THE IMPACT OF MACROECONOMIC INDICATORS ON THE FINANCIAL STABILITY OF HOUSEHOLDS IN THE VISEGRAD FOUR COUNTRIES

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Abstract: *This paper examines the impact of selected macroeconomic indicators on household financial stability in the Visegrad Four (V4) countries over the period 2005–2024. Financial stability is operationalized through the indicator of households' inability to cope with unexpected expenditure. The empirical analysis employs a random-effects panel model that accounts for both temporal and cross-sectional dimensions of the data while controlling for unobserved heterogeneity across countries. The results indicate a significant influence of labor market conditions, socio-economic circumstances, and households' capacity to accumulate savings. The key determinants of financial vulnerability are identified as the unemployment rate, the at-risk-of-poverty rate, and the household savings rate. The findings provide an empirical basis for formulating economic and social policy in the V4 countries.*

Keywords: *financial stability of households, macroeconomic indicators, V4, panel regression analysis, random effects model*

JEL Classification: C23, D14, E21

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1 Introduction

Household financial stability is a key pillar of macroeconomic stability. The ability of households to meet their financial obligations and maintain adequate consumption levels is particularly critical in the context of macroeconomic shocks, such as sharp increases in inflation, rising interest rates, or labor market fluctuations, all of which affected the V4 countries in the period following 2021. The marked increase in the cost of living, together with central banks' tightening of monetary policy, led to a substantial rise in interest rates, directly affecting households' financial resilience. The degree of household vulnerability varies across the V4 countries depending on the structure of credit markets, indebtedness levels, and the configuration of social policy frameworks (BIS, 2022); (ECB, Financial Stability Review , 2023).

The aim of this paper is to quantify and examine the impact of selected macroeconomic indicators on the financial stability of households in the V4 countries (Slovakia, the Czech Republic, Poland, and Hungary) over the period 2005 – 2024. In the empirical section, financial stability is proxied by the indicator of households' inability to cope with unexpected expenditure.

Based on the theoretical background and previous empirical evidence, it is expected that unemployment, poverty risk, and interest rates will negatively affect household financial stability, whereas higher household savings rates will contribute positively to financial resilience.

Based on this objective, the paper addresses the following research questions:

1. Which macroeconomic factors most significantly influence the level of financial stability of households in the V4 countries?

2. How does the inclusion or exclusion of the HICP indicator (Harmonized Index of Consumer Prices) affect the estimated effects of the remaining macroeconomic variables?

3. What is the extent of explained variability in household financial stability within the panel model for the V4 countries?

The paper is structured into five chapters. The first chapter introduces the subject matter and defines the research objective. The second chapter reviews

the theoretical background and relevant academic literature, defines the concept of household financial stability, and describes macroeconomic shocks. The third chapter presents the data and methodology of the empirical analysis. The fourth chapter contains the results of the panel regression analysis and their interpretation. The concluding fifth chapter summarizes the main findings, provides answers to the research questions, and offers recommendations for economic and social policymakers.

2 Literature Review

This chapter presents the theoretical foundations and literature review on which the empirical section of the paper is based. It focuses on defining the concept of household financial stability, identifying its macroeconomic determinants, examining the roles of savings and indebtedness, and reviewing empirical studies with a particular focus on the specificities of the Visegrad Four (V4) countries. The literature review simultaneously provides the framework for selecting variables for the empirical analysis.

2.1 Household Financial Stability

Household financial stability is commonly defined as the ability to fulfill financial obligations, maintain an adequate level of consumption, and accumulate financial reserves even under adverse economic conditions. In a broader macroeconomic context, household stability is regarded as a fundamental prerequisite for overall financial stability, as financial difficulties experienced by households may transmit to the broader economy through the banking sector and aggregate consumption (BIS, 2022).

International institutions emphasize that household financial stability is closely linked to developments in income, employment, indebtedness, and credit availability. Households with insufficient financial reserves and low financial literacy are considerably more vulnerable to adverse macroeconomic shocks such as rising inflation, increasing interest rates, or declining economic activity (ECB, 2025). These factors may lead to financial distress, delayed loan repayments, reduced consumption, or deepening financial stress (Lusardi & Mitchell, 2014).

In empirical studies, household financial stability is measured through both

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objective and subjective indicators. Objective indicators include the debt-to-income ratio, the share of households with overdue payments, or the level of savings. Subjective indicators, such as households' ability to make ends meet, capture not only their financial situation but also perceived economic uncertainty, and are therefore frequently employed in socio-economic analyses (Potrich, Vieira, & Kirch, 2015).

2.2 Macroeconomic Determinants of Household Financial Stability

One of the most significant determinants of household financial stability is the state of the labor market. Unemployment and job insecurity directly affect households' income stability and their capacity to meet financial obligations. Empirical studies demonstrate that job loss ranks among the strongest factors increasing the risk of household financial distress, particularly during economic recessions (Adeishvili, 2013).

Inflation is another important macroeconomic factor influencing households' real purchasing power. Sharp price increases reduce disposable income, particularly for low-income households whose expenditure is concentrated on necessities. The Bank for International Settlements (2022) warns that periods of high inflation combined with monetary policy tightening can substantially increase household financial stress.

Interest rate developments play a central role, especially in economies with a high share of credit-financed housing. Rising interest rates translate into higher mortgage and consumer loan repayments, increasing debt service costs, and reducing households' disposable income. According to the European Central Bank (2025), households with variable-rate loans and limited financial reserves are most exposed to this mechanism.

GDP per capita is often used as an indicator of overall economic prosperity. However, several empirical studies point out that economic growth does not automatically translate into improved financial conditions for all households, particularly when accompanied by rising inequalities or uneven income distribution (Potrich, Vieira, & Kirch, 2015).

2.3 Savings, Indebtedness, and the Role of Economic Policy

Household savings represent a key mechanism through which households mitigate the adverse effects of macroeconomic shocks. Savings serve as a consumption-smoothing instrument when households face temporary income shortfalls or heightened living costs. Theoretical models of household behavior indicate that households with greater financial reserves can maintain a more stable level of consumption during periods of adverse economic conditions, thereby reducing the likelihood of financial distress (Jappelli & Pistaferri, 2010).

Empirical evidence from the OECD confirms that household financial vulnerability is closely linked to a lack of financial assets, referred to as asset poverty. Households with low levels of savings and liquid assets are significantly more susceptible to financial distress during economic shocks such as price increases, employment declines, or tightening financial conditions. The OECD also highlights the importance of regional disparities, with households in less developed regions exhibiting higher rates of financial vulnerability (OECD, 2025a)

The role of economic and social policy is to mitigate these vulnerabilities through measures that support savings formation, income stabilization, and credit market regulation. Policies aimed at limiting excessive indebtedness, promoting financial literacy, and strengthening social stabilizers can significantly contribute to increasing households' resilience to macroeconomic shocks and reducing the incidence of financial distress over the long term (Bańkowska, Honkkila, Pérez-Duarte, & Reynaert, 2017; OECD, 2025a).

2.4 Empirical Studies and V4 Country Specificities

The Visegrad Four countries share several common characteristics that influence household financial stability. These include lower income levels than in Western European countries, greater sensitivity to energy price developments, and differences in the structure of credit markets.

OECD Economic Surveys indicate that in the V4 countries, the combination of inflation, rising living costs, and tightened financial conditions plays a significant role. In the Czech Republic and Slovakia, household financial

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conditions deteriorated primarily due to rising prices and housing costs (OECD, 2024b; OECD, 2025b). In Hungary and Poland, households are considerably affected by interest rate developments and reduced purchasing power, which increases their vulnerability to macroeconomic shocks (OECD, 2024a; OECD, 2025c).

These country-specific characteristics justify the focus on the V4 region and underline the need for dedicated empirical analysis of the determinants of household financial stability in this group of economies.

3 Data and Methodology

The empirical analysis is based on panel data for the Visegrad Four countries (Slovakia, the Czech Republic, Hungary, and Poland) covering the period 2005–2024.

Table 1: Descriptive Statistics of Variables

Variable	N	Mean	SD	Min	Max	Median
Inability to cope with unexpected expenditure (%)	80	40.9	15.3	17.5	75.9	37.9
Unemployment rate (%)	80	7.23	3.73	2.0	17.9	6.75
HICP (%)	80	3.6	3.71	−0.7	17.0	2.8
GDP per capita (% change)	80	2.76	3.21	−6.6	10.7	2.9
At-risk-of-poverty rate (%)	80	13.0	2.78	8.6	20.5	12.6
Interest rates (%)	80	3.88	2.16	−0.08	9.12	3.76
Household savings rate (%)	80	5.37	3.95	−2.9	14.8	5.25
Financial liabilities (%)	80	10.5	12.5	−14.0	64.4	6.95

Source: Authors' own calculations based on RStudio output; data from Eurostat and OECD.

The dependent variable in the analysis is the inability to cope with unexpected expenditure. The explanatory variables comprise selected macroeconomic

indicators identified in the theoretical background and the existing literature as significant determinants of household financial stability. Specifically, these include the unemployment rate, the inflation rate measured by the Harmonized Index of Consumer Prices (HICP), GDP per capita, the at-risk-of-poverty rate, interest rates, the household savings rate, and household financial liabilities. These variables reflect labor market conditions, changes in purchasing power, credit conditions, and household financial behavior.

To verify the robustness of the results, an alternative model specification is also estimated, excluding the HICP variable. This approach allows for an assessment of the sensitivity of the results to the inclusion of the inflation factor and facilitates identification of any changes in the statistical significance or magnitude of the effects of the remaining explanatory variables.

Data are sourced from the Eurostat and OECD databases. The combination of these two sources ensured that the indicators used are methodologically comparable across countries and consistent over time.

3.1 Household Financial Stability

Household financial stability is the ability to maintain a balance between income and expenditure while building sufficient financial reserves to cover unexpected costs. It represents an important factor in macroeconomic stability, as financially vulnerable households are more sensitive to adverse economic changes such as rising unemployment, inflation, or interest rates.

In this paper, financial stability is measured as the dependent variable through the indicator of inability to cope with unexpected expenditure, which expresses the proportion of households unable to cover an unexpected financial expense from their own resources. Higher values of this indicator signal greater financial vulnerability and lower financial resilience among households.

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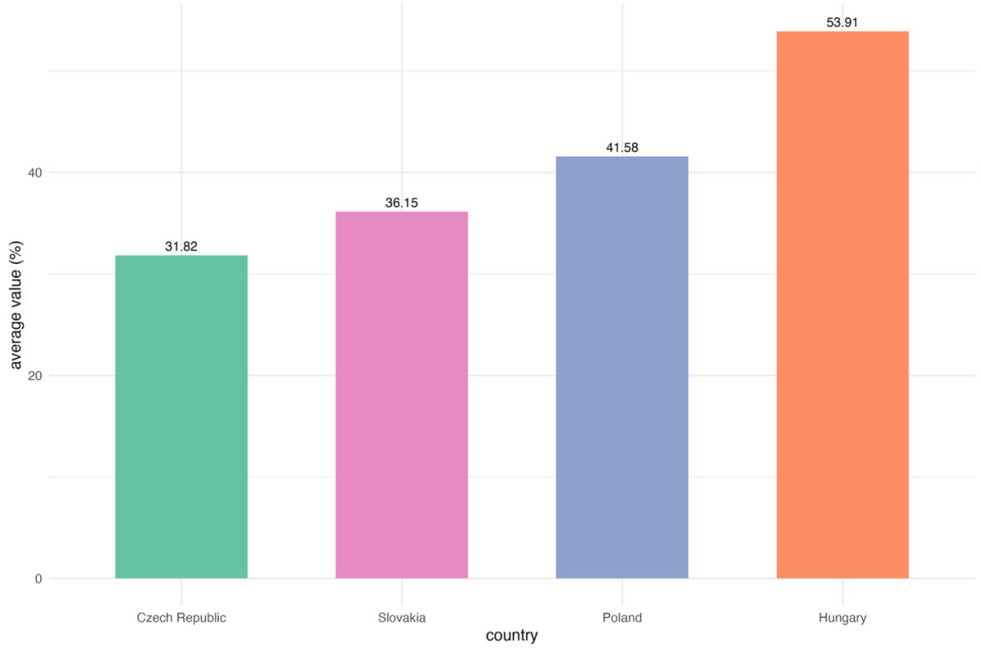
Figure 1: Comparison of Household Financial Vulnerability in V4 Countries



Source: Authors' own calculations based on Eurostat data.

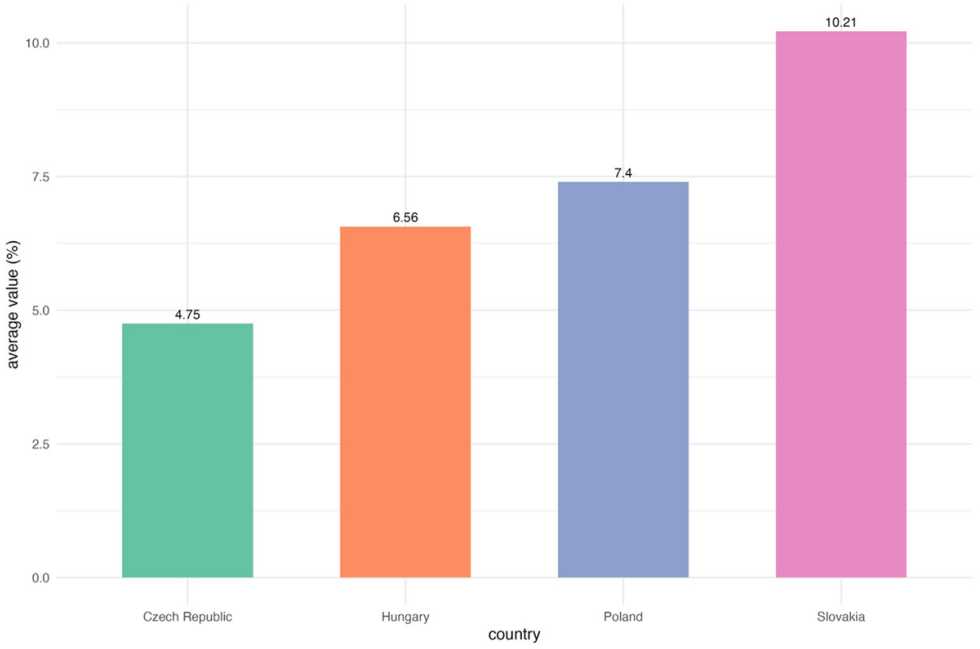
Figure 1 illustrates differences in average household financial vulnerability across the V4 countries. The Czech Republic records the highest average of 53.91%, indicating greater household financial vulnerability than the other countries. Poland leads with an average of 41.58%, followed by Slovakia with 36.15% and Hungary with 31.82%. The observed differences may reflect differences in macroeconomic conditions, employment levels, income ratios, and social policies across countries.

3.2 Independent Variables

The unemployment rate represents the proportion of the economically active population that is without employment yet willing and able to work. Unemployment reduces disposable income, heightens uncertainty, and limits households' ability to build financial reserves, thereby directly increasing the probability that households will be unable to cope with unexpected expenditures. Higher unemployment implies that a greater share of households may struggle to cover ordinary expenses, increasing household financial stress and negatively affecting their capacity for long-term financial planning and

savings accumulation.

Figure 2: Average Unemployment Rate in V4 Countries



Source: Authors' own calculations based on OECD data.

Average unemployment rates across the V4 countries (Figure 2) reveal notable labor-market differentiation. Hungary records the lowest average unemployment rate at 4.75%, followed by the Czech Republic at 6.56% and Poland at 7.40%. Slovakia has the highest value (10.21%), indicating a less favorable labor market than in the other V4 countries. These differences may stem from regional disparities, varying economic growth dynamics, or the effectiveness of active labor market policies.

The Harmonized Index of Consumer Prices (HICP) is a standardized inflation indicator for EU countries that captures the year-on-year dynamics of household consumer basket prices. Inflation directly affects the real purchasing power of disposable income, as rising prices without commensurate growth in nominal incomes lead to a decline in households' real resources. From a macroeconomic perspective, HICP also reflects price stability and indirectly influences interest rates and overall credit market conditions. Inflation is a significant risk factor for household financial stability, as it erodes the real value of savings and may

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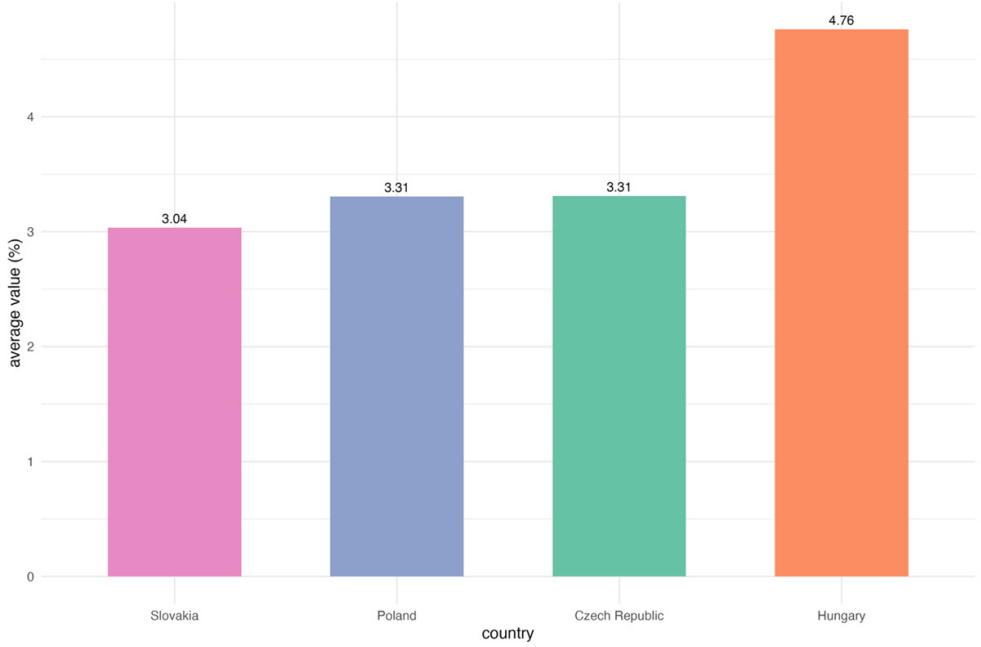
constrain households' ability to build financial reserves. In a high-inflation environment, the probability increases that households will be unable to cover unexpected expenditure without resorting to external financing.

Figure 3: Average HICP Values in V4 Countries

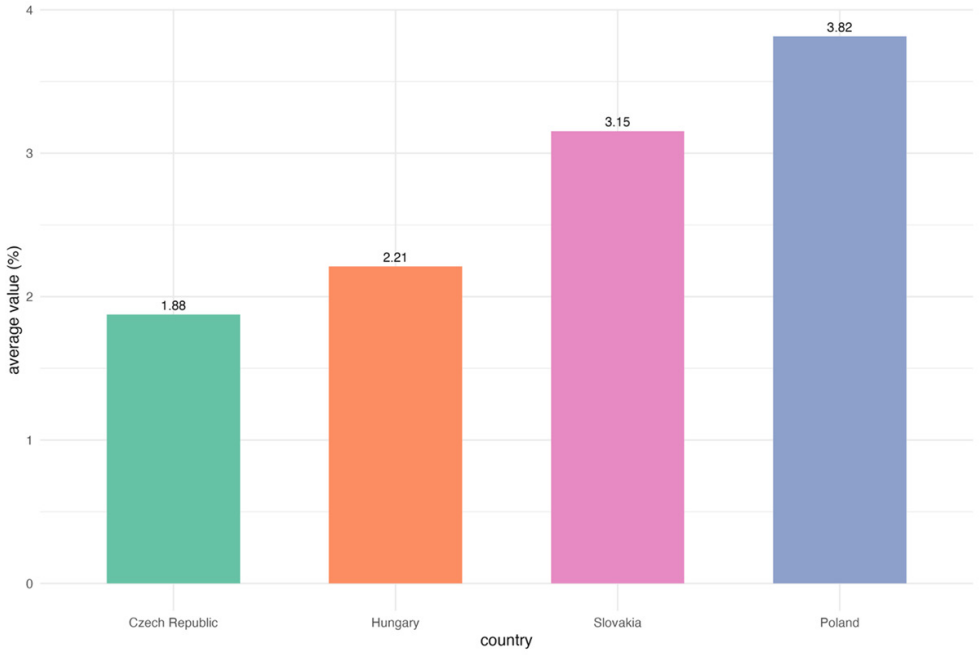


Source: Authors' own calculations based on Eurostat data.

Descriptive results (Figure 3) indicate differences in average HICP rates across the V4 countries. Slovakia records the lowest average value (3.04%), suggesting more moderate consumer price growth, while the highest is recorded in the Czech Republic (4.76%), which may erode households' real purchasing power. Poland and Hungary share an identical average inflation rate of 3.31%, indicating an intermediate inflation level. Higher average HICP values may indicate stronger price pressures, potentially reducing households' real income and heightening financial vulnerability. Differences across countries may be driven by multiple factors, including monetary policy settings, the composition of the consumer basket, the share of imported commodities, energy and food price dynamics, and wage growth. In countries where nominal income growth compensates for price increases, the negative impact of inflation on financial stability may be less pronounced.

GDP per capita is an indicator of a country's overall economic performance, calculated per capita, and is frequently used as a proxy for average economic prosperity. Higher GDP per capita generally correlates with greater labor productivity, higher wage levels, and a more stable labor market, which may contribute to lower household financial vulnerability. From a macroeconomic perspective, higher GDP signals greater income generation, higher fiscal capacity, and potentially better household access to public services and social transfers. These factors may enhance households' capacity to build financial reserves and cover unexpected expenditure.

Figure 4: Average GDP per Capita Growth in V4 Countries



Source: Authors' own calculations based on Eurostat data.

It is nonetheless necessary to emphasize that GDP per capita is an aggregate indicator that does not account for income distribution or the degree of income inequality. Even in economically more advanced countries, financially vulnerable population subgroups may exist. The interpretation of this variable in the context of household financial stability is therefore relevant only in conjunction with other indicators such as the unemployment rate or the at-risk-of-poverty rate. Figure 4 reveals differences in average GDP per capita growth among the V4 countries during the observation period. Hungary records the

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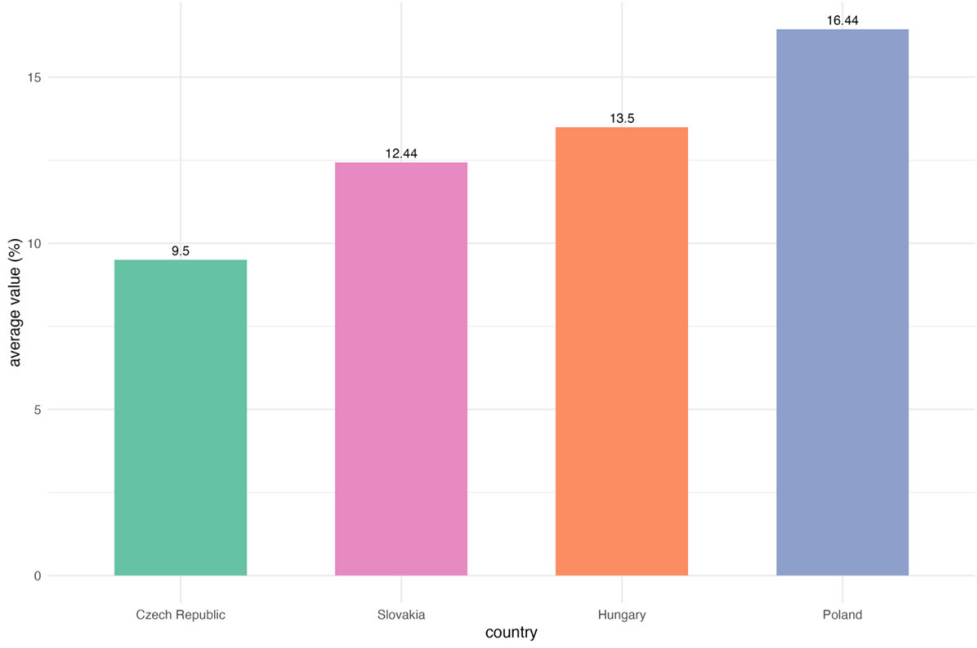
lowest average (1.88%), followed by the Czech Republic (2.21%). Slovakia registers the highest value (3.15%), and Poland records the highest average at 3.82%.

The at-risk-of-poverty rate is the proportion of persons whose disposable income falls below the established poverty threshold, typically set at 60% of the national median income. It is a relative indicator of income deprivation that captures the social dimension of economic inequality within a country. From the perspective of household financial stability, this variable is critical, as low-income households have limited savings capacity and reduced ability to cover unexpected financial shocks. A higher at-risk-of-poverty rate thus signals a larger share of the population exposed to financial vulnerability and a potentially higher probability of inability to cope with unexpected expenditure.

Figure 5: Average At-Risk-of-Poverty Rate in V4 Countries



Source: Authors' own calculations based on Eurostat data.

A comparison of at-risk-of-poverty rates reveals substantial differences in the share of the population exposed to poverty risk. Hungary records the lowest average (9.5%), followed by Slovakia (12.44%) and the Czech Republic (13.5%). Poland exhibits the highest value (16.44%), indicating greater income vulnerability over the observation period. These differences may be

driven by multiple factors, including wage levels, employment rates, labor market structure, and the effectiveness of the social system's redistributive mechanisms. Social transfers, tax progressivity, and family support policies can substantially reduce income inequalities and lower the proportion of persons below the poverty threshold. From a theoretical standpoint, a positive relationship between the at-risk-of-poverty rate and household financial vulnerability is expected.

Interest rates represent the price of borrowed capital and serve as a key monetary policy instrument, influencing borrowing costs, financing availability, and overall economic activity. From the household perspective, interest rates are critical because they determine the size of mortgage and consumer loan repayments, directly affecting disposable income and the ability to cover ordinary and unexpected expenditure. In the context of household financial stability, higher interest rates can increase financial stress, particularly for highly indebted households, by raising the cost of debt service. Conversely, lower interest rates reduce repayment burdens, facilitate access to credit, and may contribute to greater financial stability. Interest rates frequently change in response to central bank reactions to inflationary pressures, meaning that rising inflation leads to monetary policy tightening and higher rates intended to curb price pressures.

The data reveal marked differences in interest rate environments across countries. Slovakia records the lowest average interest rate at 2.63%, followed by Hungary at 2.82%, while Poland exhibits an average of 4.40% and the Czech Republic the highest at 5.66%. These differences may reflect distinct monetary policy settings, varying inflation rates, or differences in macroeconomic stability and credit market regulation. Higher interest rates in the Czech Republic may indicate a stricter monetary policy stance or stronger inflationary pressures. Based on theoretical assumptions, interest rates are expected to negatively affect household financial stability, as higher borrowing rates increase the risk of financial distress.

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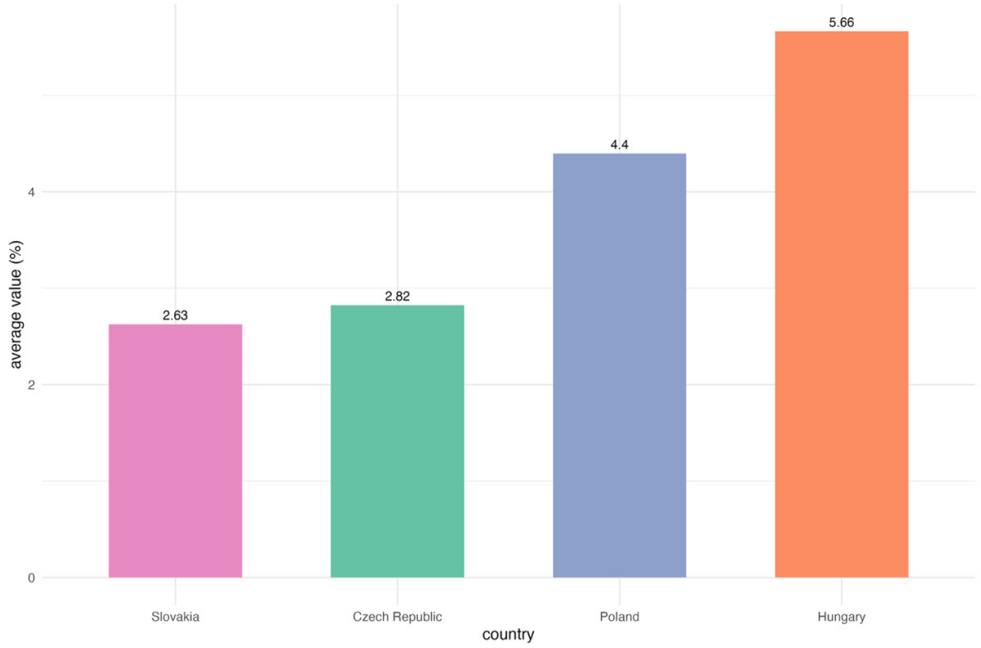
Figure 6: Average Interest Rates in V4 Countries



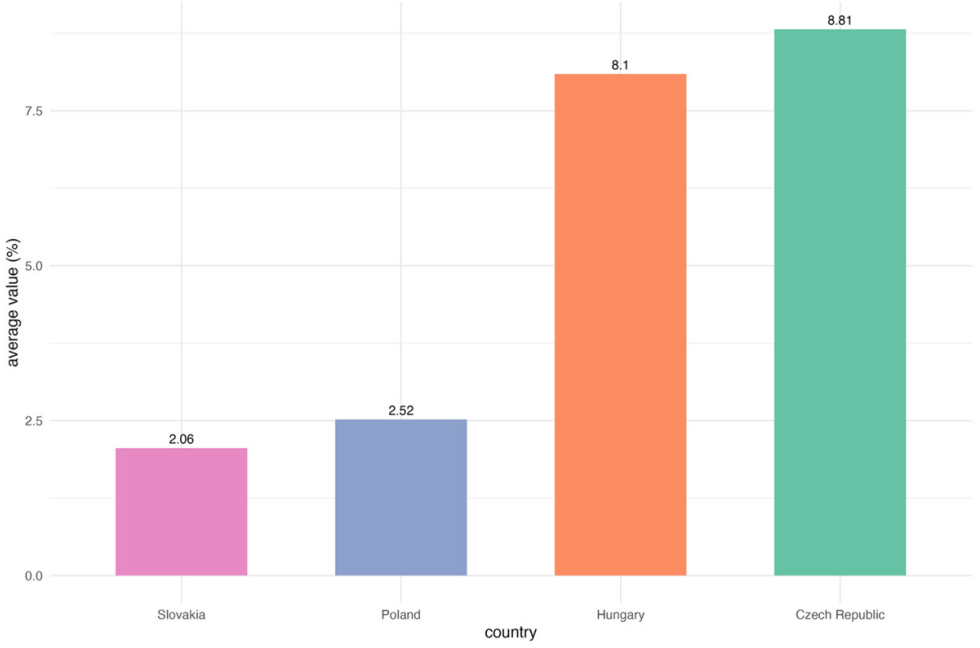
Source: Authors' own calculations based on OECD data.

The household savings rate expresses the proportion of disposable income that households do not allocate to consumption but instead set aside as financial reserves. Such reserves enable households to weather adverse periods — such as unexpected expenditure, job loss, or income declines — and are therefore a key factor reducing financial vulnerability and enhancing household financial stability. Differences in savings rates across countries may result from multiple factors. The level of disposable income plays a significant role, as households with higher incomes generally have greater savings capacity. Consumer confidence and expectations about future economic developments also matter, as households are motivated to increase savings precautionarily during periods of uncertainty. Savings culture, financial literacy, and the availability of financial products also influence households' ability to plan and separate consumption from saving, as well as their resilience to macroeconomic shocks.

A comparison of average household savings rates in the V4 countries (Figure 7) reveals substantial differences. Slovakia records the lowest average saving rate, with households saving just 2.06% of disposable income. Poland follows at 2.52%, while the Czech Republic (8.10%) and Hungary (8.81%) exhibit

considerably higher values. Higher savings rates in the Czech Republic and Hungary may indicate a greater household capacity to build financial reserves and thus greater resilience to economic shocks. Conversely, lower average values in Slovakia and Poland may signal that households consume a larger share of their income and hold smaller financial cushions, increasing their financial vulnerability.

Figure 7: Average Household Savings Rate in V4 Countries



Source: Authors' own calculations based on Eurostat data.

Household financial liabilities represent a significant determinant of financial stability, encompassing primarily mortgage loans, consumer loans, and other forms of debt. Higher indebtedness increases households' sensitivity to changes in the economic environment, particularly to rising interest rates, income declines, or deteriorating labor market conditions. Greater financial liabilities reduce households' flexibility to cover ordinary or unexpected expenditures and heighten the risk of financial stress, especially when combined with low income or high unemployment rates. Differences in financial liabilities across countries may be influenced by the availability of credit and by credit market conditions, including interest rates and regulatory measures for financial institutions. The income structure of households and their capacity to finance

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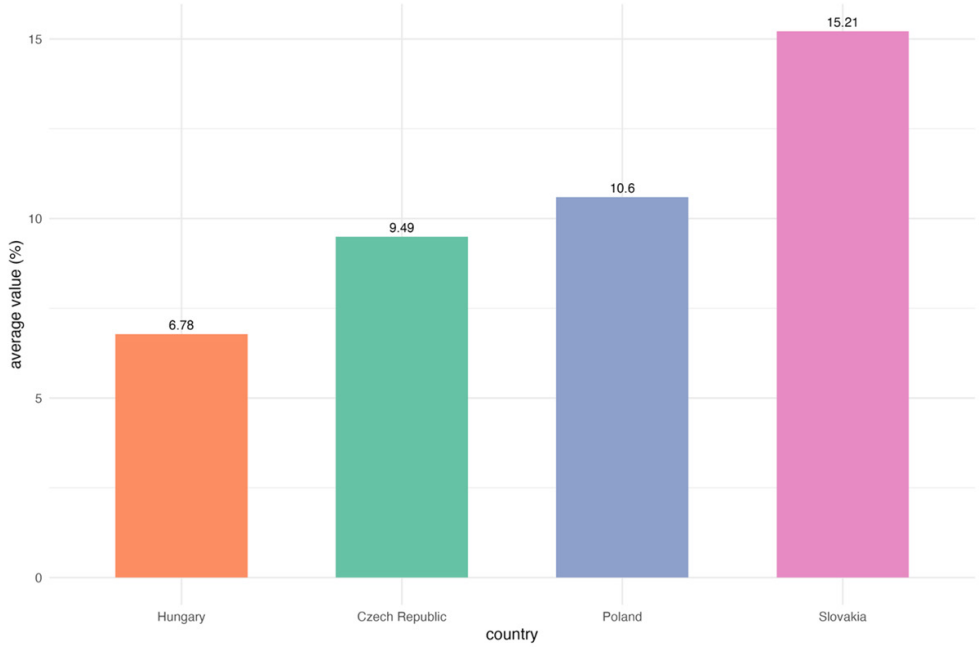
housing through mortgage loans are also relevant. Behavioral and cultural factors - such as preferences for home ownership, willingness to take on debt, or propensity to save - also affect liability levels.

Figure 8: Average Financial Liabilities in V4 Countries



Source: Authors' own calculations based on Eurostat data.

A comparison of average financial liabilities reveals substantial differences across the V4 countries. The Czech Republic records the lowest average value (6.78%), followed by Hungary (9.49%) and Poland (10.60%). Slovakia has the highest level of financial liabilities (15.21%), suggesting greater household indebtedness than in the other V4 countries. This may reflect rapid growth in the mortgage market, increased housing demand, or rising property prices over the observation period.

3.3 Methodological Approach

To analyze the impact of macroeconomic factors on household financial stability, a panel regression model was employed, allowing for the simultaneous consideration of both temporal and spatial dimensions of the data. Panel models provide control for unobserved heterogeneity across countries, which

would otherwise lead to biased estimates if a simple cross-sectional or time-series model were used.

The main model used in the empirical analysis is the random effects model, which assumes that unobserved country-specific characteristics are random and uncorrelated with the explanatory variables. This approach allows for the estimation of the impact of macroeconomic variables while retaining cross-country variability and accounting for structural differences that do not change over time. The random effects model provides more efficient estimates, particularly for a small number of countries and relatively stable variables, and creates the conditions for a broader interpretation of results in the context of similar Central and Eastern European economies.

The use of the random effects panel model preserves the model's ability to exploit information on between-country variability over time, thereby increasing the precision of estimates and enabling a better understanding of which macroeconomic indicators genuinely contribute to household financial vulnerability. This methodological approach provides a comprehensive and reliable framework for empirically testing hypotheses on the relationship between macroeconomic variables and household financial stability in the V4 countries.

The panel analysis enables evaluation of how changes in the unemployment rate, HICP, GDP per capita, interest rates, savings rates, and financial liabilities affect the degree of household financial vulnerability in the V4 countries. To assess robustness, a model specification without HICP was also estimated, given that inflation is closely linked to interest rate developments and other explanatory variables that may influence the estimated coefficients. The objective was to verify whether the identified relationships remain stable after excluding this indicator.

3.4 Model Testing and Robustness

The Hausman test was used to assess the appropriateness of the fixed-effects model relative to the random-effects model. Test results ($\chi^2 = 4.280$, df = 7, $p = 0.747$) indicated no statistically significant difference between the fixed and random effects estimates. Given the small number of countries and the paper's specific focus on the V4 countries, the random effects model was selected as

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the primary specification, as it captures between-country variability and is more data-efficient.

The presence of heteroskedasticity was tested using the Breusch-Pagan test (BP = 15.914, df = 7, p = 0.026), which confirmed a violation of the homoskedasticity assumption. Accordingly, robust clustered standard errors were employed in all primary model specifications to correct for biased variance estimates and ensure the validity of statistical tests. Given the limited number of cross-sectional units (N = 4 countries), the use of cluster-robust standard errors should be interpreted with caution, as asymptotic properties are generally derived for panels with more clusters. Nevertheless, robust standard errors were employed primarily as a precautionary measure against heteroskedasticity, and the results should be viewed as indicative rather than definitive.

The robustness of the results was further verified through alternative model specifications, including the exclusion of individual explanatory variables and the inclusion of time-fixed effects. This approach ensures that the findings are reliable and consistent, and that the influence of macroeconomic factors on household financial stability can be meaningfully compared across all V4 countries.

3.5 Limitations of the Empirical Analysis

Although the panel approach provides a robust framework for examining the relationships between macroeconomic variables and household financial stability, the empirical section of the paper faces certain limitations.

The principal limitations include the relatively small number of countries in the panel, as the analysis focuses exclusively on the Visegrad Four. This may reduce the statistical power of tests and restrict the generalizability of findings to broader European or global contexts. A further limitation is the use of a subjective indicator of household financial stability (inability to cope with unexpected expenditure), which, while providing valuable information on households' perception of financial stability, may be influenced by cultural, psychological, or social factors. Subjective assessments may be subject to reporting bias, whereby respondents evaluate their situation differently depending on expectations, attitudes toward finances, or personal experiences.

Additionally, it should be noted that the observation period (2005–2024) spans significant macroeconomic shocks, including financial crises, sharp interest rate changes, and the COVID-19 pandemic. Potential collinearity among explanatory variables — such as GDP per capita, unemployment, and the at-risk-of-poverty rate — also merits consideration. While the panel model controls for country heterogeneity and provides robust estimation via clustered standard errors, the interpretation of certain coefficients requires caution. There is a risk that the effect of individual variables may be over- or underestimated due to interdependencies among them.

Despite these limitations, the methodology employed enables the identification of significant relationships between macroeconomic indicators and household financial stability in the V4 countries. The results provide valuable empirical evidence on which factors exert the greatest influence on household financial stability and constitute an important basis for formulating economic and social policy recommendations.

4 Results

This chapter presents and interprets the results of the empirical analysis examining the determinants of household financial stability in the Visegrad Four countries over the period 2005–2024. The analysis is based on panel data and focuses on the relationship between household financial stability - measured through households' inability to cope with unexpected expenditure - and selected macroeconomic variables. The variables under examination include the unemployment rate, the Harmonized Index of Consumer Prices (HICP), GDP per capita, the at-risk-of-poverty rate, interest rates, the savings rate, and household financial liabilities.

4.1 Panel Regression Model Estimation

The empirical analysis used panel regression models to identify the impact of selected macroeconomic variables on households' inability to cope with unexpected expenditures. Estimates were obtained using both a fixed-effects (FE) and a random-effects (RE) model, with the preferred specification determined by the results of the Hausman test.

The fixed effects model captures country-specific characteristics that do not

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change over time, thereby eliminating unobserved heterogeneity that could be correlated with the explanatory variables. The results of the FE model (Figure 1) indicate that the unemployment rate, HICP, the at-risk-of-poverty rate, interest rates, and the savings rate are statistically significant at the 5% level. In contrast, GDP per capita and household financial liabilities are not.

Table 2: Fixed Effects Model Estimation (FE)

Variable	Estimate	Std. Error	t value	p value	Sig.
Unemployment rate	1.976238	0.578758	3.4146	0.0010735	**
HICP	−0.873417	0.239227	−3.6510	0.0005041	***
GDP per capita	−0.208358	0.144200	−1.4449	0.1530074	
At-risk-of-poverty rate	1.116963	0.410180	2.7231	0.0081836	**
Interest rates	0.980435	0.438318	2.2368	0.0285328	*
Household savings rate	−1.834543	0.503872	−3.6409	0.0005209	***
Financial liabilities	0.030974	0.142697	0.2171	0.8288006	

Notes: Significance codes: *** $p < 0.001$ ** $p < 0.01$ * $p < 0.05$

Source: Authors' own calculations in RStudio based on data from Eurostat and OECD.

The model was estimated using HC1-type robust standard errors clustered at the country level to address heteroskedasticity and potential within-country error correlation. The coefficients express the impact of the explanatory variables on the dependent variable, controlling for unobservable country-specific effects.

The random effects model assumes that individual effects are uncorrelated with the explanatory variables and was estimated using the Amemiya method. To ensure the reliability of statistical tests, HC1-type robust standard errors clustered at the country level were similarly applied.

Table 3: Random Effects Panel Model Results (RE)

Variable	Estimate	Std. Error	t value	p value	Sig.
(Intercept)	21.551537	9.829995	2.1924	0.0315817	*
Unemployment rate	1.952050	0.591442	3.3005	0.0015033	**

HICP	−0.901045	0.243436	−3.7014	0.0004167	***
GDP per capita	−0.194844	0.145782	−1.3365	0.1855801	
At-risk-of-poverty rate	1.062842	0.467239	2.2747	0.0259021	*
Interest rates	1.113043	0.460743	2.4158	0.0182412	*
Household savings rate	−1.749388	0.478156	−3.6586	0.0004797	***
Financial liabilities	0.026246	0.146806	0.1788	0.8586131	

Notes: Significance codes: *** p < 0.001 ** p < 0.01 * p < 0.05

Source: Authors' own calculations in RStudio based on data from Eurostat and OECD.

The RE model coefficients differed slightly from those of the FE model; however, the direction of the variable effects was preserved. The Hausman test yielded a p-value of 0.747, indicating that the difference between the fixed- and random-effects estimates is not statistically significant at the 5% level. Based on this result, the random effects model was selected as the preferred specification, which may be regarded as consistent and efficient for further interpretation. The estimated random effects model can be formally expressed as follows:

$$Y_{it} = \beta_0 + \beta_1 X_{1,it} + \beta_2 X_{2,it} + \cdots + \beta_k X_{k,it} + u_i + \varepsilon_{it} \quad (1)$$

where Y_{it} denotes the dependent variable for country i at time t, $X_{k,it}$ are the explanatory variables, u_i is the random individual country effect, and ε_{it} is the random error term.

In addition to the baseline model specification, which included all selected explanatory variables, including HICP, an alternative specification was estimated without this variable. The objective was to verify the robustness of results and the stability of the estimated coefficients.

Table 4: Random Effects Panel Model Results without HICP

Variable	**Estimate**	**Std. Error**	**t value**	**p value**	**Sig.**
(Intercept)	20.101785	11.593616	1.7339	0.08294	.
Unemployment rate	2.672385	0.326608	8.1822	2.786e−16	***
GDP per capita	−0.131329	0.283578	−0.4631	0.64328	

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At-risk-of-poverty rate	0.869966	0.701611	1.2400	0.21499	
Interest rates	−0.143858	0.526828	−0.2731	0.78480	
Household savings rate	−1.701260	0.353529	−4.8122	1.493e−06	***
Financial liabilities	0.020093	0.075469	0.2662	0.79006	

Notes: Significance codes: *** p < 0.001 ** p < 0.01 * p < 0.05

Source: Authors' own calculations in RStudio based on data from Eurostat and OECD.

HICP is a macroeconomic indicator closely linked to interest rate developments and the broader economic environment, which may affect the estimates it produces. Although multicollinearity diagnostics did not reveal a serious problem (VIF values ranged from 1.41 to 2.26, indicating a low level of multicollinearity), estimating the model without HICP (Table 4) allows an assessment of whether the principal determinants of household financial distress remain significant under a slightly modified specification.

4.2 Interpretation of Regression Coefficients

The coefficient for the unemployment rate was positive and statistically significant at the 5% level in both estimated model specifications. In the full model (Table 3), it reached approximately 1.95, and in the specification without HICP (Table 4), approximately 2.67. In economic terms, an increase in the unemployment rate by one percentage point is associated with an increase in the proportion of households unable to cope with unexpected expenditure of approximately 1.95 percentage points in the model including HICP and 2.67 percentage points in the reduced model. This suggests a potential omitted-variable correlation between inflation and labor market dynamics. Nevertheless, the direction and significance of the effect remain stable. This result is economically expected: rising unemployment implies a decline or loss of income for a portion of the population, reducing households' ability to cover ordinary expenditure and increasing financial vulnerability. The consistency of the estimate across both specifications confirms that labor market conditions rank among the primary determinants of household financial stability.

The HICP variable was included only in the first model specification. Its coefficient was approximately −0.90 and was statistically significant at the 5% level. The estimate thus suggests that an increase in inflation by 1 percentage

point was associated with a moderate decline in the proportion of households unable to cope with unexpected expenditure during the observation period. This likely reflects adjustment mechanisms in wages, transfers, and debt dynamics rather than a direct causal improvement in household financial stability. This result may appear counterintuitive, given that price increases are generally associated with deteriorating household financial conditions. A plausible explanation is that during the analyzed period, nominal wages or social transfers increased sufficiently to at least partially offset price developments. Furthermore, inflation reduces the real value of existing debt, which may partially alleviate the debt burden for indebted households. A comparison of the two specifications shows that while excluding HICP produced slight changes in some coefficient values, the fundamental relationships among the key variables were preserved, supporting the robustness of the results.

Nevertheless, the negative sign of the HICP coefficient should be interpreted with caution. The result may reflect specific macroeconomic circumstances during the analyzed period, including wage adjustments, fiscal support measures, or temporary reductions in the real burden of household debt. It may also indicate the presence of omitted variables or other factors not fully captured by the model specification. Therefore, the estimated relationship should not be interpreted as evidence that higher inflation systematically improves household financial stability.

In the model including HICP (Table 3), the coefficient for the at-risk-of-poverty rate was approximately 1.06 and statistically significant at the 5% level. In the alternative specification without HICP (Table 4), its value declined slightly to approximately 0.87; however, the variable lost statistical significance, suggesting that inflation dynamics may capture part of the effect.

The savings rate exhibited a negative and statistically significant relationship with the dependent variable in both specifications. In the model including HICP, the coefficient was approximately −1.75; after its exclusion, it was approximately −1.70. An increase in the savings rate by one percentage point is associated with a decline of approximately 1.7 percentage points in the proportion of households having difficulty in coping with unexpected expenditure. This is an economically coherent result, as higher savings create a financial buffer that enables households to absorb adverse shocks without an immediate deterioration in their financial situation. The minimal change in the coefficient value suggests that this relationship is stable and independent of

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the inclusion of the inflation variable.

In the model including HICP (Table 3), the interest rate coefficient was approximately 1.11 and statistically significant at the 5% level. This implies that a one percentage-point increase in interest rates is associated with a rise of approximately 1.11 percentage points in the share of households unable to cope with unexpected expenditure. The economic rationale lies in higher interest rates increasing the cost of debt service, which negatively affects the disposable income of indebted households — an effect most pronounced for variable-rate loans. Following the exclusion of HICP, however, interest rates lost statistical significance, suggesting that the interest rate effect may be partially confounded with inflation dynamics and correlated monetary conditions, potentially indicating multicollinearity or overlapping transmission channels.

GDP per capita and financial liabilities were not statistically significant at the 5% level in either specification. This implies that, when controlling for other factors, a direct effect on household financial stability cannot be conclusively confirmed. In the case of GDP per capita, the effect may be absorbed by labor-market conditions and income distribution, which are more directly linked to household financial stress. Household financial liabilities may exert differentiated impacts depending on debt structure and financing conditions, which may not be unambiguously reflected in aggregated data.

4.3 Answers to Research Questions

The empirical analysis enabled an examination of the primary macroeconomic factors influencing household financial stability in the V4 countries, as well as an assessment of the stability and robustness of estimates across different panel model specifications.

Research Question 1: Which macroeconomic factors most significantly influence the level of financial stability of households in the V4 countries?

The model results indicate that the key determinants of household financial stability are labor market conditions, the at-risk-of-poverty rate, and households' capacity to generate savings. The unemployment rate emerged as one of the most significant factors, as its increase reduces households' disposable income and raises the probability of financial distress. The at-risk-

of-poverty rate reflects the level of socio-economic inequality. It demonstrates that a higher proportion of the population at risk of poverty is associated with a greater number of households experiencing difficulties in covering unexpected expenditure. Conversely, households' savings capacity exerts a protective effect, as savings create a financial buffer that enables households to manage unexpected expenditures or economic shocks without an immediate decline in living standards. This set of factors is significant primarily in the main model specification. At the same time, the unemployment rate and the savings rate remained statistically significant across both specifications, confirming their central role in determining household financial stability in the Visegrad Four countries.

Research Question 2: How does the inclusion or exclusion of the HICP indicator affect the estimated effects of the remaining macroeconomic variables?

A comparison of the model with HICP with the specification without HICP reveals that including the price indicator affects the estimated coefficients of the remaining variables. In the model estimated without HICP, the coefficients for certain variables — most notably the unemployment rate and the at-risk-of-poverty rate — increased slightly. This shift suggests that HICP is to some extent correlated with the other macroeconomic variables, and its inclusion enables a cleaner separation of the net effects of individual determinants. Robustness tests and multicollinearity diagnostics confirmed that the inclusion or exclusion of HICP does not alter the fundamental direction or significance of the primary determinants of financial distress, indicating the stability of the estimates and the overall robustness of the model results.

Research Question 3: What is the extent of explained variability in household financial stability within the panel model for the V4 countries?

Based on the panel regression estimates, the extent to which the included macroeconomic variables explain the differences in household financial stability across the V4 countries was examined. To evaluate the model's capacity to capture variability in the dependent variable, the adjusted R^2 was used, which accounts for both the explained variability and the number of independent variables, providing a more reliable picture of model quality than the standard R^2. In the model containing all selected variables, including HICP, the adjusted R^2 was approximately 0.758, indicating that the included

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macroeconomic factors explain 76% of the variability in household financial stability. At the same time, a relatively high adjusted R^2 should not be interpreted as evidence of causality, particularly in a panel data model, where common macroeconomic shocks may simultaneously influence multiple variables. In the specification from which HICP was excluded, the adjusted R^2 declined slightly to approximately 0.726. Despite this decline, the model continues to explain a substantial share of the dependent variable's variability, confirming the stability and robustness of the estimated relationships across model specifications.

5 Conclusion

The objective of this paper was to analyze the determinants of household financial stability in the Visegrad Four countries over the period 2005–2024. The empirical analysis demonstrated that the most significant determinants of households' ability to manage ordinary and unexpected expenditure are labor market conditions, socio-economic factors, and households' capacity to accumulate savings.

Higher unemployment rates and a larger proportion of the population at risk of poverty significantly contribute to household financial distress. In comparison, higher savings rates exert a protective effect, enhancing resilience to economic shocks. The impact of the Harmonized Index of Consumer Prices (HICP) and interest rates primarily reflects their interactions with other macroeconomic variables and the model's transmission channels. At the same time, GDP per capita and financial liabilities did not demonstrate a statistically significant direct effect on financial stability. The adjusted R^2 of 0.758 confirms that the panel model explains approximately 76% of the variability in household financial stability, attesting to the robustness and suitability of the methodological approach employed.

The empirical findings are broadly consistent with previous studies emphasizing the importance of labor market conditions and household savings for financial resilience (Lusardi & Mitchell, 2014); (Jappelli & Pistaferri, 2010). Similarly, the positive association between poverty risk and financial vulnerability aligns with findings from OECD studies on household financial fragility. However, the negative coefficient estimated for HICP differs from standard theoretical predictions in macroeconomic literature and should therefore be interpreted

with caution.

Based on the obtained results, the following policy measures are recommended to support household financial stability in the V4 countries: strengthening labour markets by reducing unemployment through the creation of stable employment, active employment policies, and support for labor mobility; efficient redistribution and targeting of social transfers to reduce the at-risk-of-poverty rate and support low-income groups; promotion of financial literacy through educational programs that enhance households' capacity to plan expenditure, build financial reserves. Effectively manage unexpected shocks and incorporate the effects of inflation and interest rates on household financial behavior in the formulation of monetary and fiscal policy.

The paper further highlights that even in countries with higher GDP, financially vulnerable household groups exist, supporting the need for a combined approach integrating economic, social, and financial policy. Despite limitations related to the limited number of cross-sectional units and the use of a subjective indicator of financial distress, the results provide a valuable empirical basis for evidence-based policymaking and future research on household financial resilience.

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https://doi.org/10.53465/ER.2644-7185.2026.2.123-150

REFERENCES

[1] Adeishvili, G. (2013). The impact of real macroeconomic indicators on financial stability indicators. *A Thesis Paper Submitted in Partial Fulfillment of the Requirements of the Degree of Master of Science in International Economics and Finance. Tto-von-Guericke-University Magdeburg.*

[2] Bankowska, K., Honkkila, J., Pérez-Duarte, S., & Lefebvre, L. R. (2017). *Household vulnerability in the euro area* (Vol. 46). Bank for International Settlements.

[3] BIS. (2022). *Annual economic report.* Available at: https://www.bis.org/publ/arpdf/ar2022e.htm

[4] ECB. (2023). *Financial stability review.* https://doi.org/10.2866/6163

[5] ECB. (2025). *Financial stability review.* Available at: https://www.ecb.europa.eu/press/financial-stability-publications/fsr/html/ecb.fsr202511~263b5810d4.en.html

[6] Jappelli, T., & Pistaferri, L. (2010). The consumption response to income changes. *Annual Review of Economics, 2*(1), 479–506. https://doi.org/10.1146/annurev.economics.050708.142933

[7] Lusardi, A., & Mitchell, O. S. (2014). The economic importance of financial literacy: Theory and evidence. *Journal of Economic Literature, 52*(1), 5–44. https://doi.org/10.1257/jel.52.1.5

[8] OECD. (2024a). *OECD economic surveys: Hungary 2024.* https://doi.org/10.1787/795451e5-en

[9] OECD. (2024b). OECD economic surveys: Slovak Republic 2024. https://doi.org/10.1787/397ca086-en

[10] OECD. (2025a). *Household financial fragility and asset poverty in OECD regions: New indicators and an experimental imputation method.* https://doi.org/10.1787/ee9f2f16-en

[11] OECD. (2025b). *OECD economic surveys: Czechia 2025.* https://doi.org/10.1787/7a70af5c-en

[12] OECD. (2025c). *OECD economic surveys: Poland 2025.* https://doi.org/10.1787/483d3bb9-en

[13] Potrich, A. C. G., Vieira, K. M., & Kirch, G. (2015). Determinants of financial literacy: Analysis of the influence of socioeconomic and demographic variables. *Revista Contabilidade & Finanças, 26*(69), 362–377. https://doi.org/10.1590/1808-057x201501040