, etc.), debts from friends, relatives, employers, etc., as well as debts from lines of credit and credit card debt.

For each of the debt burden and liquidity indicators, there is a vulnerability threshold above which a household can be considered financially vulnerable. ***A single indicator analysis*** is used, without linking the selected debt burden and liquidity indicators to each other but stating that a household is financially vulnerable if it exceeds the specific indicator under assessment. It is relevant to examine which indicator has the highest proportion of European households above the vulnerability threshold, and which indicator is the most important in shaping the degree of financial vulnerability in the European region. Figure 1 shows the distribution of financially vulnerable households in the European region.

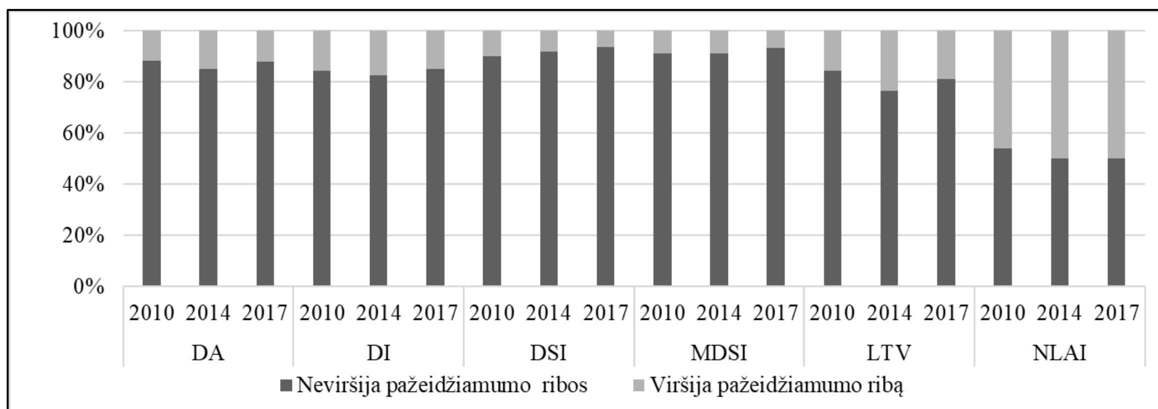

Figure 1. Distribution of financially vulnerable households in the European region according to individual debt burden and liquidity indicators (2010; 2014; 2017)

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In terms of debt burden indicators, the distribution of households above the vulnerability threshold has remained fairly stable ***over the three waves*** of the analyzed survey, with a slight decrease in the distribution of households above the vulnerability threshold in 2017. The Net Liquid Assets to Income Ratio (NLAI) indicator stands out strongly in all periods and, when looking at financial vulnerability, as many as 50.08% of all households are considered vulnerable in 2017. It is also the only indicator where the number of households above the vulnerability threshold has slightly increased. This symbolizes that as many as half of the households in the European region are potentially facing liquidity problems and have few liquid assets. Thus, among the selected indicators, the liquidity indicator - the ratio of net liquid assets to income - was the most significant determinant of the financial vulnerability of households in the European region.

Table 2. The debt burden and liquidity ratios of households above the vulnerability threshold in Europe and their changes over the waves 2010, 2014, 2017

Ratio	Wave	Average	Standard error	95% confidence interval		p value 2010-2017	p value 2014-2017
DA >= 75%	2010	319%	10,03%	299,8%	339,2%	2,48% **	0,16% ***
	2014	263%	6,64%	250,3%	276,3%		
	2017	294%	8,25%	278,0%	310,4%		
DI >= 3	2010	5,88	6,74%	5,75	6,01	48,67%	0,14% ***
	2014	6,15	6,32%	6,03	6,27		
	2017	5,88	6,59%	5,75	6,01		
DSI >= 40%	2010	105%	4,93%	95,0%	114,4%	0,33% ***	3,61% **
	2014	113%	4,92%	103,8%	123,1%		
	2017	129%	7,15%	114,6%	142,7%		
MDSI >= 40%	2010	105%	5,79%	93,4%	116,1%	0,36% ***	8,42% *
	2014	118%	6,31%	105,5%	130,3%		
	2017	132%	8,32%	115,7%	148,3%		
LTV >= 75%	2010	104%	1,21%	101,9%	106,6%	37,98%	<0,0001 ***
	2014	111%	0,79%	109,6%	112,7%		
	2017	105%	0,89%	103,0%	106,5%		
NLAI < 2 monthly income	2010	-7,593	1,88	-11,269	-3,918	22,73%	12,9%
	2014	-5,836	1,97	-9,692	-1,980		
	2017	-12,840	5,68	-23,977	-1,702		

Table 2 shows the average debt burden and liquidity ratios for households above the vulnerability threshold in 2010, 2014 and 2017, and the statistical significance of their changes. The significance of the change in the means of the indicators is compared for the entire period from the first wave of the 2010 survey to the last wave of the 2017 survey, and from the penultimate wave of the 2014 survey to the last wave of the 2017 survey. The results show that most of the changes in the means between the periods were statistically significant, except for the changes in the means of the debt-to-income (DI) and loan-to-value (LTV) ratios between 2010 and 2017, and the changes in the means of the only liquidity indicator, the net liquid assets-to-income (NLAI) ratio, were not statistically sig-

nificant in any period. The changes in the averages of the debt burden and liquidity ratios could be due to the change in the economic situation stabilizing after the financial crisis of 2008.

To correctly assess the changes, *density functions* were calculated for selected indicators. The density functions showed that the distribution of the debt-to-income (DI) ratio remained stable, with no significant changes observed. The density distribution of the debt-to-assets (DA) ratio showed that a higher share of households exceeded the vulnerability threshold in 2014 than in 2010 and 2017. The density functions for both the debt service-to-income (DSI) ratio and the mortgage debt service-to-income (MDSI) ratio show that the growth of the indicator was steeper in 2017 than in previous periods, implying that a higher proportion of households did not exceed the vulnerability threshold of 40%. The density function for the loan-to-value (LTV) ratio shows that the situation in 2017 was better than in 2014, but worse than in 2010, with more households below the vulnerability threshold of 75% in the latter period than in subsequent periods. The distribution of the Net Liquid Assets to Income (NLAI) ratio remained very similar in 2014 and 2017, but it is still noticeable that in the 2010 data, households had more liquid assets, while vulnerable households were slightly less likely to be vulnerable according to this indicator.

Financial vulnerability is highly multifaceted. A household that exceeds the vulnerability threshold in one of the debt burden or liquidity indicators can already be considered as a financially vulnerable household, but this does not necessarily mean that the household is guaranteed to default on its debts or face severe liquidity problems, and the complexity of the vulnerabilities themselves can also vary. Therefore, in order to assess financial vulnerability more effectively, a framework of ***financial vulnerability levels*** has been applied. All indicators are treated as equivalent in relation to each other, without any differentiation in terms of importance. The level to which a household is assigned depends on the extent to which the household exceeds the vulnerability thresholds in the indicators examined. In total, there are four levels of financial vulnerability. The distribution of households in the European region according to the levels of financial vulnerability is shown in Table 3.

Table 3. Distribution of financially vulnerable households by level of vulnerability in the European region

Level of financial vulnerability	Amount of vulnerability thresholds exceeded	Proportion of financially vulnerable households		
		2010	**2014**	**2017**
1 level	1	78,70%	78,07%	81,49%
2 level	2	11,66%	10,76%	10,11%
3 level	3-4	8,72%	9,64%	7,62%
4 level	5-6	0,92%	1,54%	0,78%

Table 3 shows that in 2017, the largest group of financially vulnerable households - 81.49% - belongs to the first level of low financial vulnerability, which is defined as households that exceed only one of the six debt burden and liquidity indicators considered. Compared to the results of previous periods, the level of vulnerability of financially vulnerable households decreased in 2017, with the largest difference observed in the third and fourth levels. In 2017, 10.11% and 7.62% of households belong to the second and third levels respectively, while the last level, the very high financial vulnerability level, includes 377 households in the European region, representing 0.78% of all vulnerable households. Thus, there is a general trend towards a slight decrease in the level of financial vulnerability over the selected period.

As the level of economic development, the financial services sector, the tax systems, and many other aspects differ between countries in the European region, it is likely that the

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number of vulnerable households varies ***from country to country and from sub region to sub region***.

As it is most relevant to analyze the most recent data possible, it has been chosen to carry out the country analysis with data from 2017. Figure 2 shows the share of households above the vulnerability threshold of the debt burden indicators compared to the total number of households with different types of debt in that region and the share of households above the vulnerability threshold for the liquidity indicator Net Liquid Assets to Income (NLAI) across separate European sub regions.

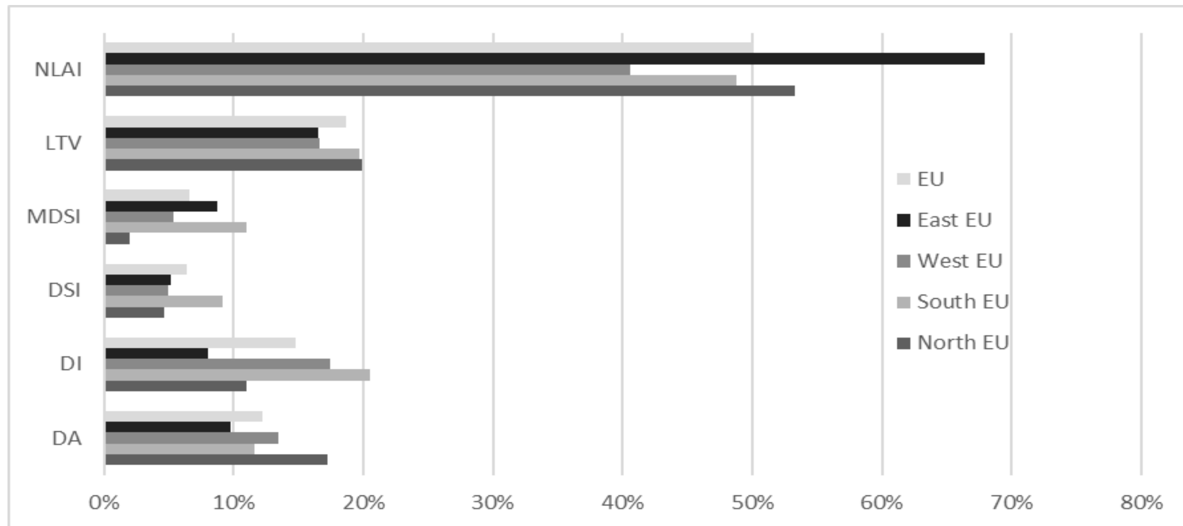

Figure 2. Share of households above the vulnerability thresholds for debt burden and liquidity indicators across the European regions (wave of 2017)

Looking at each debt burden indicator separately, we can see that the differences across sub-regions occur. The Southern European region has the highest number of countries with a high number of vulnerable households across a range of all indicators.

In terms of liquidity, the highest share of vulnerable households is in Latvia - 83.6% and Croatia - 80.3% of vulnerable households. Malta has the lowest percentage of vulnerable households at 25%. The distribution of vulnerable households varies across countries, but it can be highlighted that in Eastern Europe there is an overall trend towards a higher proportion of vulnerable households (Fig. 2).

Thus, in the European region financial vulnerability is mainly shaped by the liquidity ratio - the net ratio of liquid assets to income. Trends in the debt burden and liquidity indicators has variations by regions with the Southern European region having the higher portion of vulnerable households taken into account all debt burden and liquidity ratios, while in the Eastern European region the liquidity problems of the households dominate.

Conclusions

Thus, the empirical study on the household financial vulnerability and its level has revealed mixed results, which are not necessarily in line with the views of previous studies. While most previous research papers and studies have focused on the importance of borrowing decisions, debt and debt burden for financial vulnerability, this study has found that, of the five debt burden indicators and one liquidity indicator selected, the liquidity indicator - the ratio of net liquid assets to income - is the most influential in shaping the financial vulnerability of households in the European region, as more than half of the European region's households would be considered financially vulnerable when looking at their financial vulnerability from the perspective of this indicator.

Considering the significance in changes across different waves of the Household Finance and Consumption Survey (HFCS), the overall level of financial vulnerability of European Households has decreasing tendency.

Trends in the debt burden and liquidity indicators vary from country to country and sub-region to sub-region, with the Southern European region having the most vulnerable households according to the whole range of indicators of debt burden and liquidity. In the Eastern European sub-region the households mainly suffer from liquidity problems while debt and debt burden patterns do not stand out from other sub-regions.

For further research directions it would be important to analyze why such differences occur across countries and separate households, what determinants have influence on these differences in the sociodemographic level.

References

Aastveit, K. A., Juelsrud, R. and Wold, E. G. (2020). Mortgage Regulation and Financial Vulnerability at the Household Level. *Norges Bank Working Paper, 6*(20). doi: 10.2139/ssrn.3640636

Albacete, N., Lindner, P. (2013). Household vulnerability in Austria – a microeconomic analysis based on the household finance and consumption survey. Financial Stability Report, 25, 57-73. Prieiga per internetą: https://econpapers.repec.org/RePEc:onb:oenbfs:y:2013:i:25:b:2.

Anderloni, L., Bacchiocchi, E. and Vandone, D. (2012). Household financial vulnerability: An empirical analysis. *Research in Economics, 66*(3), 284-296. doi: 10.1016/j.rie.2012.03.001

Bankowska, K., Lamarche, P., Osier, G. and Perez-Duarte, S. (2015). Measuring household debt vulnerability in the euro area. *Bank for International Settlements, 39*. Available online: https://EconPapers.repec.org/RePEc:bis:bisifc:39-46

Brunetti, M., Giarda, E. and Torricelli, C. (2016). Is Financial Fragility a Matter of Illiquidity? An Appraisal for Italian Households. *Review of Income and Wealth, 62*(4). doi: 10.1111/roiw.12189

Cao, M., Xu, D., Xie, F., Liu, E. and Liu, S. (2016). The influence factors analysis of households' poverty vulnerability in southwest ethnic areas of China based on the hierarchical linear model: A case study of Liangshan Yi autonomous prefecture. *Applied Geography, 66*, 144-152. doi: /10.1016/j.apgeog.2015.11.016

Cateau, G., Roberts, T. and Zhou, J. (2015). Indebted households and potential vulnerabilities for the Canadian financial system: A microdata analysis. *Bank of Canada*. Available online: https://www.semanticscholar.org/paper/indebted-Households-and-Potential-vulnerabilities-%3A-Cateau-Roberts/0931decd6d6481debf00534f3102ca3c2c8e928b

Cava, G. L. and Wang, L. (2021). The Rise in Household Liquidity. *Reserve Bank of Australia*. doi: 10.47688/rdp2021-10

Chen, Z. and Lemieux, C. M. (2016). Financial knowledge and behaviors of Chinese migrant workers: An international perspective on a financially vulnerable population. *Journal of Community Practice, 24*(4), 462-486. doi: 10.1080/10705422.2016.1233475

Cifuentes, R., Margaretic, P. and Saavedra, T. (2020). Measuring households' financial vulnerabilities from consumer debt: Evidence from Chile. *Emerging Markets Review, 43*. doi: 10.1016/j.ememar.2020.100677

Claessens, S. and Kose, A. (2013). Financial Crises: Explanations, Types, and Implications. *International Monetary Fund*. doi: 10.5089/9781475561005.001

Despard, M. R., Friedline, T. and Martin-West, S. (2020). Why Do Households Lack Emergency Savings? The Role of Financial Capability. *Journal of Family and Economic Issues, 41*, 542-557. doi: 10.1007/s10834-020-09679-8

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Article DOI: https://doi.org/10.15544/mts.2023.33

Dieckelmann, D. and Metzler, J. (2022). Household inequality and financial stability risks: exploring the impact of changes in consumer prices and interest rates. *Financial Stability Review*. Available at: https://www.ecb.europa.eu/pub/financial-stability/fsr/special/html/ecb.fsrart202211_02~8c5b8be620.en.html

ECB (2013). Financial Stability Review: November 2013. European Central Bank, ISSN 1830-2025. Prieiga per internetą: https://www.ecb.europa.eu/pub/pdf/fsr/financialstabilityreview201311en.pdf.

ECB (2022) Household Finance and Consumption Network (HFCN). Available online: https://www.ecb.europa.eu/pub/economic-research/research-networks/html/researcher_hfcn.en.html

French, D. and Vigne, S. (2019). The causes and consequences of household financial strain: A systematic review. *International Review of Financial Analysis, 62*, 150-156. doi: 10.1016/j.irfa.2018.09.008

Glassmann, U. and Filsinger, M. (2021). Varieties of private household debt in Europe: incompatibility of culturally diverse lendingregimes between Germany and Italy? *German Politics, 30*(3), 380-402. doi: 10.1080/09644008.2021.1877662

Gomes, F., Haliassos, M. and Ramadorai, T. (2021). Household Finance. *Journal of Economic Literature, 59*(3), 919-1000. doi: 10.1257/jel.20201461

Klopocka, A. M. (2017). Does Consumer Confidence Forecast Household Saving and Borrowing Behavior? Evidence for Poland. *Soc Indic Res, 133*, 693-717. doi: 10.1007/s11205-016-1376-4

Leika, M. and Marchettini, D. (2017). A Generalized Framework for the Assessment of Household Financial Vulnerability. International Monetary Fund, IMF Working Paper WP/17/228. Available at: https://www.imf.org/en/Publications/WP/Issues/2017/11/07/A-Generalized-Framework-for-the-Assessment-of-Household-Financial-Vulnerability-45297

Michelangeli, V. and Rampazzi, C. (2016). Indicators of Financial Vulnerability: A Household Level Study. *Bank of Italy Occasional Paper, 369*. doi: 10.2139/ssrn.2934248.

Muthitacharoen, A., Nuntram, P. and Chotewattanakul, P. (2015). Rising Household Debt: Implications for Economic Stability. *Thailand and The World Economy, 33*(3), 43-65. Available online: https://so05.tci-thaijo.org/index.php/TER/article/view/137687

Poh, L. M. and Sabri, M. F. (2017). Review of Financial Vulnerability Studies. *Archives of Business Research, 5*(2), 127-134. doi: 10.14738/abr.52.2784

Sabri, M. F., Aw, E. C. X., Burhan, N. A. S., Rahim, H. A., Othman, M. A. and Simanjuntak, M. (2021). Financial Literacy, Behaviour and Vulnerability Among Malaysian Households: Does Gender Matter? *International Journal of Economics and Management, 15*(2), 241-256. Available online: https://www.researchgate.net/publication/353946495_Financial_Literacy_Behavior_and_Vulnerability_Among_Malaysian_Households_Does_Gender_Matter

Shkvarchuk, L. and Slav'yuk, R. (2019). The Financial Behavior of Households in Ukraine. *Journal of Competitiveness, 11*(2), 144-159. doi: 10.7441/joc.2019.03.09

Sierminska, E. (2014). Indebtedness of households and the cost of debt by household type and income group. *European Commission, 10/2014*. Available online: https://ec.europa.eu/social/BlobServlet?docId=13628&langId=en

Singh, K. N. and Malik, S. (2022), An empirical analysis on household financial vulnerability in India: exploring the role of financial knowledge, impulsivity and money management skills. *Managerial Finance, 48*(9/10), 1391-1412. doi: 10.1108/MF-08-2021-0386

Xiao, J.J. and Tao, C. (2021). Consumer finance/household finance: the definition and scope. *China Finance Review International, 11*(1), 1-25. doi: 10.1108/CFRI-04-2020-0032