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FROM THE EDITORS

In **Volume 7, No. 2** of the journal *TRANSBORDER ECONOMICS – International Journal on Transborder Economics, Politics and Statistics*, we would like to draw readers' attention to issues that arise in many economies, this time viewed specifically from a Polish perspective. We will address the behavioural consequences of restrictive monetary policy and the financial condition of selected municipalities in Poland in an international comparison. In this issue, we also present a brief report on the conference "Scientific Research from a Student's Perspective." It is worth noting that the article on the financial condition of municipalities was presented at this conference.

The article by Mateusz Malecki entitled *The Ratchet Effect and the flight to non-bank lenders: behavioural consequences of restrictive monetary policy in Poland* presents an in-depth examination of the mechanisms of household credit indebtedness in Poland, integrating macroeconomic indicators with insights from behavioural economics. Drawing on data from the OECD, the Polish Financial Supervision Authority (KNF), and the Credit Information Bureau (BIK), the paper identifies a pronounced structural bifurcation in the Polish credit market.

Joanna Naróg and Ola Kuźnia's paper *A comparative analysis of the financial management of the municipalities of Tuczępy and Gnojno (2021-2023) in the context of the financial condition of the rural municipalities in Romania* presents a comparative analysis of financial management in two Polish rural municipalities—Tuczępy and Gnojno—between 2021 and 2023, framing their budgetary performance against the fiscal reality of rural local governments in Romania. The findings reveal a clear divergence: while Tuczępy maintains strong financial autonomy, a stable operating surplus, and a clear focus on development investments, Gnojno faces severe financial distress marked by an operating deficit, high per capita debt, and heavy reliance on central government funding—a structure remarkably similar to underfunded Romanian comunas.

The report on the conference "Scientific Research from a Student's Perspective" describes the proceedings of the conference and discusses the papers presented. It was a student conference organized at the University of Rzeszów by the "Leaders of Business" Scientific Club.

Prof. Elżbieta Feret
Editor-in-Chief

Hubert Leśniak
Secretary

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THE RATCHET EFFECT AND THE FLIGHT TO NON-BANK LENDERS: BEHAVIOURAL CONSEQUENCES OF RESTRICTIVE MONETARY POLICY IN POLAND

Mateusz Malecki[1]

ABSTRACT

The article presents an in-depth examination of the mechanisms of household credit indebtedness in Poland, integrating macroeconomic indicators with insights from behavioural economics. The study elucidates the primary determinants of consumption smoothing financed through external sources of credit. Drawing on data from the OECD, the Polish Financial Supervision Authority (KNF), and the Credit Information Bureau (BIK), the paper identifies a pronounced structural bifurcation in the Polish credit market. The transmission of restrictive monetary policy through the WIBOR index has exerted a substantial constraining effect on the volume of traditional bank lending. As a consequence, a marked reallocation of credit demand is observed: households, seeking to stabilize their consumption trajectories in the context of declining real incomes and increasingly stringent banking regulations, are progressively shifting towards the dynamically expanding non-bank lending segment. Quantitative analyses indicate a profound structural transformation of the market: the value of non-bank loan sales increased from PLN 4.7 billion in 2020 to PLN 16.3 billion in 2024. These findings point to significant systemic vulnerabilities associated with this reorientation of credit flows and underscore the urgency of strengthening macroprudential oversight as well as enhancing the scope and effectiveness of financial education initiatives.

Key words: SME sector, Polish economy, analysis.
JEL: G51, D14, G21.

1. Introduction and Research Problem

Households represent one of the key sectors of the contemporary financial system, and their propensity to assume credit liabilities exerts a direct influence

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on the dynamics of domestic demand and, consequently, on the rate of economic growth. The indebtedness mechanism is a complex, multidimensional phenomenon whose comprehensive understanding necessitates the integration of a macroeconomic perspective with insights derived from behavioural finance.

In recent years, the Polish financial market has been subject to profound turbulence induced by the post-pandemic recovery process, the outbreak of the war in Ukraine, elevated inflationary pressures, and unprecedented increases in central bank policy rates. Against this backdrop, the primary objective of this article is to identify the determinants underlying household credit decisions and to assess the mechanisms shaping the level, structure, and dynamics of the indebtedness of Polish households in a newly emerged, highly volatile macroeconomic environment.

To address the formulated research problem, the study proposes and empirically verifies the following research hypotheses:

H1: There exists a strong, statistically significant, negative relationship between the tightening of monetary policy—operationalized as increases in the central bank's reference rates and the WIBOR index—and the volume of traditional consumer loans extended by the commercial banking sector.

H2: Under the influence of the ratchet effect, households that are excluded from access to traditional bank credit as a result of more stringent regulatory requirements and rising capital costs reallocate their borrowing activity toward the non-bank lending segment in order to sustain their consumption levels, thereby contributing to the dynamic expansion of the shadow banking sector.

2. Research Methodology

The research procedure was based on a systematic literature review in the field of macroeconomics combined with secondary data analysis (desk research). The structure and dynamics of indebtedness were examined using statistical data from the Organisation for Economic Co-operation and Development (OECD), cyclical reports of the Polish Financial Supervision Authority (KNF) on the situation of the banking sector (FINREP reports), data from the Credit Information Bureau (BIK), and reports of the National Bank of Poland (NBP). The selection of these sources made it possible to address the research problem both from a broad European perspective and with a detailed breakdown between the Polish banking and non-banking sectors.

The primary empirical analysis covers the period 2012–2025 and is supplemented with historical reference data starting in 2008. This time horizon was deliberately chosen to encompass both phases of prolonged macroeconomic stability and periods of exogenous shocks of unprecedented scale, including the post-pandemic recovery and the inflationary surge associated with the outbreak of the war in Ukraine. Such an extended observation window provides a robust basis for comparative analysis of credit behaviour under heterogeneous monetary policy regimes.

In addition to descriptive statistics, the study applies quantitative methods, in particular Pearson's correlation coefficient, to formally assess the strength and direction of the relationship between interest rates and loan volumes. This analytical approach enables a statistically grounded verification of the extent to which the tightening of monetary policy is transmitted into effective consumer credit demand.

3. Theoretical and Behavioural Determinants of Indebtedness

Contemporary economic explanations of household indebtedness are predominantly grounded in two foundational paradigms: the life-cycle hypothesis (LCH), pioneered by F. Modigliani (1954), and the permanent income hypothesis (PIH), formulated by M. Friedman (1957). Modigliani′s framework posits that individuals allocate consumption and savings intertemporally over their entire lifespan so as to optimize the intertemporal distribution of utility across different stages of life. Within this framework, a central determinant of credit demand is the age of the economic agent, in conjunction with labour market status and household composition (Kata et al., 2021). Over the household life cycle, heterogeneity in borrowing patterns reflects evolving needs, typically transitioning from long-term liabilities (e.g., mortgage debt) in early adulthood towards borrowing primarily aimed at consumption smoothing in later phases of life.

In contrast, Friedman's PIH asserts that consumption decisions are determined not solely by current income, but by "permanent" income— defined as the expected long-run average income stream over the life cycle, though contemporary heterogeneous agent models demonstrate that households frequently encounter liquidity constraints that disrupt perfect consumption smoothing (Kaplan and Violante, 2022). Both theoretical constructs imply a rational intertemporal budget constraint: while a household cannot, over the long run, consume beyond the present value of its permanent income, it may reallocate consumption across time by using external borrowing. Although these classical models provide a rigorous rational benchmark for understanding indebtedness, they do not fully capture decision-making under conditions of pronounced macroeconomic uncertainty and binding credit constraints.

A more comprehensive account of contemporary debt dynamics necessitates the incorporation of insights from behavioural economics. From this perspective, debt instruments function as mechanisms that allow households to sustain elevated consumption levels in the face of temporary income shocks. Empirical observation suggests, however, that when real income declines, households frequently fail to adjust their expenditures downward in a manner consistent with classical rationality. Instead, they exhibit a "ratchet effect," originally conceptualized within J. Duesenberry's Relative Income Hypothesis (Duesenberry, 1949). Duesenberry argued that consumption patterns display a strong asymmetry: once a given standard of living has been attained, households are markedly reluctant to reduce it, even when their financial capacity deteriorates.

Within behavioural finance, this rigidity is further rationalized by loss aversion and present bias. The disutility associated with a reduction in consumption is perceived as substantially greater than the utility derived from an equivalent increase, which makes downward adjustments particularly painful. As a result, households often resort to loans and other financial instruments to artificially sustain previously attained consumption levels.

During phases of restrictive monetary policy, when commercial banks tighten credit scoring criteria and raise the cost of capital, low- and middle-income households are disproportionately affected by credit rationing and increased financial vulnerability. Under the combined influence of the ratchet effect and a behavioural aversion to lowering their standard of living, these households increasingly turn to the non-bank credit sector (shadow banking). Although such alternative sources of finance are typically associated with substantially higher total borrowing costs (e.g., a higher APRC), the behavioural drive for short-term consumption smoothing can temporarily dominate considerations of long-term financial optimality. This, in turn, contributes to structural reconfigurations in the composition and distribution of household debt within the broader credit market (Waliszewski and Czechowska, 2019; Gemzik-Salwach and Perz, 2015).

4. Research Results and Discussion

The level of household indebtedness is closely linked to the volume of disposable income available to consumers, and this relationship exhibits a dual character. On the one hand, household with insufficient income frequently resort to borrowing to satisfy urgent consumption or liquidity needs, which results in an increase in short-term debt. On the other hand, access to credit is conditional on adequate creditworthiness, meaning that individuals with higher material status can more easily contract substantial, long-term financial liabilities. These mechanisms, clearly observable at the microeconomic level, are directly reflected in the macroeconomic differentiation of indebtedness across countries at varying stages of economic development.

In comparative perspective within the European Union, Poland continues to be characterized by a relatively low and macroeconomically safe ratio of household debt to nominal disposable income (see Figure 1). In 2024, this indicator for Poland amounted to only 49%, compared with an EU average of 106%.

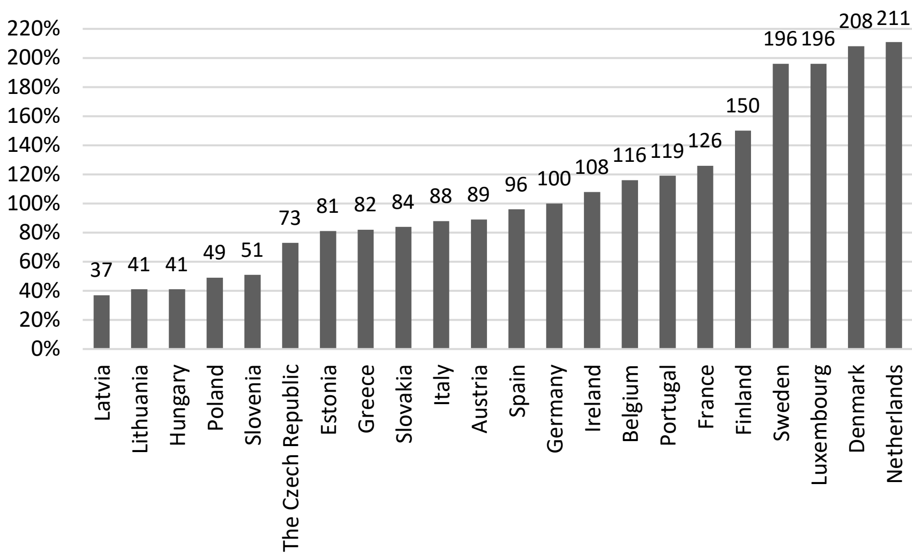

Figure 1. Household debt as a percentage of nominal disposable income in EU countries in 2024 (%)

Source: author's work based on OECD data, https://data.oecd.org/hha/household-debt.htm (accessed March 5, 2026).

The highest levels of household indebtedness are recorded in affluent Western European economies, such as the Netherlands, where the debt-to-income ratio has reached 211%, as well as in Denmark and France. These countries are characterized by a well-established and highly developed credit culture, and their banking sector loan portfolios are distinguished by high stability and robust repayment performance. In contrast, Central and Eastern European economies (including, for example, Poland and Latvia, where the indicator stands at 37%) exhibit a substantially lower overall level of household indebtedness, while at the same time demonstrating a relatively higher proportion of unsecured consumer credit in their banking portfolios.

An analysis of the trajectory of Polish household indebtedness over the past decade indicates that, between 2012 and 2021, the debt-to-income ratio remained relatively stable, fluctuating around 60% (within a range of 57.2% to 61.6%) – Figure 2. A pronounced deviation from this pattern was observed in 2022, when the ratio declined to 49.20%. The post-pandemic environment, the outbreak of the war in Ukraine, and the resulting macroeconomic and geopolitical uncertainty markedly reduced households' willingness to assume new financial obligations, particularly in the form of long-term mortgage loans.

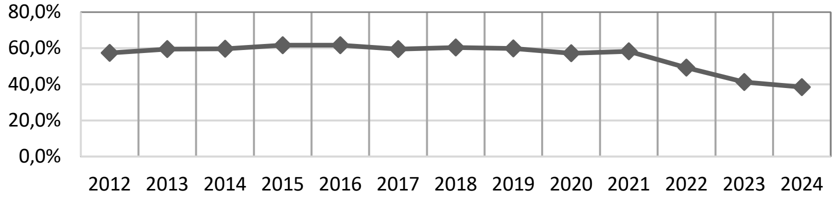

Figure 2. Household debt in Poland as a percentage of nominal disposable income (%) in the years 2012-2024

Source: author's work based on OECD data, https://data.oecd.org/hha/household-debt.htm (accessed March 4, 2026).

The primary transmission channel shaping the deceleration of the Polish credit market has been the level of interest rates set by the Monetary Policy Council (Rada Polityki Pieniężnej, RPP) – figure 3. Decisions of the central bank define the operational framework of the interbank market, which is directly reflected in the behaviour of reference rates. The amplitude of fluctuations in the interest rates on three-month and six-month interbank deposits (WIBOR 3M and WIBOR 6M) exhibits a strong correlation with changes in the key policy rates of the National Bank of Poland (Narodowy Bank Polski, NBP). The most pronounced increases in these indicators in Poland's recent economic history occurred at the end of 2008, in the aftermath of the global financial crisis, and at the beginning of 2022, in response to the inflationary shock associated with the COVID-19 pandemic and the military aggression of the Russian Federation against Ukraine.

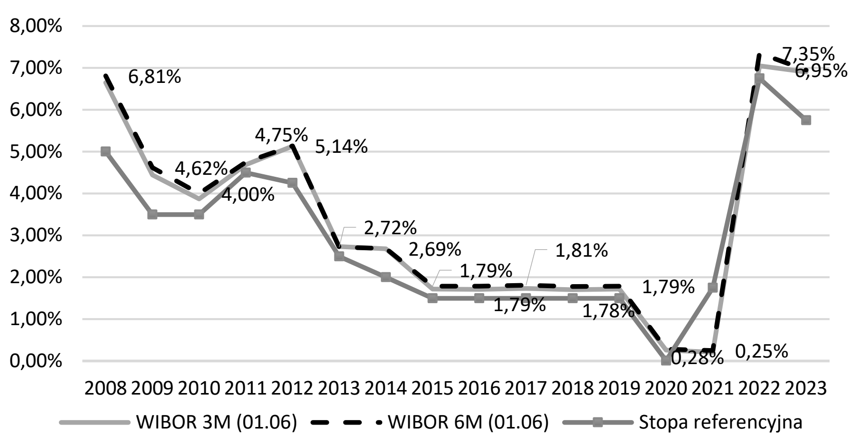

Figure 3. Changes in the NBP reference rate, WIBOR 3M, and WIBOR 6M rates in the years 2008-2023

Source: author's work based on OECD data, https://data.oecd.org/hha/household-debt.htm (accessed March 6, 2026).

To empirically assess the impact of macroeconomic determinants on household credit demand, a statistical analysis was conducted to examine the relationship between the National Bank of Poland's (NBP) monetary policy and consumer borrowing (see Figure 4). The computation of Pearson's correlation coefficient between the NBP reference interest rate and the volume of formal consumer loans granted reveals a strong and statistically significant negative correlation ($r = -0.89$, $p < 0.05$). This inverse association, illustrated in Figure 4, indicates that an increase in the cost of capital is accompanied by a pronounced decline in the demand for formal bank credit among Polish households. Conversely, during the period of relative macroeconomic stability from 2014 to 2019, declining interest rates were associated with a substantial expansion in the volume of loans extended to households. The enhanced availability of relatively low-cost credit appears to have encouraged consumers to increase their use of formal banking products, thereby contributing to higher household expenditures and exerting a stimulative effect on domestic economic activity.

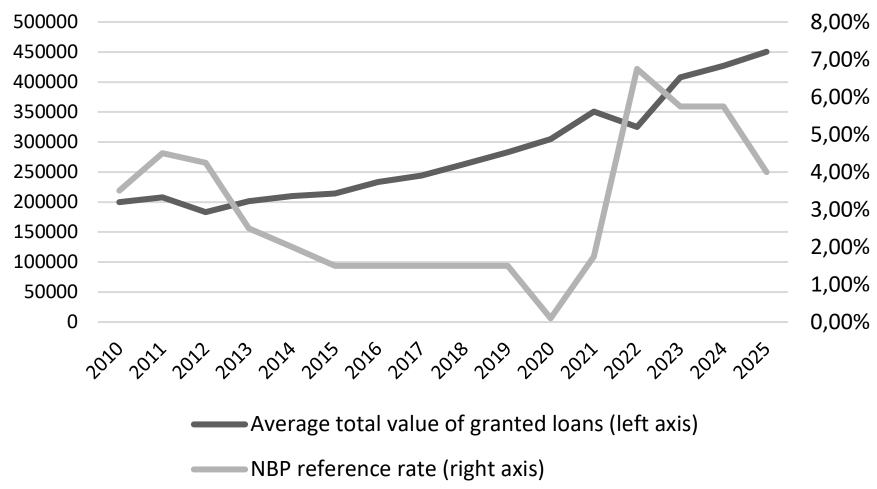

Figure 4. Average total value of granted loans versus the NBP reference rate in Poland (2010–2025)

Source: author's work based on KNF data, "Information on the situation of the banking sector in 2024" (https://www.knf.gov.pl/?articleId=85173&p_id=18, accessed July 20, 2026) and NBP data (https://nbp.pl/podstawowe-stopy-procentowe-archiwum/, accessed July 20, 2026).

Overall, the analysis demonstrates that interest rates and broader macroeconomic conditions constitute primary determinants of household borrowing behaviour. Both the monetary policy stance of the central bank and the credit risk management frameworks of commercial banks exert a decisive influence on the effective demand for consumer credit. Accordingly, continuous risk surveillance and the swift adjustment of financial institutions to evolving market conditions are indispensable for preserving the stability of the formal banking sector and fostering sustainable economic development. Moreover, in a highly volatile, high–interest rate environment, household decision-makers must employ rigorously rational criteria in the use of external debt instruments in order to mitigate the risk of excessive indebtedness.

The pronounced increase in the cost of capital exerted a direct influence on household credit decisions, necessitating a marked reconfiguration of the composition of their financial liabilities – Figure 5. Within the consumer credit portfolio (as defined by the FINREP classification at the end of 2024), instalment loans represented the dominant category, accounting for 59.3% of total indebtedness. Other forms of consumer credit (including current account overdrafts) comprised 30.1% of the market, whereas credit card debt constituted 6.8%, and automobile loans represented only 4.3% of the overall portfolio.

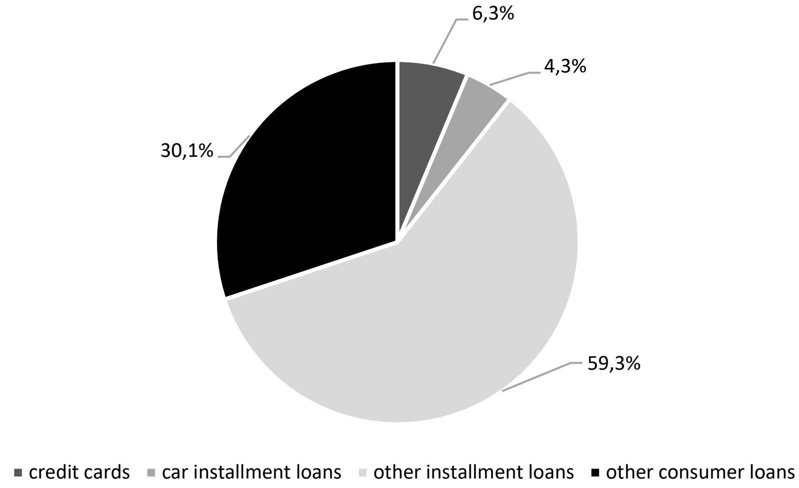

Figure 5. Structure of the consumer credit portfolio at the end of 2024 (according to the FINREP report)

Source: author's work based on KNF, Report on the situation of the banking sector in 2024, https://www.knf.gov.pl/?articleId=85173&p_id=18 (accessed March 4, 2026).

Under conditions of rising interest rates and the tightening of credit risk assessment procedures within the banking sector, a marked deceleration in traditional lending activity was observed, triggering a substantial reconfiguration of financing sources in the economy. The share of non-bank institutions in meeting the demand for debt financing increased, and the functional burden of credit provision was to a large extent transferred from the banking sector to the shadow banking system (Figure 6).

Following a temporary economic downturn in 2020—caused by restrictions associated with the COVID-19 pandemic and the concurrent tightening of anti-usury regulations, which constrained the transaction volume in this market segment to PLN 4.7 billion—the non-bank loan market entered a phase of dynamic growth. By 2024, its value reached PLN 16.3 billion, a level more than twice as high as that recorded in 2021.

This increase was partly attributable to the implementation of novel reporting obligations, which imposed on non-bank institutions the requirement to submit data to the Credit Information Bureau (BIK), thereby enhancing the coverage and accuracy of transactions recorded in official statistics. Nevertheless, household behaviour remained the predominant determinant on both the supply and demand side. Under conditions of elevated inflation and heightened pressure to sustain the liquidity of household budgets, consumers made extensive use of microloans, most commonly in amounts not exceeding PLN 1,000.

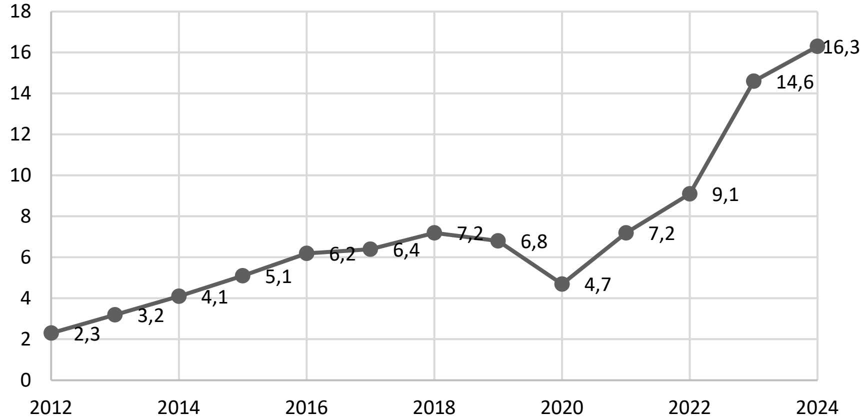

Figure 6. Sales value of non-bank loans in the years 2012-2024 (in billions of PLN)
Source: author's work based on data from BIK, KPF, and PZIP.

The phenomenon of structural migration from the traditional banking sector to non-bank lending institutions observed in Poland does not constitute an isolated case; rather, it represents a local manifestation of a broader global trend defined in the literature as regulatory arbitrage. The rapid expansion of loan companies in Poland, occurring in parallel with a contraction in commercial bank lending driven by elevated WIBOR rates, is strongly consistent with the recent findings of Elliott et al. (2022). In their study of the U.S. market, the authors provide empirical evidence that monetary policy tightening systematically redirects credit demand towards the less regulated non-bank financial sector, explicitly emphasizing the critical role of regulatory constraints in generating this heterogeneous response. More precisely, they document that a 25-basis-point monetary tightening induces a relative increase in non-bank loan size of approximately 4% in the segment of corporate lending and up to 4.5% in the case of consumer auto loans, compared with banks (Elliott et al., 2022).

Furthermore, this dynamic expansion of shadow banking generates new and significant challenges for global macroprudential surveillance, closely reflecting the microeconomic threats currently observed in the Polish market. As documented in the Financial Stability Board's 2024 report on non-bank financial intermediation, the global NBFI sector expanded by 8.5% in 2023—more than twice the growth rate of the banking sector (3.3%) —thereby increasing its share to 49.1% of total global financial assets. Of particular importance, the "narrow measure" of NBFI, which encompasses entities engaged in credit intermediation exhibiting bank-like vulnerabilities, reached a record level of USD 70.2 trillion. Within this segment, finance companies providing loans funded by short-term liabilities (EF2) recorded growth of 7.6% and continued to exhibit elevated levels of financial leverage, thereby reinforcing the very systemic risks identified in the Polish non-bank lending sector (Financial Stability Board, 2024).

This behavioural mechanism constitutes a canonical manifestation of the ratchet effect, whereby consumers' psychological aversion to reductions in their previously attained standard of living temporarily supersedes financial rationality, thereby propelling them towards high-APRC indebtedness, as documented by Białowolski et al. (2021) and Gathergood (2012). Although Poland's aggregate debt-to-income ratio remains, in macroeconomic terms, relatively contained, the qualitative deterioration of indebtedness—specifically, the reallocation from comparatively secure bank credit towards high-cost non-bank loans—generates significant systemic vulnerabilities. As rigorously theorized by Aramonte et al. (2021), non-bank financial intermediaries (NBFIs) exert an increasingly influential role in shaping systemic liquidity through business models that depend on leverage and liquidity transformation, while typically lacking access to formal public backstop mechanisms. Under conditions of restrictive monetary policy, abrupt increases in margin requirements compel these inherently procyclical institutions to undertake rapid, system-wide deleveraging. This process materializes as a "dash for cash," transmitting systemic risk not primarily via chains of insolvency, but through "pecuniary externalities" —that is, severe asset-price spillovers induced by forced liquidations and a concomitant contraction in the system-wide capacity for risk-taking. Consequently, the structural reorientation of Polish households towards the shadow-banking sector heightens the exposure of the domestic credit market to destabilizing deleveraging spirals, underscoring the urgent need for comprehensive macroprudential regulation to address this vulnerability within the European financial architecture (Białowolski et al., 2021).

5. Conclusion

This study examined the macroeconomic and behavioural determinants of household indebtedness in Poland in the context of a restrictive monetary policy regime. The empirical findings fully corroborate both research hypotheses formulated in the introduction. First, in line with Hypothesis 1, the analysis identified a strong and statistically robust negative correlation ($r = -0.89$) between the central bank's reference interest rate and the volume of consumer credit, indicating that higher costs of capital effectively constrained credit extension by commercial banks.

Second, consistent with Hypothesis 2, the results confirm the occurrence of a pronounced structural transformation attributable to a behavioural "ratchet effect." Confronted with quantitative and qualitative credit constraints in the banking sector, households seeking to stabilize or maintain their consumption levels redirected borrowing demand toward the non-bank lending segment. This reallocation is clearly reflected in the marked increase in non-bank loan sales, from PLN 4.7 billion in 2020 to PLN 16.3 billion in 2024.

Although Poland's aggregate debt-to-income ratio remains within a range typically regarded as macroeconomically sustainable (49%), the compositional shift towards high-cost, weakly regulated shadow banking instruments materially elevates systemic risk and exacerbates households' exposure to over-indebtedness and debt spiral dynamics. To safeguard domestic financial stability, there is a pressing need to reinforce macroprudential oversight of non-bank financial intermediaries and to implement broad-based, evidence-based financial education programs targeting households.

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A COMPARATIVE ANALYSIS OF THE FINANCIAL MANAGEMENT OF THE MUNICIPALITIES OF TUCZĘPY AND GNOJNO (2021–2023) IN THE CONTEXT OF THE FINANCIAL CONDITION OF RURAL MUNICIPALITIES IN ROMANIA

Joanna Naróg [1], Ola Kuźnia[2]

ABSTRACT

This study presents a comparative analysis of financial management in two Polish rural municipalities—Tuczępy and Gnojno—between 2021 and 2023, framing their budgetary performance against the fiscal reality of rural local governments in Romania. The findings reveal a clear divergence: while Tuczępy maintains strong financial autonomy, a stable operating surplus, and a clear focus on development investments, Gnojno faces severe financial distress marked by an operating deficit, high per capita debt, and heavy reliance on central government funding—a structure remarkably similar to underfunded Romanian comunas. Ultimately, the research proves that macroeconomic and geographical factors alone do not dictate municipal performance; rather, a proactive local strategy for managing financial risk and developing an independent tax base is the decisive factor for long-term stability in Central and Eastern Europe.

Key words: local government finance, municipal budget, municipal debt, rural municipalities, Romania.

JEL: H71, H72, H74, R51.

1. Introduction

Local financial management in the period following the COVID-19 pandemic and during the inflationary crisis has become one of the greatest challenges facing

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local government units (LGUs) in Central and Eastern Europe. These processes have particularly affected rural municipalities, which, due to their specific socio-economic characteristics, exhibit lower budgetary flexibility than large urban centres. This study presents a comparative analysis of the financial management of the rural municipalities of Tuczępy and Gnojno, located in Busko County (Świętokrzyskie Voivodeship), over the period 2021–2023. To provide the research with a broader international perspective, the financial characteristics of these municipalities are compared with the fiscal condition of Romanian rural municipalities (comunas), which operate under similar conditions of post-socialist institutional transformation and the European Union's cohesion policy. Findings from original empirical studies indicate that fiscal decentralization in Poland and Romania has followed different developmental paths, resulting in distinct initial conditions for local governments in the two countries. The objective of this study is to assess how different budget management strategies affect the financial stability and investment potential of rural municipalities operating under comparable external conditions.

2. Literature review

The problem of indebtedness among local government units (LGUs) and its multifaceted economic and institutional consequences constitutes one of the central themes in public finance literature. Researchers emphasize that the level and structure of debt significantly affect long-term solvency, financial stability, and the fiscal burden borne by local communities. In the context of growing expenditure needs and insufficient own-source revenues, debt has become a common instrument for financing infrastructure investments (Bellot et al., 2017). However, excessive indebtedness may weaken the private sector by reducing wages and limiting investment, thereby diminishing the stimulative effects of public spending (Pinardon-Touati, 2022; Cao et al., 2022). Once a critical threshold is exceeded, debt may crowd out private investment and hinder economic growth (Zhao et al., 2019).

The literature points to the dual nature of municipal debt. On the one hand, uncontrolled debt accumulation may deteriorate financial liquidity and lead to a debt spiral (Standard and Kozera, 2020). High levels of local debt can also generate broader macroeconomic risks, including increased borrowing costs at the central government level (Greer, 2015). On the other hand, when managed prudently, debt can support long-term development by enabling earlier implementation of capital investments and spreading their costs across generations (Gorina et al., 2018; Canuto and Liu, 2013). To limit fiscal risks, many countries apply the so-called golden rule, according to which current expenditures should be financed from current revenues, while borrowing should be reserved for investment purposes (Lotz, 2006; Kloha et al., 2005; Kose et al., 2020).

Unlike private entities, local governments rarely experience formal bankruptcy because they are legally required to ensure the continuous provision of essential public services. Instead, they may face “hidden insolvency”, manifested in the inability to meet financial obligations while formally maintaining budgetary balance through debt rollovers or delayed payments (Liu and Waibel, 2008). In Polish literature, local government solvency is defined as the ability to meet obligations on time while simultaneously satisfying the needs of the local community (Bitner, 1999).

Research on fiscal crises suggests that debt is often only a symptom of deeper structural problems. Limited budget flexibility, soft budget constraints, moral hazard, political budget cycles, demographic changes, and economic downturns are among the key determinants of local fiscal distress (Muñoz and Olaberria, 2019; Shi and Hendrick, 2020; Benito et al., 2021).

Overall, the literature indicates that the financial stability of LGUs should be viewed as a dynamic institutional process shaped both by local fiscal decisions and by the broader architecture of the public finance system.

3. Research Methods

3.1. Citations

The financial condition of local government units (LGUs) is commonly assessed using financial ratio analysis, which enables the evaluation of fiscal autonomy, expenditure structure, and debt sustainability (Groves et al., 1981; Wang et al., 2007). According to the OECD (2019), a higher share of own-source revenues increases municipalities' financial independence and resilience to economic shocks. At the same time, prudent debt management is essential for maintaining long-term fiscal stability, with borrowing recommended primarily for financing capital investments rather than current expenditures (Canuto & Liu, 2013). Consequently, this study evaluates the municipalities of Tuczępy and Gnojno using indicators of fiscal autonomy, expenditure performance, and debt per capita, which are widely applied in analyses of local government finance (Kloha et al., 2005).

3.2. Formulae

In the analysis, the main technique used was indicator analysis. The following indicators were used in the indicator analysis:

Revenue indicators

1. Share of own revenues in total budget revenues:

$$\mathrm{WZD} = \left(\frac{\mathrm{DW}}{\mathrm{D}}\right) \times 100$$

where:

- WZD – share of own revenues in total budget revenues,
- DW – total own revenues,
- D – total budget revenues.

This indicator shows what proportion of total revenues is made up of own revenues.

2. Share of revenues from taxes constituting state budget revenues in total budget revenues:

$$\mathrm{WSUD} = \left(\frac{\mathrm{UD}}{\mathrm{D}}\right) \times 100$$

where:

- WSUD – share of revenues from taxes constituting state budget revenues in total revenues of a local government unit,
- UD – share of personal income tax (PIT) and corporate income tax (CIT) revenues,
- D – total budget revenues.

This indicator shows what proportion of total revenues comes from taxes constituting state budget revenues.

3. Share of targeted grants in total budget revenues:

$$\mathrm{WDC} = \left(\frac{\mathrm{DC}}{\mathrm{D}}\right) \times 100$$

where:

- WDC – share of targeted grants in total budget revenues,
- DC – total targeted grants,
- D – total budget revenues.

This indicator shows what proportion of total revenues is made up of targeted grants.

4. Share of general subsidy in total budget revenues:

$$\mathrm{WSO} = \left(\frac{\mathrm{SO}}{\mathrm{D}}\right) \times 100$$

where:

- WSO – share of general subsidy in total budget revenues,
- SO – general subsidy,
- D – total budget revenues.

This indicator shows what proportion of total revenues is made up of the general subsidy.

5. Share of operating surplus in total revenues:

$$\mathrm{WNO} = \left(\frac{\mathrm{NO}}{\mathrm{D}}\right) \times 100$$

where:

- WNO – share of operating surplus in total budget revenues,
- NO – operating surplus (difference between current revenues and current expenditures),
- D – total budget revenues.

This indicator shows what proportion of total revenues is represented by the operating surplus.

6. Share of tax revenues in total budget revenues:

$$\mathrm{WDP} = \left(\frac{\mathrm{DP}}{\mathrm{D}}\right) \times 100$$

where:

- WDP – share of tax revenues in total budget revenues,
- DP – tax revenues,
- D – total budget revenues.

This indicator shows what proportion of total revenues is made up of tax revenues.

7. Share of revenues according to budget classification in total revenues:

$$WDK = \left(\frac{DK}{D}\right) \times 100$$

where:

- WDK – share of revenues by budget classification (section) in total revenues,
- DK – revenues in a given budget section,
- D – total budget revenues.

This indicator shows the share of a specific budget classification section in total revenues, allowing analysis of revenue structure by source.

Expenditure indicators

1. Share of current expenditures in total expenditures:

$$\mathrm{WZB} = \left(\frac{\mathrm{ZB}}{\mathrm{W}}\right) \times 100$$

where:

WZB – share of current expenditures in total expenditures,
ZB – current expenditures,
W – total budget expenditures.

This indicator shows what proportion of total expenditures is made up of current expenditures.

2. Share of investment expenditures in total expenditures:

$$\mathrm{WUWI} = \left(\frac{\mathrm{WI}}{\mathrm{W}}\right) \times 100$$

where:

WUWI – share of investment expenditures in total budget expenditures,
WI – investment expenditures,
W – total budget expenditures.

This indicator shows what proportion of total expenditures is made up of investment expenditures.

3. Share of own revenues in total expenditures:

$$U_{DW} = \left(\frac{DW}{W}\right) \times 100$$

where:

U_{DW} – share of own revenues in total expenditures,
DW – total own revenues,
W – total budget expenditures.

This indicator shows what proportion of total expenditures is covered by own revenues.

4. General structure indicator of expenditures by budget classification:

$$WZKB = \left(\frac{ZKB}{W}\right) \times 100$$

where:

WZKB – structure indicator of expenditures by budget classification,
ZKB – expenditures in a given budget section,
W – total budget expenditures.

This indicator shows what proportion of total expenditures is allocated to a specific budget classification section.

5. Share of revenues from local taxes and fees in total expenditures:

$$U_{DWPO} = \left(\frac{DWPO}{W}\right) \times 100$$

where:

U_{DWPO} – share of revenues from local taxes and fees in total expenditures,
DWPO – revenues from local taxes and fees,
W – total budget expenditures.

This indicator shows what proportion of total expenditures is covered by local taxes and fees.

Debt indicators

1. Share of local government debt in total revenues:

$$WUDS = \left(\frac{DS.}{D}\right) \times 100$$

where:

- WUDS – share of local government debt in total budget revenues,
- DS – local government debt,
- D – total budget revenues.

This indicator shows the share of debt in total budget revenues.

2. Debt per capita:

$$\mathrm{WKDM} = \left(\frac{\mathrm{DS.}}{\mathrm{LM}}\right) \times 100$$

where:

- WKDM – debt per capita indicator,
- DS – local government debt,
- LM – number of inhabitants.

This indicator shows the amount of municipal debt per resident, allowing assessment of the scale of indebtedness relative to population size.

4. Results and Discussion

4.1. Income indicators

The structure of revenues is the primary determinant of the financial autonomy of each municipality. Table 1 presents detailed income indicators for both entities.

Table 1. Income indicators of the Tuczępy and Gnojno municipalities in 2021–2023 (%).

Specification	Tuczępy 2021	Tuczępy 2022	Tuczępy 2023	Gnojno 2021	Gnojno 2022	Gnojno 2023
Share of own revenues in total revenues	40.83	52.36	39.00	21.55	29.57	24.90
Share of taxes constituting state budget revenue	11.20	19.33	7.46	8.28	16.13	7.88
Share of targeted grants in total revenues	33.57	31.30	37.75	35.26	39.64	27.96
Share of general subvention in total revenues	25.61	16.34	23.25	43.19	30.79	47.14
Share of operating surplus in total revenues	8.06	16.43	9.41	0.73	1.26	-0.25
Share of tax revenues in total revenues	29.33	32.69	31.23	12.41	10.85	13.50

Source: authors' work based on municipal budget execution reports from 2021–2023.

The analysis reveals a profound polarization in revenue-generating capacity between the analysed entities. The municipality of Tuczępy demonstrates strong fiscal autonomy, with own-source revenues peaking at 52.36% in 2022 and local tax anchors providing over 31% of total revenues in 2023, allowing it to maintain a safe operating surplus of 9.41%. Conversely, Gnojno exhibits extreme dependence on external transfers, with own-source revenues remaining below 30% and general subsidies reaching 47.14% in 2023. This led to a critical operating deficit of -0.25% in 2023, signalling an inability to cover current expenditures with current revenues.

In an international context, Gnojno's budget model closely reflects the structural condition of most rural municipalities (*comunas*) in Romania, where genuine fiscal decentralization is very low. The average Romanian *comuna* generates only 15% to 25% of its revenues from own sources, relying heavily on central equalization transfers and national personal income tax (PIT) shares allocated at the county level. Just as fluctuations in PIT/CIT shares caused revenue declines in both Polish municipalities in 2023, similar instability regularly triggers liquidity pressures in Romanian local governments. In contrast, Tuczępy's stable local tax base represents a mature level of fiscal autonomy that remains largely unattainable for most rural local government structures in Romania.

4.2. Expenditure indicators

Income-side disparities determine the flexibility and directions of expenditure policy.

Table 2. Expenditure indicators of Tuczępy Municipality and Gnojno Municipality in 2021–2023 (%)

Specification	Tuczępy 2021	Tuczępy 2022	Tuczępy 2023	Gnojno 2021	Gnojno 2022	Gnojno 2023
Share of current (operating) expenditures in total expenditures	85.74	92.86	60.93	97.01	96.23	82.09
Share of investment expenditures in total expenditures	11.98	7.06	34.88	2.89	3.54	7.89
Share of own revenues in total expenditures	44.00	58.65	36.38	24.17	29.07	22.04
Share of local tax revenues in expenditures	22.11	22.22	19.33	6.21	4.97	5.50

Source: authors' work based on municipal budget execution reports from 2021–2023.

The expenditures of Gnojno Municipality were highly rigid, with administrative and basic service costs consuming over 96% of the budget in 2021–2022, leaving only 7.89% for investments in 2023. This stands in sharp contrast to the pro-development policy of Tuczępy, which restructured its spending in 2023 by reducing current expenditures to 60.93%, thereby freeing up a remarkable 34.88% of total funds for capital investments.

In an international context, the budget rigidity seen in Gnojno is a defining feature of Romanian rural local governments. Due to low tax efficiency, Romanian *comunas* allocate an average of 90% to 95% of their budgets to current expenditures, mainly local administration wages and social assistance. Consequently, infrastructural development in rural Romania depends almost entirely on external funding impulses, such as EU funds or targeted government programmes like the *Anghel Saligny* programme; without them, these municipalities merely perform a survival function. By contrast, Tuczępy's exceptional ability to self-finance nearly a fifth of its total expenditures from local taxes alone (19.33% in 2023) places it far above the financial standard of peripheral local governments in Central and Eastern Europe.

4.3. Debt indicators

The final, but most polarizing criterion of assessment is the level of debt and the efficiency of its management.

Table 3. Debt indicators of Tuczępy Municipality and Gnojno Municipality in 2021–2023

Specification	Tuczępy 2021	Tuczępy 2022	Tuczępy 2023	Gnojno 2021	Gnojno 2022	Gnojno 2023
Share of local government debt in total revenues (%)	7.84	4.60	3.20	65.08	56.62	63.95
Debt per capita (PLN)	477.82	316.21	234.40	4084.27	4010.60	3979.57

Source: authors' work based on municipal budget execution reports from 2021–2023.

Debt indicators reveal a vast economic gap between the two local governments. Tuczępy pursued a rigorous debt reduction strategy, lowering its debt-to-revenue ratio to just 3.20% in 2023 (PLN 234.40 per capita). In contrast, Gnojno's debt hovered around a critical 64% of total revenues, resulting in a per capita debt of PLN 3,979.57—nearly seventeen times higher than in Tuczępy.

Introducing the Romanian context reveals a paradox. While Gnojno exhibits alarmingly high debt levels by Polish standards, such official figures are rare among Romanian *comunas*. Romanian law strictly limits borrowing for small local governments, and commercial banks refuse to finance entities lacking an operating surplus, keeping official debt close to zero. However, this absence of bank debt reflects structural weakness rather than health; it is replaced by "hidden debt" in the form of unpaid outstanding liabilities to utility providers and contractors. Ultimately, the structural liquidity trap caused by Gnojno's operating deficit mirrors the Romanian reality, where a permanent lack of cash flow paralyzes basic public services, whether the debt is officially recorded or concealed in unpaid invoices.

4.4. Discussion

Our empirical comparative analysis of the financial management of the Tuczępy and Gnojno municipalities (2021–2023), juxtaposed with Romanian *comunas*, contributes to the debate on local government financial independence and debt in Central and Eastern Europe, proving that deep fiscal disparities can occur even within the same legal framework. Relating these findings to the research by J. Łukomska-Szarek (2011), we observe a structural continuity in local finance mechanisms. While the author highlighted that macroeconomic slowdowns often force rural municipalities into debt due to declining own revenues, the analysed units show two fiscal extremes. Tuczępy represents an exceptionally successful model, generating 2023 investment expenditures at 34.88% of total spending while maintaining a minimal debt of 3.20% (PLN 234.40 per capita) thanks to a strong local tax base. Conversely, Gnojno serves as an empirical warning aligning with Łukomska-Szarek's threats; with low investment levels, debt reaching nearly 64% (approx. PLN 4,000 per capita), and a 2023 operating deficit of -0.25%, it perfectly illustrates how the loss of an operating surplus paralyzes development.

From an international perspective, the results update the theses of E. Markowska-Bzducha (2005) regarding asymmetrical decentralization in Central and Eastern Europe, where the devolution of tasks was rarely accompanied by adequate tax powers. Both Romanian *comunas* (own revenues at 15%–25%) and the Gnojno municipality (subsidy at 47.14%, own revenues below 25%) remain in structural transfer dependency. As Markowska-Bzducha noted, such low tax autonomy deprives local governments of flexibility during shocks, reducing them to executing rigid administrative costs. In conclusion, while validating both theoretical frameworks, this study's original contribution is demonstrating that legal frameworks alone do not determine fiscal stability. The decisive factor remains the local budget management strategy, expenditure flexibility, and active tax base cultivation.

5. Conclusions

The comparative analysis revealed a profound asymmetry in development and a clear polarization within the regional local government economy, where identical macroeconomic conditions led to markedly different financial outcomes. The Municipality of Tuczępy represents a model of resilience, in which the expansion of the local tax base, the generation of an operating surplus, and a consistent debt-reduction policy played a crucial role. Consequently, these factors enabled the financing of dynamic investments while maintaining financial stability during the crisis period.

In contrast, the Municipality of Gnojno exhibits a syndrome of transfer dependency, characterized by entrapment in a structural debt cycle and high fixed costs, which constrain its investment autonomy and make its functioning dependent on external support. This situation resembles that of peripheral rural municipalities (comunas) in Romania, where low tax efficiency and a limited capacity for self-financed development remain common challenges.

The practical implications indicate that the emergence of an operating deficit in Gnojno, combined with a nearly seventeen-fold higher level of per capita debt compared to the neighbouring municipality, constitutes a clear signal that a rigorous recovery programme and debt restructuring measures are urgently needed. Romanian experience demonstrates that the absence of structural reforms leads to the long-term deterioration of local infrastructure and the gradual loss of the economic autonomy of rural local governments.

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THE XVIII EDITION OF THE CONFERENCE: "SCIENTIFIC RESEARCH FROM A STUDENT'S PERSPECTIVE"

The XVIII Edition of the Conference "Scientific Research from a Student's Perspective" is an event that was held on 28th May, 2026, at the Faculty of Economics and Finance of the University of Rzeszów. The conference was organized by the scientific club "Leaders of Business" (Koło Naukowe UR Liderzy Biznesu) of the University of Rzeszów.

The conference began at 8:00 AM. At the beginning, the host welcomed all the guests and started the conference. The entirety of the event was dedicated to the presentations of students, covering a broad spectrum of economic, financial, and social topics. The first one to speak was Kornelia Bodeńko, who made a speech about consumer preferences towards local products from an intergenerational perspective. Her presentation shed a new light on how different age groups approach regional goods. Subsequently, Patrycja Bober spoke about the influence of influencers on the career preferences of Generation Z, broadening the horizons of the listeners in the fields of modern career planning and the impact of digital media on professional choices.

The next speech was held by Ola Kuźnia and Joanna Naróg, who spoke about the comparative analysis of the financial management of the Tuczępy and Gnojno municipalities in the years 2021–2023. The lecturers addressed the issues such as local budget allocation and regional administration. What is more, Aneta Wolak emphasized the structure of income and expenditure of households in the Podkarpackie Voivodeship, providing valuable statistical insights into regional economics.

The latter part of the conference featured Iga Chorzępa, who explained the functioning of financial and accounting systems in the opinion of their drawing, basing on the SILP system experience. Last but not least, we had a chance to attend the speech of Ewelina Wojturska, who broadened our horizons on the comparative analysis of physical activity, stress levels, and sleep hygiene among seniors from urban and rural areas.

After the students' occurrences, we had a chance to be a part of a quick quiz for the audience that summarized the knowledge gained from the conference modules. The conference officially concluded at 9:45 AM.

The conference was an excellent opportunity to broaden the knowledge of the listeners and engage with scientific research from a student's perspective. The speakers addressed the essential issues regarding fields such as finance, management, and sociology that should be known commonly, as they are the inevitable matters in the nowadays' world. The event was a great chance to gain a better understanding of complex connections in modern economics and society.

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