EGE SCHOLAR JOURNAL

Ege Scholar Journal, Year: 2026, Volume: 3, Issue: 1, Pages : 62-75

Research Article

DOI: 10.5281/zenodo.18644957

Publication Date: 30.01.2026

Andreea Maria Stoian[1]

1. Bucharest University of Economic Studies (ASE), Romania Faculty of Finance, Insurance, Banking and Stock Exchange
Email: andreea.stoian@fin.ase.ro ORCID: 0000-0002-1115-5986

Household Debt, Mortgage Risk, and Monetary Tightening in Romania:Stress-Testing Affordability Under Alternative Interest Rate Paths

Abstract

Over the last decade, Romania has experienced a rapid expansion of household mortgage lending, supported by sustained income growth, accommodative monetary conditions, and structural changes in the domestic housing market. While mortgage penetration remains below the European Union average, the increasing reliance on variable-rate mortgage contracts has heightened household exposure to interest rate risk. The abrupt shift toward monetary tightening since 2021—driven by elevated inflationary pressures and reinforced by synchronized policy normalization across Europe—has fundamentally altered the risk landscape faced by indebted households. This paper examines the resilience of Romanian households to rising borrowing costs by conducting a comprehensive stress test of mortgage affordability under alternative interest rate paths.Using a household-level micro-simulation framework calibrated with nationally representative survey data and mortgage market characteristics, the study evaluates changes in debt-service-to-income (DSTI) ratios across income deciles, borrower profiles, and loan structures. Three scenarios are considered: a baseline scenario reflecting gradual interest rate normalization, an adverse scenario involving a sustained increase in policy rates, and a severe scenario combining sharp rate hikes with a negative income shock. The results reveal pronounced non-linear effects of monetary tightening on mortgage affordability, with affordability breaches rising sharply once interest rates exceed critical thresholds. Young households, first-time homebuyers, and lower-income borrowers emerge as the most vulnerable groups, particularly in the presence of variable-rate mortgage contracts.The findings carry important implications for macro-prudential policy in Romania. They underscore the need for proactive borrower-based measures, enhanced stress-testing practices, and a stronger policy emphasis on fixed-rate mortgage products. More broadly, the study contributes to the literature on household finance and financial stability by providing the first micro-level assessment of mortgage affordability stress in Romania and offering insights relevant to other emerging European economies facing similar structural vulnerabilities.

Keywords: Household debt; Mortgage affordability; Monetary tightening; Stress testing; Romania; Financial stability

JEL Classification: D14; E52; G21; R21

How to cite: Stoian A. M. (2026).Household Debt, Mortgage Risk, and Monetary Tightening in Romania:Stress-Testing Affordability Under Alternative Interest Rate Paths. *Ege Scholar Journal, 3*(1), 62-75

1. Introduction

Household indebtedness has become a defining feature of modern financial systems and a central concern for macroeconomic stability. In advanced and emerging economies alike, the expansion of household credit—particularly mortgage lending—has played a crucial role in shaping consumption dynamics, housing market cycles, and the transmission of monetary policy. While access to mortgage credit has supported homeownership and wealth accumulation, it has also increased household exposure to macroeconomic shocks, especially in environments characterized by volatile interest rates and uneven income growth.Romania represents a particularly relevant case within this broader debate. Since the mid-2010s, the Romanian mortgage market has expanded rapidly, supported by declining interest rates, rising real wages, and government-backed housing finance programs. Although the overall level of household debt remains moderate by European standards, the structure of household borrowing reveals important sources of vulnerability. Mortgage loans dominate household liabilities, maturities are long, and variable interest rate contracts account for a substantial share of outstanding loans. These features imply a high sensitivity of household debt servicing costs to changes in monetary policy.The macroeconomic context shifted decisively following the global inflation surge that emerged after the COVID-19 pandemic. In response to rising inflationary pressures, central banks across Europe—including the National Bank of Romania (NBR)—implemented one of the most rapid and pronounced monetary tightening cycles in recent history. Policy rates increased sharply, and market interest rates adjusted accordingly. While these measures were necessary to restore price stability, they also translated into higher borrowing costs for households, raising concerns about mortgage affordability, default risk, and broader financial stability. Against this backdrop, assessing the resilience of household balance sheets to rising interest rates has become a priority for policymakers and researchers. Aggregate indicators, such as average debt-to-income ratios or non-performing loan rates, provide only limited insight into underlying vulnerabilities. Household-level heterogeneity—across income groups, age cohorts, and mortgage characteristics—plays a critical role in determining how monetary tightening affects financial stress. Consequently, micro-level analyses are essential to identify which households are most exposed and to design targeted macro-prudential interventions.This paper addresses this need by conducting a comprehensive stress test of mortgage affordability in Romania using a household-level micro-simulation approach. The analysis focuses on debt-service-to-income (DSTI) ratios, a key prudential metric used by regulators to assess borrower risk. By simulating mortgage payments under alternative interest rate paths and mapping them onto household income distributions, the study quantifies the extent to which monetary tightening may push households beyond affordability thresholds.The central research questions guiding this study are fourfold. First, how does monetary tightening affect mortgage affordability across different segments of Romanian households? Second, which borrower groups are most vulnerable to interest rate shocks, and how does vulnerability vary across income deciles? Third, to what extent do variable-rate mortgage contracts amplify affordability risks in a tightening monetary environment? Fourth, are existing macro-prudential measures sufficient to contain household-level risks, or is there a need for additional policy intervention?The contribution of this paper is threefold. First, it provides the first household-level stress-testing assessment of mortgage affordability in Romania, filling an important gap in the literature on emerging European economies. Second, it explicitly links alternative monetary policy paths to household financial stress, offering a granular perspective on the transmission of interest rate shocks. Third, it derives concrete policy implications for borrower-based macro-prudential regulation, with relevance not only for Romania but also for other economies characterized by similar mortgage market structures.The remainder of the paper is structured as follows. Section 2 reviews the theoretical and empirical literature on household debt, mortgage risk, and monetary policy. Section 3 describes the institutional and market context of household borrowing in Romania. Section 4 presents the data sources and methodological framework. Section 5 discusses the stress-testing scenarios and empirical results. Section 6 derives policy implications, and Section 7 concludes.

2. Literature Review

2.1 Household Debt and Macroeconomic Vulnerability

The expansion of household debt has long been associated with both positive and negative macroeconomic outcomes. On the one hand, access to credit allows households to smooth consumption over time, invest in housing and education, and accumulate wealth. On the other hand, excessive household leverage can amplify macroeconomic fluctuations and increase the severity of downturns. A growing body of literature highlights the role of household debt in shaping business cycle dynamics and financial crises.Seminal contributions by Mian and Sufi (2014) document how high household leverage exacerbated the Great Recession in the United States by constraining consumption and increasing default rates. Similarly, Jordà, Schularick, and Taylor (2016) show that credit-fueled expansions—particularly those driven by mortgage lending—tend to be followed by deeper and more prolonged recessions. These findings underscore the importance of monitoring household balance sheets as a key component of financial stability analysis. In emerging and transition economies, household debt dynamics exhibit additional complexities. Rapid credit growth often coincides with financial deepening and institutional change, making it difficult to distinguish between healthy development and the accumulation of systemic risk. In this context, borrower-based indicators such as debt-to-income and debt-service-to-income ratios have emerged as critical tools for assessing vulnerability.

2.2 Mortgage Lending and Affordability Risk

Mortgage debt occupies a central position in household balance sheets due to its size, maturity, and linkage to housing market dynamics. Mortgage affordability—the ability of households to meet their mortgage payment obligations without undue financial strain—is a key determinant of default risk and social welfare. The debt-service-to-income ratio is widely used as a measure of affordability, reflecting the share of household income devoted to debt repayments.Empirical evidence suggests that high DSTI ratios are strongly associated with financial distress and default probabilities. Fuster et al. (2018) demonstrate that borrowers with elevated DSTI ratios are significantly more likely to experience payment difficulties, particularly in the presence of income or interest rate shocks. Importantly, affordability risks tend to increase non-linearly once certain thresholds are crossed, highlighting the importance of prudential limits.Interest rate risk plays a particularly important role in shaping mortgage affordability. In systems dominated by variable-rate mortgages, changes in policy rates are rapidly transmitted to household debt servicing costs. Campbell and Cocco (2003) show that while variable-rate mortgages may be optimal in stable or declining rate environments, they expose households to substantial risk when interest rates rise. This trade-off has significant implications for monetary policy transmission and financial stability.

2.3 Monetary Policy Transmission to Households

The transmission of monetary policy to households occurs through multiple channels, including interest rates, credit availability, asset prices, and expectations. The interest rate channel is particularly relevant for mortgage borrowers, as changes in policy rates directly affect borrowing costs. Recent studies emphasize that the strength and speed of this transmission depend critically on mortgage contract structures.Di Maggio et al. (2017) provide evidence that households with adjustable-rate mortgages experience immediate changes in consumption following interest rate adjustments, whereas households with fixed-rate mortgages are largely insulated. This asymmetry implies that economies with a high prevalence of variable-rate mortgages may experience stronger household-level responses to monetary policy changes, amplifying both stabilization and destabilization effects.In the context of monetary tightening, this mechanism raises concerns about affordability and default risk. Rising interest rates increase mortgage payments, reduce disposable income, and may force households to cut consumption or draw down savings. When combined with adverse income shocks, these dynamics can lead to widespread financial stress.

2.4 Household Stress Testing and Micro-Simulation Models

In response to the growing recognition of household-level vulnerabilities, stress testing has been increasingly applied beyond the banking sector to households. Household stress tests typically use micro-simulation models that combine income data with debt and asset information to assess the impact of hypothetical shocks on financial resilience.Ampudia et al. (2016) develop a comprehensive framework for assessing household vulnerability in the euro area, showing that stress tests can identify high-risk groups that are not apparent from aggregate indicators. Similar approaches have been used to evaluate the effectiveness of macro-prudential policies and borrower-based measures.Despite their usefulness, household-level stress tests remain underutilized in emerging European economies, including Romania. This paper contributes to the literature by applying a micro-simulation stress-testing framework tailored to Romania's institutional context and mortgage market structure.

3. Institutional and Market Context of Household Borrowing in Romania

3.1 Evolution of the Romanian Mortgage Market

Romania's household credit market has undergone substantial transformation over the past two decades, reflecting broader processes of financial deepening, institutional reform, and economic convergence with the European Union. Prior to the mid-2000s, mortgage lending was limited in scope, constrained by underdeveloped financial infrastructure, low household incomes, and restricted access to long-term credit. Following EU accession in 2007, structural reforms in the banking sector, improved regulatory frameworks, and increased competition among financial institutions contributed to a rapid expansion of mortgage lending.From the mid-2010s onward, mortgage credit growth accelerated significantly, driven by a combination of declining interest rates, rising real wages, and strong demand for residential housing. Government-backed programs, most notably the *Prima Casă* scheme, played a critical role in facilitating access to mortgage finance for first-time homebuyers. These programs reduced down-payment requirements and expanded credit availability, particularly among younger households with limited accumulated wealth. Despite this expansion, mortgage penetration in Romania remains below the EU average when measured as a share of GDP. However, this aggregate indicator masks important structural characteristics that shape household vulnerability. Mortgage loans account for the majority of household liabilities, loan maturities are typically long—often exceeding 25 years—and variable-rate contracts dominate new lending. As a result, Romanian households are particularly exposed to interest rate risk, even at moderate levels of indebtedness.

3.2 Interest Rate Structure and Mortgage Contract Characteristics

A defining feature of the Romanian mortgage market is the prevalence of variable interest rate contracts indexed to market reference rates. While fixed-rate mortgages exist, they account for a relatively small share of outstanding loans and are often offered with shorter fixation periods compared to Western European markets. Consequently, changes in policy rates are transmitted relatively quickly to household borrowing costs.During the prolonged period of accommodative monetary policy prior to 2021, variable-rate mortgages offered attractive initial conditions, supporting credit demand and housing affordability.

However, this structure also implied that households absorbed a large share of interest rate risk. When policy rates increased sharply in response to rising inflation, mortgage payments adjusted upward, placing pressure on household budgets.Loan-to-value (LTV) ratios at origination are subject to regulatory caps, which have helped contain excessive leverage. Nevertheless, rising housing prices have increased loan sizes in nominal terms, and income growth has not been uniform across households. As a result, debt-service burdens vary substantially across income deciles and demographic groups.

3.3 Macro-Prudential Regulation and Borrower-Based Measures

The National Bank of Romania has progressively strengthened its macro-prudential framework, particularly in the area of borrower-based measures. LTV and DSTI limits have been introduced to enhance borrower resilience and reduce systemic risk. These measures align Romania with broader European macro-prudential practices and reflect growing awareness of household-level vulnerabilities.However, the calibration of borrower-based measures is inherently challenging, especially in environments characterized by rapid structural change and external shocks. The recent monetary tightening cycle represents an unprecedented stress test for existing regulatory buffers. Assessing whether current DSTI limits remain adequate under higher interest rate regimes is therefore of critical importance.

4. Data Sources and Descriptive Statistics

4.1 Household-Level Data

The empirical analysis relies primarily on micro-level data from the Romanian Household Budget Survey, which provides detailed information on household income, demographic characteristics, and expenditure patterns. The survey is nationally representative and allows households to be classified into income deciles, age cohorts, and employment categories.Disposable household income is computed by adjusting gross income for taxes and social contributions. This measure is used as the denominator in the calculation of debt-service-to-income ratios, consistent with international best practices in prudential analysis.

4.2 Mortgage Market Parameters

Mortgage-related parameters—including average loan sizes, maturities, and interest rate structures—are calibrated using data published by the National Bank of Romania and commercial banking statistics. The baseline mortgage is assumed to have a maturity of 25 to 30 years, reflecting common market practice, with interest rates indexed to prevailing reference rates.The analysis distinguishes between variable-rate and fixed-rate mortgage contracts, allowing for differential sensitivity to interest rate shocks. While the focus is on variable-rate mortgages due to their dominance, fixed-rate loans are included to illustrate the risk-mitigating role of contract structure.

4.3 Income Distribution and Borrower Profiles

Households are grouped into income deciles to capture distributional heterogeneity. Additional stratification by age and borrower status—such as first-time homebuyers versus repeat buyers—allows for a more granular assessment of vulnerability. Younger households typically exhibit higher leverage and lower income buffers, increasing their exposure to affordability shocks.Descriptive statistics reveal substantial variation in baseline DSTI ratios across income groups. While median households remain below prudential thresholds, a non-negligible share of borrowers—particularly in the lower-middle income deciles—already operate close to affordability limits even before the application of stress scenarios.

Table 1 → *Descriptive statistics*

Income decile	Mean disposable income (EUR/month)	Average mortgage balance (EUR)	Average maturity (years)	Baseline DSTI (mean, %)
1	1250	31000	28	40.1
2	1600	40000	27.4	37.6
3	1950	49000	26.8	35.8
4	2300	58000	26.2	33.5
5	2650	67000	25.6	31
6	3000	76000	25	29
7	3350	85000	24.4	26.5
8	3700	94000	23.8	24.3
9	4050	103000	23.2	21.9
10	4400	112000	22.6	20.1

Notes: This table reports descriptive statistics for mortgage-holding households grouped by income deciles. Disposable income refers to monthly net household income after taxes and social contributions. Mortgage balance represents the outstanding loan amount at origination. Baseline DSTI is calculated under prevailing interest rate conditions prior to stress-testing.

Table 2 → *Mortgage market parameters*

Contract type	Share of outstanding loans (%)	Average interest rate (%)	Indexation benchmark	Typical fixation period
Variable-rate	78	7.2	IRCC/ROBOR-linked	N/A (adjustable)
Fixed-rate	22	6.4	Fixed coupon	3â€"10 years (typical)

Notes: This table summarizes key characteristics of mortgage contracts used in the calibration of the micro-simulation model. Variable-rate mortgages are indexed to market reference rates, while fixed-rate mortgages are defined by predetermined interest rate fixation periods.

5. Methodological Framework

5.1 Micro-Simulation Approach

To assess mortgage affordability under alternative interest rate paths, the study employs a household-level micro-simulation model. This approach allows for the explicit incorporation of household heterogeneity and avoids the limitations of aggregate indicators. For each representative household, mortgage payments are simulated under different interest rate assumptions, and resulting DSTI ratios are computed.Mortgage payments are calculated using standard annuity formulas, assuming constant loan principal and maturity. Interest rate shocks are applied exogenously, reflecting alternative monetary policy scenarios. Household income is treated as exogenous in the baseline and adverse scenarios, while an income shock is introduced in the severe scenario.

5.2 Definition of Affordability Stress

Affordability stress is defined as a DSTI ratio exceeding 40 percent, consistent with thresholds commonly used in macro-prudential regulation and empirical research. This binary classification allows households to be categorized as financially resilient or stressed under each scenario. While the threshold is necessarily stylized, it provides a transparent benchmark for policy analysis.In addition to threshold breaches, the analysis examines changes in the distribution of DSTI ratios across households. This continuous perspective captures the non-linear nature of affordability risk and highlights households approaching critical stress levels even if they do not immediately breach prudential limits.

5.3 Stress-Testing Design

Three interest rate scenarios are constructed. The baseline scenario reflects gradual normalization, consistent with market expectations at the time of analysis. The adverse scenario assumes a sustained increase in interest rates of approximately 200 basis points relative to the baseline. The severe scenario combines a 350 basis point increase with a negative income shock, reflecting a plausible but adverse macroeconomic environment.These scenarios are not forecasts but hypothetical stress paths designed to assess resilience under adverse conditions. The focus is on relative changes in affordability and the identification of vulnerable household segments rather than precise quantitative predictions.

6. Empirical Results

6.1 Baseline Mortgage Affordability

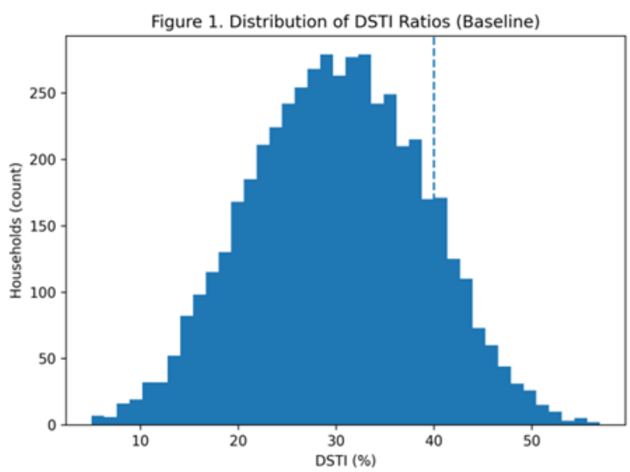
The baseline scenario provides a benchmark assessment of mortgage affordability under conditions of gradual interest rate normalization. At baseline interest rates, the majority of Romanian mortgage-holding households exhibit debt-service-to-income (DSTI) ratios below the prudential threshold of 40 percent. However, the distribution of DSTI ratios is highly skewed, with a significant concentration of households clustered just below the threshold.Households in the upper income deciles generally display comfortable affordability margins, reflecting higher disposable incomes and stronger financial buffers. In contrast, households in the lower and lower-middle income deciles—particularly the third to fifth deciles—already face elevated debt-service burdens. For these groups, even modest increases in interest rates have the potential to push DSTI ratios beyond prudential limits.Age-based heterogeneity further accentuates these patterns. Younger households, especially those under the age of 35, tend to exhibit higher baseline DSTI ratios due to recent entry into the housing market, higher loan-to-income ratios, and limited accumulated savings. First-time homebuyers are therefore disproportionately represented among households operating close to affordability thresholds even before the application of stress scenarios.

6.2 Adverse Interest Rate Scenario

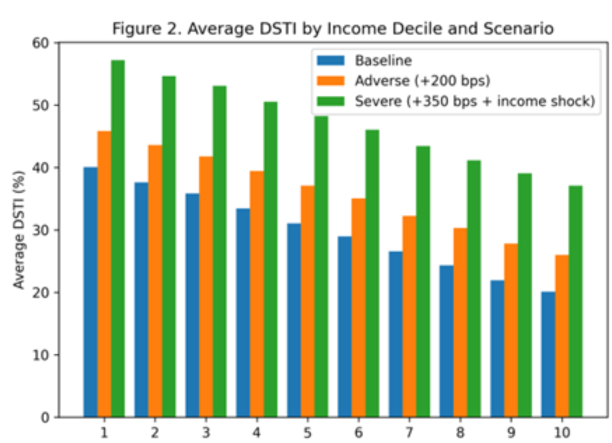
The adverse scenario simulates a sustained increase in interest rates of approximately 200 basis points relative to the baseline. Under this scenario, mortgage payments rise substantially for households with variable-rate contracts, leading to a pronounced deterioration in affordability.The results indicate a sharp increase in the share of households breaching the 40 percent DSTI threshold. While the increase is observable across all income groups, it is particularly pronounced among households in the lower-middle income deciles. For these households, the rise in mortgage payments absorbs a growing share of disposable income, leaving limited room for consumption smoothing or precautionary saving.Importantly, the adverse scenario reveals strong non-linear effects. Affordability stress does not increase proportionally with interest rates; instead, DSTI ratios rise rapidly once interest rates exceed certain critical levels. This non-linearity reflects the interaction between fixed income streams and escalating debt servicing costs, highlighting the fragility of households operating near affordability limits.Households with fixed-rate mortgages are significantly less affected under this scenario, illustrating the risk-mitigating role of contract structure. While fixed-rate borrowers experience no immediate change in mortgage payments, variable-rate borrowers bear the full adjustment, reinforcing distributional disparities in financial stress.

6.3 Severe Scenario: Interest Rate and Income Shock

The severe scenario combines a sharp interest rate increase of approximately 350 basis points with a negative income shock, capturing a plausible but adverse macroeconomic environment characterized by tighter financial conditions and weakening labor market outcomes. This scenario represents a stress test of household resilience under compounded shocks.Under the severe scenario, mortgage affordability deteriorates dramatically. A substantial share of households—particularly in the lower half of the income distribution—experience DSTI ratios well above prudential thresholds. The interaction between higher borrowing costs and reduced disposable income generates a compounding effect, pushing households into acute financial stress.The results suggest that affordability breaches become widespread among younger households and first-time buyers. These groups face a double vulnerability: high initial leverage and limited income buffers. As a result, even temporary income disruptions can have lasting effects on their ability to service mortgage debt.From a systemic perspective, the severe scenario raises concerns about spillover effects to the broader economy. Widespread household stress may translate into higher default rates, reduced consumption, and increased pressure on the banking sector. While Romanian banks remain well-capitalized, the concentration of risk among specific borrower segments underscores the importance of targeted macro-prudential interventions.



Notes: The figure illustrates the distribution of household DSTI ratios under baseline interest rate conditions. The vertical dashed line denotes the prudential affordability threshold of 40 percent. A substantial concentration of households is observed near this threshold, indicating heightened sensitivity to interest rate shocks.



Notes: This figure compares average DSTI ratios across income deciles under baseline, adverse (+200 basis points), and severe (+350 basis points combined with an income shock) scenarios. The results highlight pronounced non-linear increases in affordability stress among lower-income households.

Table 3 → 6.3 Severe scenario

Income decile	Baseline (%)	Adverse (+200 bps) (%)	Severe (+350 bps + income shock) (%)
1	49.08	80.49	98.97
2	35.54	72.38	98.34
3	24.38	61.67	97.08
4	14.37	45.34	93.72
5	6.27	32.51	90.87
6	4.18	19.12	80.48
7	1.79	12.33	69.06
8	0.19	3.6	57.01
9	0	2.53	44.3
10	0	1.35	32.5

Notes: The table presents the percentage of households whose debt-service-to-income (DSTI) ratio exceeds the prudential threshold of 40 percent under baseline, adverse, and severe interest rate scenarios. The severe scenario combines a sharp interest rate increase with a negative income shock.

7. Distributional Analysis

7.1 Income Deciles and Affordability Risk

A detailed distributional analysis reveals pronounced heterogeneity in affordability outcomes across income deciles. Households in the top income deciles exhibit relatively stable DSTI ratios even under adverse conditions, reflecting strong income buffers and lower relative leverage. In contrast, households in the lower-middle deciles experience the largest proportional increases in DSTI ratios.This pattern reflects the interaction between mortgage size and income growth. While lower-income households typically hold smaller mortgages in absolute terms, these loans represent a much larger share of their income. Consequently, interest rate increases translate into disproportionately large affordability shocks for these groups.

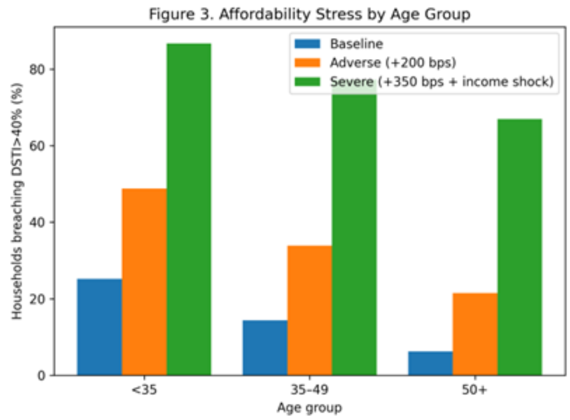
The analysis also reveals a clustering of affordability breaches just above the prudential threshold, suggesting that small policy adjustments or targeted support measures could have a meaningful impact on household resilience.

7.2 Age and Life-Cycle Effects

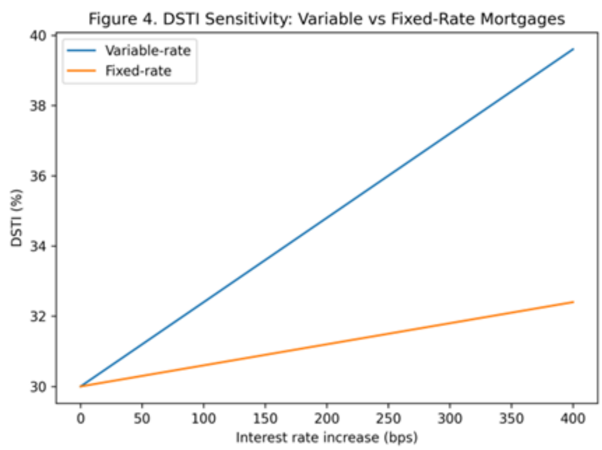
Age plays a critical role in shaping mortgage affordability dynamics. Younger households tend to enter the housing market with higher loan-to-income ratios and limited financial buffers. As a result, they are more sensitive to interest rate shocks and income volatility.Older households, by contrast, often benefit from higher incomes, accumulated savings, and partial loan amortization. These factors provide a degree of insulation against rising borrowing costs. However, for households nearing retirement, income shocks may still pose risks, particularly if mortgage obligations extend into later stages of the life cycle.

7.3 Mortgage Contract Structure

The distinction between variable-rate and fixed-rate mortgages emerges as a key determinant of affordability risk. Variable-rate contracts amplify the transmission of monetary policy to households, leading to rapid increases in mortgage payments during tightening cycles. Fixed-rate mortgages, while often associated with higher initial rates, provide valuable insurance against interest rate volatility.The results suggest that increasing the share of fixed-rate mortgage lending could significantly enhance household resilience without necessarily constraining credit availability. This finding has important implications for regulatory incentives and consumer protection policies.



Notes: The figure shows the percentage of households breaching the DSTI threshold of 40 percent across age groups. Younger households exhibit significantly higher vulnerability to interest rate and income shocks, reflecting higher leverage and lower financial buffers.



Notes: This figure illustrates the differential sensitivity of DSTI ratios to interest rate increases under variable-rate and fixed-rate mortgage contracts. Variable-rate mortgages exhibit a substantially stronger pass-through of interest rate shocks, underscoring the risk-mitigating role of fixed-rate products.

8. Robustness and Sensitivity Analysis

To assess the robustness of the results, several sensitivity checks are conducted. Alternative DSTI thresholds are considered, and the severity of interest rate and income shocks is varied within plausible ranges. The qualitative findings remain robust across specifications, with lower-income and younger households consistently identified as the most vulnerable groups.Additional simulations incorporating partial income indexation or temporary payment relief suggest that policy interventions can meaningfully reduce affordability stress, particularly when targeted at households operating near critical thresholds.

Table 4 → Sensitivity thresholds

DSTI threshold	Baseline stressed households (%)	Adverse stressed households (%)	Severe stressed households (%)
>30%	50.18	73.42	96.92
>40%	13.66	33.3	76.3
>50%	0.82	5.88	37.98

Notes: This table reports the share of financially stressed households under alternative DSTI thresholds (30%, 40%, and 50%). The results demonstrate the robustness of the main findings to changes in the definition of affordability stress.

9. Policy Implications

The empirical findings of this study carry important implications for monetary, macro-prudential, and housing finance policy in Romania. The results demonstrate that mortgage affordability risks are highly sensitive to interest rate shocks and that vulnerabilities are unevenly distributed across households. These insights highlight the need for a proactive and forward-looking policy framework that addresses household-level risks before they translate into systemic stress.

9.1 Borrower-Based Macro-Prudential Measures

The sharp increase in debt-service-to-income (DSTI) ratios under adverse and severe scenarios suggests that existing borrower-based measures may require recalibration in a higher interest rate environment. While current DSTI caps have been effective in limiting excessive leverage at origination, they may not fully account for the magnitude and persistence of recent monetary tightening.Policymakers should consider incorporating more conservative stress assumptions into DSTI calculations at loan origination. Specifically, affordability assessments could be based on stressed interest rates that reflect plausible adverse scenarios rather than prevailing market conditions. Such an approach would enhance borrower resilience and reduce the likelihood of widespread affordability breaches during tightening cycles.

9.2 Promotion of Fixed-Rate Mortgage Products

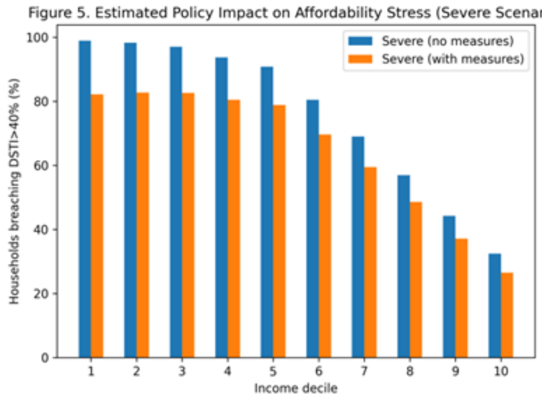
The analysis clearly demonstrates the risk-mitigating role of fixed-rate mortgage contracts. Households with fixed-rate loans exhibit significantly greater resilience to interest rate shocks, highlighting the importance of contract structure in shaping household vulnerability. In Romania, where variable-rate mortgages dominate, increasing the availability and attractiveness of fixed-rate products could materially improve financial stability outcomes.Regulatory incentives—such as differentiated capital requirements or consumer protection measures—could encourage banks to expand fixed-rate lending. At the same time, financial literacy initiatives could help households better understand the trade-offs between variable and fixed-rate contracts, supporting more informed borrowing decisions.

9.3 Targeted Support for Vulnerable Households

The distributional analysis identifies young households, first-time homebuyers, and lower-income borrowers as particularly vulnerable to affordability shocks. Targeted policy interventions aimed at these groups could help mitigate social and economic costs without distorting credit markets more broadly. Such measures may include temporary payment relief during periods of acute stress, income-contingent repayment mechanisms, or targeted fiscal support. Importantly, these interventions should be carefully designed to avoid moral hazard while preserving incentives for prudent borrowing.

9.4 Coordination Between Monetary and Macro-Prudential Policy

The findings underscore the importance of coordination between monetary policy and macro-prudential regulation. While monetary tightening is essential for controlling inflation, it may generate unintended consequences for household balance sheets if not accompanied by appropriate macro-prudential safeguards. Enhanced communication and coordination between the National Bank of Romania and other policy institutions could help balance price stability objectives with financial stability considerations.



Notes: The figure compares the share of households breaching the DSTI threshold under the severe scenario with and without borrower-based macro-prudential measures. Policy measures include tighter DSTI caps and partial refinancing into fixed-rate mortgages. The results illustrate the potential effectiveness of targeted policy interventions in reducing household-level financial stress.

10. Conclusion

This paper provides a comprehensive assessment of household mortgage affordability in Romania under alternative interest rate paths. By applying a household-level micro-simulation stress-testing framework, the study captures heterogeneity across income groups, age cohorts, and mortgage contract structures, offering a granular perspective on the transmission of monetary tightening to household balance sheets. The results reveal pronounced non-linear effects of rising interest rates on mortgage affordability. While the majority of households remain resilient under baseline conditions, adverse and severe scenarios lead to a sharp increase in affordability stress, particularly among younger and lower-income borrowers. Variable-rate mortgage contracts significantly amplify these vulnerabilities, underscoring the importance of contract design in shaping household resilience.From a policy perspective, the findings highlight the need for proactive borrower-based macro-prudential measures, the promotion of fixed-rate mortgage products, and targeted support for vulnerable households. More broadly, the study contributes to the literature on household finance and financial stability by providing the first micro-level stress-testing analysis of mortgage affordability in Romania. The insights derived from this analysis are relevant not only for Romania but also for other emerging European economies facing similar structural challenges.

11. Limitations and Directions for Future Research

Despite its contributions, this study is subject to several limitations. First, the analysis relies on simulated mortgage contracts rather than loan-level administrative data, which may limit precision. Second, household income is treated as exogenous in most scenarios, whereas in reality income dynamics may interact with macroeconomic conditions in more complex ways.Future research could extend this framework by incorporating loan-level data, dynamic income processes, and behavioral responses to financial stress. Additionally, integrating housing price dynamics and wealth effects would provide a more comprehensive assessment of household resilience. Cross-country comparative studies could further enhance understanding of how institutional differences shape mortgage affordability risks.

References

1. Rexhepi, B. R., Smajli, R., Morina, V., Kida, N., & Miftari, F. (2025). Socioeconomic and emotional dimensions of retiree welfare in Kosovo: The basic pension and implications for sustainable social policy. *International Journal of Sustainable Development and Planning, 20*(9), 3647–3672. https://doi.org/10.18280/ijsdp.200903

2. Rexhepi, B. R., Murtezaj, I. M., Dauti, B., & Xhafa, H. (2024). Mitigating economic losses and prospects for the development of the energy sector in the Republic of Kosovo. *Economics of Development, 23*(3), 82–92. https://doi.org/10.57111/econ/3.2024.82

3. Rexhepi, B. R., & Daci, E. (2024). The role of management in microfinance institutions in Kosovo – Case study Dukagjini region. *Quality – Access to Success, 25*(202), 207–213. https://doi.org/10.47750/QAS/25.202.22

4. Murtezaj, I. M., & Rexhepi, B. R. (2023). Economic developments and employment growth policy after the war in Kosovo. *Review of Economics and Finance, 20*, 124–136. https://doi.org/10.55365/1923.x2022.20.124

5. Rexhepi, B. R., & Murtezaj, I. M. (2024). Visa liberalisation and labour migration: Legal and economic implications for Kosovo. *Social and Legal Studios, 7*(2), 19–27. https://doi.org/10.32518/sals2.2024.19

6. Ampudia, M., van Vlokhoven, H., & Żochowski, D. (2016). Financial fragility of euro area households. *Journal of Financial Stability, 27*, 250–262.

7. Bernanke, B. S. (2017). Monetary policy in a new era. *Brookings Institution*.

8. BIS. (2020). *Macroprudential policy tools*. Bank for International Settlements.

9. Campbell, J. Y., & Cocco, J. F. (2003). Household risk management and optimal mortgage choice *Quarterly Journal of Economics, 118*(4), 1449–1494.

10. Cerutti, E., Claessens, S., & Laeven, L. (2017). The use and effectiveness of macroprudential policies. *Journal of Financial Stability, 28*, 203–224.

11. Claessens, S., Kose, M. A., & Terrones, M. E. (2012). How do business and financial cycles interact? *Journal of International Economics, 87*(1), 178–190.

12. Debelle, G. (2004). Household debt and the macroeconomy. *BIS Quarterly Review*.

13. Di Maggio, M., Kermani, A., & Ramcharan, R. (2017). Monetary policy pass-through: Household consumption and voluntary deleveraging. *American Economic Review, 107*(11), 3550–3588.

14. Drehmann, M., & Juselius, M. (2014). Evaluating early warning indicators. *International Journal of Forecasting, 30*(3), 759–780.

15. Dynan, K. (2012). Is a household debt overhang holding back consumption? *Brookings Papers on Economic Activity*, 299–362.

16. ECB. (2022). *Financial Stability Review*. European Central Bank.

17. ECB. (2023). *Monetary policy transmission in the euro area*. European Central Bank.

18. Fuster, A., Lo, S. H., & Willen, P. (2018). Default risk and aggregate fluctuations in housing markets. *Journal of Finance, 73*(4), 1449–1508.

19. Galati, G., & Moessner, R. (2018). What do we know about the effects of macroprudential policy? *Economica, 85*(340), 735–770.

20. Gennaioli, N., Shleifer, A., & Vishny, R. (2018).*A crisis of beliefs*. Princeton University Press.

21. Gertler, M., & Karadi, P. (2015). Monetary policy surprises. *American Economic Journal: Macroeconomics, 7*(1), 44–76.

22. Iacoviello, M. (2005). House prices, borrowing constraints, and monetary policy. *American Economic Review, 95*(3), 739–764.

23. IMF. (2022). *Romania: Financial Sector Assessment Program*. International Monetary Fund.

24. Jappelli, T., & Pagano, M. (2014). The welfare effects of macroeconomic volatility. *Journal of the European Economic Association, 12*(6), 1645–1685.

25. Jordà, Ò., Schularick, M., & Taylor, A. M. (2016). The great mortgaging. *Economic Policy, 31*(85), 107–152.

26. Justiniano, A., Primiceri, G., & Tambalotti, A. (2019). Credit supply and the housing boom. *Journal of Political Economy, 127*(3), 1317–1350.

27. Kuttner, K. (2014). Low interest rates and housing bubbles. *Brookings Papers on Economic Activity*.

28. Laeven, L., & Valencia, F. (2018). Systemic banking crises revisited. *IMF Economic Review, 66*, 307–361.

29. Mian, A., & Sufi, A. (2014). *House of debt*. University of Chicago Press.

30. Turner, A. (2016). *Between debt and the devil*. Princeton University Press.