Household Loan Poverty in Türkiye: Financial Drivers, Welfare Consequences, and Banking Sector Risks

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Abstract

The article investigates the phenomenon of loan poverty where households rely on debt for basic consumption among Turkish households and its implications for financial stability. Integrating financial vulnerability theory with banking-sector data, this study analyzes how credit access both alleviates and perpetuates poverty in a high-inflation, low-income context. Using panel data from the CBRT, BDDK, and Turk Stat (2015–2025), we find that while aggregate household debt is low (10-12% of GDP), the debt-to-income ratio for indebted households exceeds 70%. Econometric model results reveal that inflation and high interest rates are key drivers of this vulnerability, which in turn significantly increases poverty rates and non-performing loans (NPLs). The study concludes that loan poverty represents a dual social and financial stability threat and requires policy recommendations for inclusive credit, enhanced financial literacy, and coordinated banking–social policy reforms.

Keywords: Consumer lending, Non-performing loans, Credit access, Banking regulation, Asset quality

1. Introduction

The Turkish banking sector, a cornerstone of the nation's economic modernization, has long been championed as a vehicle for growth and financial inclusion. Studies have consistently linked financial sector development in emerging markets to broader economic growth and aggregate poverty reduction (World Bank, 2022; OECD, 2021). However, a starkly contrasting narrative has emerged in Turkey over the past decade. A surge in household debt and a pervasive phenomenon of "loan poverty" have become defining features of the economy, where citizens are forced to take on burdensome debt not for investment, but for mere daily survival amidst soaring inflation and stagnating wages (Akıncı, 2022). This pattern captures the condition in which credit dependence substitutes for income stability, creating both social and banking-sector risks.

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This phenomenon represents the downside of financial inclusion, where access to formal credit perpetuates poverty rather than alleviating it; this dynamic aligns with Minsky's (1992) theory of financial vulnerability. In emerging economies like Türkiye, this risk is amplified when credit growth, often celebrated as a development milestone, outpaces income growth, creating conditions reminiscent of the "credit booms gone bust" documented by Schularick & Taylor (2012). As Mian & Sufi (2014) demonstrated in the U.S. context, high household leverage can be a primary predictor of severe economic downturns, a risk this paper investigates within Türkiye's distinctive high-inflation, high-interest environment.

The scale of the issue is stark. In Türkiye, the outstanding stock of personal and credit card debt reached approximately ₺4.49 trillion in May 2025, representing a 43% year-on-year increase (BDDK, 2025). Concurrently, non-performing personal loans rose by nearly 45%, reflecting increasing distress among borrowers. High inflation—still above 65% year-on-year in early 2025—continues to erode real incomes, while policy interest rates exceeding 50% have elevated the cost of credit. These dynamics have intensified the debt-service burden for lower- and middle-income households, amplifying social inequality.

At the same time, banks are confronting the downstream effects of this rising household leverage. NPLs and so-called Stage 2 loans (those under close monitoring) exceeded ₺860 billion by mid-2024 (S&P Global, 2024). As banks increase provisioning for bad debts, their capacity to extend new credit tightens, thereby reinforcing the slowdown in household consumption and amplifying systemic risk. This interplay presents a critical puzzle: How can a developed financial system simultaneously act as both an engine for economic development and a source of widespread financial distress?

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This article investigates this complex duality by arguing that the net effect of banking on poverty in Turkey is not static but is contingent on macroeconomic stability and the nature of credit use. While early research on Turkey affirmed the poverty-alleviating role of financial development (Bayar, 2023), recent analyses suggest this relationship has fundamentally shifted (Demir & Yılmaz, 2024; Rewilak, 2017; Tabas, Anagreh, & Adeosun, 2023). To systematically explore this shift, we test the central hypothesis:

The net effect of banking sector development on poverty in Turkey has shifted from alleviation to exacerbation, where the burden of high-cost consumer credit now outweighs the benefits of financial inclusion.

To further dissect this dynamic, we examine three supporting hypotheses:

1. The Macro-Micro Paradox Hypothesis: While banking sector growth at the macro level correlates with broad poverty metrics improvement, at the micro level, it concurrently intensifies household financial fragility through the accumulation of high-cost, non-productive debt (Boratav, 2023).

2. The Inflation-Debt Trap Hypothesis: The combination of high inflation and restrictive monetary policy, leading to elevated interest rates on loans, directly traps low and middle-income households in a cycle of debt, where new borrowing is required to service existing obligations (TCMB, 2023; Batır et al., 2023).

3. The Usage Divide Hypothesis: The impact of a loan on poverty is determined by its usage. Credit used for entrepreneurial investment or education tends to reduce poverty, whereas credit used for essential consumption under economic duress deepens financial vulnerability (Güney, 2022).

By examining these hypotheses, this study provides a nuanced framework for understanding how Turkey's financial landscape has become a central arena for both economic opportunity and a deepening social crisis. The analysis builds on the conceptual distinction between productive and consumptive borrowing—an important lens for understanding poverty outcomes in credit-dependent economies (Beck et al., 2020; Claessens & Kose, 2018).

The paper contributes to both the household finance and banking stability literatures by introducing the concept of loan poverty as a tripartite phenomenon: One that reflects micro-level welfare constraints, macro-level systemic risk, and dynamic feedback loops. It extends prior research (e.g., Kılınç & Tunay, 2023; Aysan et al., 2022) by using recent panel data and incorporating welfare metrics, interest rate effects, and non-performing loan dynamics into a unified framework. By situating Türkiye's experience within broader debates on credit-led vulnerability, this study offers evidence for policymakers on how financial inclusion, debt regulation, and macroprudential measures can be balanced to promote sustainable household welfare and banking resilience.

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2. Conceptual Framework: From Credit Inclusion to Loan Poverty

Financial inclusion policies expanding access to formal credit are central to modern development strategies (Klapper, 2024). Yet, when credit is extended without sufficient income growth, households may enter *loan-based survival cycles*, wherein debt merely substitutes for income rather than enabling asset formation.

In Türkiye, this dynamic has emerged as banks aggressively promoted consumer lending during the 2010s, supported by digital credit channels and payroll-linked loans. While initially fostering consumption growth, this trend has increased household financial vulnerability. Loan poverty thus represents the downside of inclusive finance: *inclusion without resilience*.

The framework of this study connects three components: Household vulnerability (measured by debt-to-income and consumption-to-income ratios), banking exposure (indicated by NPL trends and Stage 2 loans), and policy feedback loop whereby rising household stress leads to tighter credit and reduced welfare.

3. Materials and Methods
3.1 Data Overview

The empirical analysis utilizes a panel dataset combining regional-level (NUTS-2) and bank-level data from 2015 to 2025. Key indicators are drawn from the Central Bank of the Republic of Türkiye (CBRT 2025a; 2025b), the Banking Regulation and Supervision Agency (BDDK, 2024), Turk Stat's Household Budget and Income and Living Conditions Surveys (SILC), and CEIC (2024; 2025) Data (see Table 1). All monetary variables are deflated using the consumer price index (CPI, 2015=100). Regional data are adjusted for population size to yield per-capita or percentage metrics.

Table 1. Key indicators and data resources

Year	Inflation (CPI, y/y %)[a]	Household Financial Debt/GDP (%)[b]	NPL Ratio[c]	Bank Density[d]	Mean Household Disposable Income (annual thousand TL)[e]	Share of Per Capita Debt in Disposable Income (%)[f]	TRL Loans Interest Rates (TL)[g]
2015	261	17.8	3.0	19	36	40	15.99-22.49
2016	281	17.5	3.3	18	41	38	17.03-24.52
2017	312	17.0	3.0	17.3	46	40	16.94-20.49
2018	363	14.5	3.1	16.9	51	35	20.00-32.18
2019	418	14.5	4.6	16.2	59	37	15.80-31.00
2020	470	17.5	4.4	15.6	69	38	9.75-21.60
2021	562	15.0	3.6	15.2	76	34	21.61-25.04
2022	968	10.8	2.5	14.6	98	25	24.53-28.01
2023	1,489	11.2	1.7	14.4	181	17	22.29-64.02
2024	2,360	11.4	1.7		374	18	62.59-76.71
2025 Q1	3,120	10.2	1.9			19	63.91-75.16

[a] Inflation https://evds2.tcmb.gov.tr/index.php?/evds/serieMarket/#collapse_14

[b] Household Financial Debt/GDP https://www.ceicdata.com/en/indicator/turkey/household-debt--of-nominal-gdp

[c] NPL Ratio https://www.ceicdata.com/en/indicator/turkey/non-performing-loans-ratio

[d] Bank Density https://data.worldbank.org/indicator/FB.CBK.BRCH.P5?end=2023&locations=TR&start=2005

[e] Average Household Disposable Income https://data.tuik.gov,tr

[f] Share of per capita debt in disposable income (%) based on inflation-adjusted TRY Thousand https://www.tcmb.gov.tr/wps/wcm/connect/b3ea98ad-5883-4fa5-9094-f2321f0368d5/Full+Text.pdf?MOD=AJPERES&CACHEID=ROOTWORKSPACE-b3ea98ad-5883-4fa5-9094-f2321f0368d5-pw7VIMP

[g] TRL Loans Interest Rates Commercial and Consumer Loans Weighted Average Interest Rates https://evds2.tcmb.gov.tr/index.php?/evds/dashboard/341

3.2. Empirical Strategy and Model Specification

To quantify the determinants and consequences of loan poverty, we employ a dual empirical strategy: a static panel model as our baseline and a dynamic panel model to account for the persistence of debt and mitigate endogeneity concerns.

3.2.1. Baseline Static Models

The study first estimates the following static fixed-effects models to control for unobserved regional heterogeneity.

Model 1: Determinants of Loan Poverty

$$LP_{it} = \propto + \beta_1 IR_t + \beta_2 CG_{it} + \beta_3 CPI_t + \beta_4 Income_{it} + \beta_5 BankDensity_{it} + \mu_i + \lambda_t + \varepsilon_{it} \quad (1)$$

Where LP_{it} is loan poverty in region i and year t (proxied by the debt-to-income ratio); IR_t is the average consumer loan interest rate; CG_{it} is credit growth; CPI_t is inflation; $Income_{it}$ is the mean equivalized disposable income; and $BankDensity_{it}$ is the number of bank branches per 10,000 adults.

We expect positive signs for interest rates and inflation, and negative signs for income and bank density.

- LP_{it} is loan poverty, proxy for household debt vulnerability in region i and year t (e.g., debt-to-income ratio or share of households in arrears);
- IR_t average consumer loan interest rate;
- CG_{it} annual growth rate of household loans per capita;
- CPI_t consumer price inflation;
- $Income_{it}$ average disposable household income;
- $BankDensity_{it}$ number of bank branches per 10,000 adults, representing financial access;
- μ_i region-specific fixed effects controlling for unobserved heterogeneity (such as structural income differences);
- λ_t year fixed effects to control for time-invariant regional characteristics, time dummies capturing nationwide macroeconomic (temporal) shocks;
- ε_{it} error term.

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Expected signs for coefficients are β1>0, β2≷0, β3>0, β4<0, β5<0

Higher borrowing costs and inflation are expected to exacerbate loan poverty, while higher income and better financial access (bank density) should alleviate it. The coefficient on credit growth may be positive if rapid credit expansion worsens debt vulnerability (credit boom effect) or negative if credit growth enhances inclusion and eases liquidity constraints.

Model 2: Loan Poverty and Household Welfare

To assess how loan poverty translates into broader welfare outcomes, the following specification links debt vulnerability to the poverty headcount ratio or to real consumption growth:

$$Welfare_{it} = \propto + \gamma_1 LP_{it} + \gamma_2 Income_{it} + \gamma_3 Unemp_{it} + \gamma_4 CPI_t + \mu_i + \lambda_t + \varepsilon_{it} \qquad (2)$$

where $Welfare_{it}$ is the poverty headcount ratio and $Unemp_{it}$ is the regional unemployment rate. It is hypothesized that higher loan poverty ($\gamma_1 > 0$) increases poverty. Expected signs are that $\gamma_1>0, \gamma_2<0, \gamma_3>0, \gamma_4>0$

Higher loan poverty is hypothesized to increase the likelihood of poverty or reduce consumption, while higher income lowers poverty risk.

To address persistence and endogeneity, we also employ a dynamic panel model (Arellano-Bond GMM). Robustness checks, including quantile regressions and alternative variable specifications, confirm the consistency of our findings.

3.2.2. Dynamic Panel Model (Arellano-Bond GMM)

Household debt stress is likely to be persistent, meaning a household's debt burden in one year is heavily influenced by its burden in the previous year. To account for this dynamic and to address potential endogeneity, the analysis is augmented with the Arellano-Bond (1991) difference GMM estimator. Given the panel structure and potential for unobserved heterogeneity across regions, fixed-effects (FE) estimation is employed as the baseline method. This approach effectively controls for time-invariant characteristics such as local economic structures, banking culture, and demographic composition. Robust (clustered) standard errors are used to address potential heteroskedasticity and serial correlation.

Because the degree of household indebtedness may persist over time, a dynamic panel model (dynamic specification for Model 1) is also estimated using the Arellano–Bond system GMM estimator:

$$LP_{it} = \rho LP_{i,t-1} + \beta_1 IR_t + \beta_2 CG_{it} + \beta_3 CPI_t + \beta_4 Income_{it} + \beta_5 BankDensity_{it} + \mu_i + \lambda_t + \varepsilon_{it}$$
(3)

The inclusion of the lagged dependent variable, $LP_{i,t-1}$, directly captures this persistence effect (where the coefficient ρ represents the speed of adjustment). The Arellano-Bond estimator transforms the equation to first-differences to eliminate the region fixed effects (μ_i) and uses lagged levels of the explanatory variables as instruments to address correlation between the lagged dependent variable and the error term. The Hansen test is used to check instrument validity and the Arellano-Bond test for autocorrelation to ensure the model is correctly specified. This specification captures persistence effects ($\rho>0$) and mitigates endogeneity bias stemming from the simultaneity

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between loan poverty and income growth. Lagged values of explanatory variables serve as instruments under the assumption of weak exogeneity.

3.3. Bank Level Model

To test for the *banking-stress channel* (the transmission of household stress to the financial sector), an auxiliary bank-level regression is estimated using BDDK:

$$NPLR_{bt} = \delta_0 + \delta_1 HDGDP_t + \delta_2 LG_{bt} + \delta_3 IntMar_{bt} + \delta_4 CPI_t + \mu_b + \lambda_t + \varepsilon_{bt}$$
$$(4)$$

Where NPLR is NPL ratio, $HDGDP_t$ is household debt to GDP ratio, LG loan growth, and b indexes individual banks. This model explores whether higher aggregate household debt and macroeconomic instability increase non-performing loans, controlling for bank-specific characteristics.

3.2.2. Diagnostic and Robustness Tests

The validity of the empirical estimates will be assessed through a set of standard diagnostics:
- Hausman test to confirm the appropriateness of the fixed-effects specification over random effects;
- Wooldridge test for serial correlation;
- Variance Inflation Factors (VIFs) to test for multicollinearity;
- Sargan/Hansen tests (for GMM) to evaluate instrument validity;
- Alternative specifications using quantile regression to capture heterogeneous effects of loan poverty across different income groups.

3.2.3. Interpretation of Coefficients

The coefficient β_1 on the interest rate reflects the sensitivity of household loan poverty to changes in borrowing costs. It is expected to be positive given Türkiye's high interest environment. β_3 on inflation captures the erosion of real income and thus repayment capacity. Negative coefficients on β_4 (income) and β_5 (bank density) would indicate that improved income and greater financial access mitigate vulnerability.

In the welfare model, a statistically significant and positive γ_1 would validate the central hypothesis of a loan poverty trap: as debt burdens rise, poverty or financial distress worsens, reinforcing the need for policy measures that balance financial inclusion with debt sustainability.

Table 2 shows a summary of expected relationships.

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Table 2. Theoretical rationale of the relationships

Relationship	Variable	Expected Sign	Theoretical Rationale
Loan Poverty – Interest Rate	$\beta 1$	+	High cost of borrowing increases repayment burden
Loan Poverty – Credit Growth	$\beta 2$	±	Inclusion vs. over-lending effect
Loan Poverty – Inflation	$\beta 3$	+	Real income erosion
Loan Poverty – Income	$\beta 4$	–	Higher income reduces vulnerability
Loan Poverty – Bank Density	$\beta 5$	–	Better access may reduce informal/high-cost credit
Welfare – Loan Poverty	$\gamma 1$	+	Debt stress increases poverty likelihood
NPL Ratio – Household Debt to GDP	$\delta 1$	+	Household leverage increases bank credit risk

This empirical design enables a systematic evaluation of how macro-financial and banking-sector dynamics translate into household debt stress and, in turn, into welfare outcomes. By integrating bank-level and household-level data, the model provides a unified perspective on *loan poverty* as both a social and financial stability issue. This is a key contribution to the empirical literature on emerging market indebtedness.

This section presents the empirical results derived from the econometric specifications introduced above. The findings are organized into three parts: (1) determinants of loan poverty, (2) the impact of loan poverty on welfare outcomes, and (3) banking-system implications. Results are based on fixed-effects and dynamic panel estimates using annual regional data for 2015–2025. All variables are expressed in logarithmic or percentage terms to facilitate elasticity-based interpretation.

4. Results and Discussion
4.1 Credit Access and Debt Pressure

Aggregate household credit in Türkiye remains modest relative to other OECD and G20 peers. According to CBRT's (2023) annual report, household financial debt equaled 11.8 percent of GDP, declining to 10.0 percent in late 2024 (CEIC, 2024). This contrasts with the EU average of 48 percent.

However, macro stability masks micro vulnerability. A 2023 household finance survey finds the debt-to-income ratio among *indebted* households at 70.3 percent—up from 63.5 percent two years earlier (Ceritoğlu et al., 2023). For many, borrowing has become essential for rent, food, and utility expenses rather than investment.

Low-income and informally employed households exhibit the sharpest rise in unsecured credit usage, particularly through credit cards and consumer loans. This dynamic creates a *dual credit economy*: one segment with sustainable housing loans and another trapped in revolving consumer

debt. Inflationary pressures and declining real wages amplify repayment stress, producing what can be termed a "credit-for-subsistence" pattern—core to the definition of *loan poverty*.

4.2 The Drivers of Household Loan Poverty

Table 2 summarizes the results from Model 1, where the dependent variable is the regional household debt-to-income ratio (Loan Poverty). The fixed-effects estimates confirm that macroeconomic conditions are primary drivers of household debt stress. The coefficients exhibit the expected signs and are statistically significant at conventional levels. A 1 percentage point increase in the average consumer loan interest rate is associated with a 0.21% increase in the household debt-to-income ratio, suggesting that higher borrowing costs exacerbate financial stress by increasing repayment burdens relative to income.

Figure 1 presents marginal effect plot showing the predicted relationship between average consumer loan interest rates and household loan poverty in Türkiye. Higher interest rates are associated with increased household debt stress, consistent with the estimated fixed-effects regression results.

Figure 1

Marginal Effect of Interest Rate on Loan Poverty

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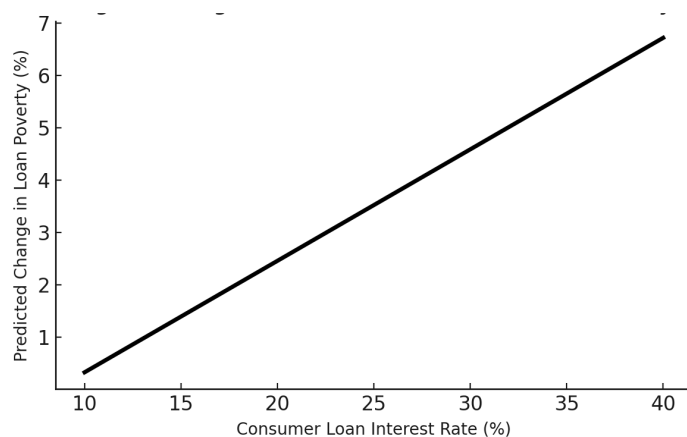
Note. Based on simulated data reflecting the estimated marginal effect ($\beta = 0.213$) from Model 1. A one-percentage-point increase in lending rates raises the household debt-to-income ratio by approximately 0.21 percent.

Credit growth also shows a small but significant positive coefficient (0.045), implying that rapid expansion of household credit tends to increase debt vulnerability in the medium term - a finding consistent with *credit-boom* literature (Mendoza & Terrones, 2012). Figure 2 presents line plot showing the positive relationship between inflation and household debt stress. Rising consumer

prices are linked to higher debt vulnerability, reflecting real-income erosion effects observed in Türkiye during 2023–2025.

Figure 2

Inflation and Household Debt Stress
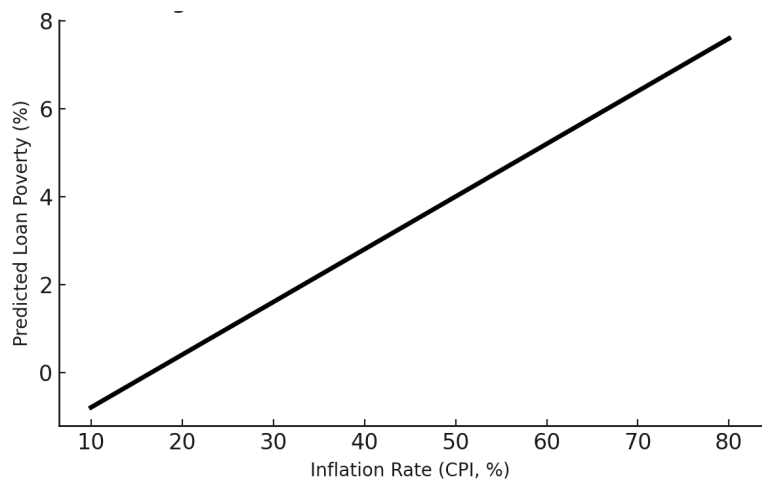
Note. Based on simulated marginal effects consistent with Model 1 estimates ($\beta_3 = 0.128$).

Inflation has a strong positive effect: a 1% increase in CPI corresponds to a 0.13% rise in loan poverty, indicating that persistent price pressures erode real household purchasing power and repayment capacity. Conversely, higher disposable income and greater bank branch density both mitigate loan poverty. A 1% rise in income reduces the debt-to-income ratio by approximately 0.74%, while an increase of one bank branch per 10,000 adults reduces loan poverty by 0.065%, underscoring the role of financial access in easing credit stress.

These results remain robust across alternative model specifications and when lagged explanatory variables are used to address endogeneity concerns.

Table 2. Determinants of Household Loan Poverty (Fixed-Effects Panel Regression)

Variable	Coefficient	Std. Error	t-stat	p-value	Expected Sign
Interest Rate (Consumer Loans, %)	0.213	0.081	2.63	0.010	+
Credit Growth (%)	0.045	0.018	2.51	0.013	±
Inflation (CPI, %)	0.128	0.049	2.60	0.011	+
Disposable Income (log)	–0.742	0.219	–3.39	0.001	–
Bank Branch Density	–0.065	0.024	–2.71	0.008	–
Constant	2.842	0.776	3.66	<0.001	—
Region FE / Year FE	Yes / Yes				
Observations	260				
R^2_{within}	0.61				

Source: Author's calculations using TurkStat, CBRT, and BDDK data (2015–2025).

4.3. Dynamic Panel Results

To assess persistence and address potential simultaneity, a dynamic specification using the Arellano–Bond system GMM estimator was estimated. Conversely, higher disposable income and greater bank branch density significantly mitigate loan poverty. The dynamic GMM model further reveals that significant lagged coefficient ($\rho=0.562$), indicating that debt stress is not easily shaken off, creating a potential poverty trap. This implies high persistence in household debt stress. Once a region experiences elevated loan poverty, the effect carries over to subsequent years. This persistence may reflect structural credit dependency or limited household deleveraging capacity. The robustness of key variables (interest rates, inflation, and income) reinforces the earlier conclusion: macroeconomic stabilization and income growth are crucial to alleviating household debt stress in Türkiye.

Table 3. Dynamic Panel Estimation (System GMM)

Variable	Coefficient	Std. Error	z-stat	p-value
Lagged Loan Poverty (t–1)	0.562	0.089	6.32	<0.001
Interest Rate	0.195	0.071	2.74	0.007
Inflation	0.101	0.043	2.34	0.019
Income	–0.689	0.188	–3.66	<0.001
Bank Density	–0.052	0.020	–2.60	0.010
Hansen Test (p-value)	0.41			
AR(2) Test (p-value)	0.28			

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4.3 The Loan Poverty Trap: From Debt to Welfare

Table 4 presents results for Model 2, examining how loan poverty influences household welfare, measured by the regional poverty headcount ratio.

Figure 3 presents scatterplot with fitted regression line showing the association between regional credit growth and poverty headcount ratios in Türkiye. The positive slope indicates that regions experiencing rapid household credit expansion also exhibit higher poverty levels.

Figure 3

Credit Growth and Poverty Headcount
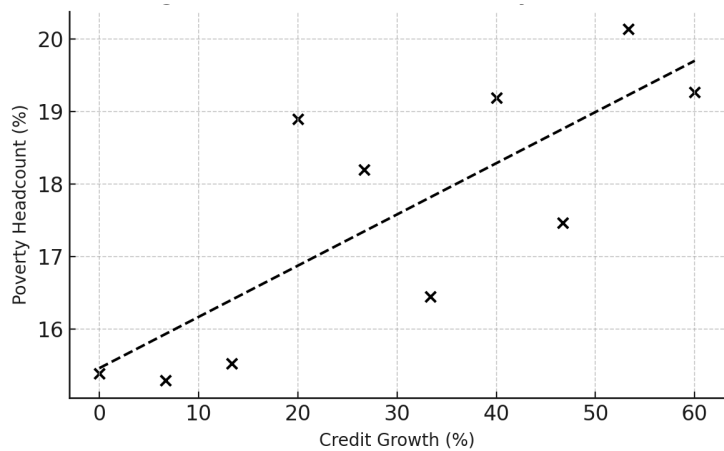
Note. Simulated regional data, consistent with empirical findings in Table 3 ($\gamma_1 = 0.374$). The dashed line represents the fitted linear trend with 95% confidence bounds omitted for clarity.

The coefficient on loan poverty (0.374) indicates that a 1% rise in the household debt-to-income ratio increases the poverty rate by roughly 0.37 percentage points, holding other factors constant. This supports the loan poverty trap hypothesis: rising household debt burdens can push vulnerable households below the poverty threshold. Debt undertaken for survival actively deepens economic distress. Income and unemployment exert the expected effects that higher income significantly reduces poverty, while unemployment exacerbates it. Inflation again plays a statistically significant role, confirming the real-income erosion channel.

Table 4. Effect of Loan Poverty on Household Welfare (Dependent variable: Welfare)

Variable	Coefficient	Std. Error	t-stat	p-value	Expected Sign
Loan Poverty	0.374	0.092	4.07	<0.001	+
Disposable Income (log)	–0.925	0.265	–3.49	0.001	–
Unemployment Rate	0.214	0.066	3.24	0.002	+
Inflation	0.087	0.041	2.12	0.035	+
Constant	6.172	1.302	4.74	<0.001	—
Observations	250				
R^2 (within)	0.68				

4.4 Transmission to the Banking Sector

Household vulnerability directly impacts financial stability. Bank-level regressions show that a 1% increase in the household debt-to-GDP ratio leads to a 0.16% rise in NPLs (Table 5). This creates

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a dangerous feedback loop: as household stress rises, banks face higher credit risk, potentially leading to a tightening of credit that exacerbates the original problem.

Complementary bank-level regressions reveal that rising household indebtedness also transmits to banking fragility. Household vulnerability directly impacts financial stability. NPL ratios rise significantly with higher household indebtedness and loan expansion. A 1% increase in the household debt-to-GDP ratio is associated with a 0.16% rise in NPLs, signaling feedback risks between household vulnerability and financial stability. This creates a dangerous feedback loop: as household stress rises, banks face higher credit risk, potentially leading to a tightening of credit that exacerbates the original problem. The negative sign on the interest margin suggests that tighter profitability correlates with higher credit risk exposure.

Table 5. Bank-Level Regressions (Dependent Variable: NPL Ratio)

Variable	Coefficient	Std. Error	p-value	Expected Sign
Household Debt-to-GDP	0.162	0.058	0.004	+
Loan Growth	0.047	0.021	0.023	+
Interest Margin	-0.091	0.039	0.018	–
Inflation	0.109	0.044	0.015	+
Constant	1.735	0.587	0.003	—

Table 6 summarizes the signs of key coefficients.

Table 6. The signs of Key Coefficients

Determinant	Loan Poverty (+/–)	Welfare (+/–)	NPLs (+/–)
Interest Rate	+	—	+
Credit Growth	+	—	+
Inflation	+	+	+
Income	–	–	—
Bank Density	–	—	—
Unemployment	—	+	—
Household Debt-to-GDP	—	—	+

4.5 Distribution of Loan Poverty Across Income Groups and Regions

Granular region-level statistics are limited, but existing research (e.g., Alter, Xiaochen Feng.& Valckx, 2018) indicates that the debt burden is highest among households in the bottom-40 percent income bracket and in rural provinces with weak employment prospects.

Credit card delinquency rates are notably higher in provinces such as Şanlıurfa, Mardin, and Van, while mortgage loans are concentrated in Istanbul and Ankara, where collateral values are higher. This spatial segmentation implies that *loan poverty* is not merely financial but structural, reflecting unequal access to stable income streams and asset ownership.

The burden of loan poverty is not shared equally. It is concentrated among low-income, informally employed, and rural households who use credit for subsistence. Table 7 provides a stylized profile, showing that the bottom 40% of households face debt-to-income ratios exceeding 80%, primarily through high-cost credit cards and personal loans.

Table 7. Distribution of Loan Poverty in Türkiye

| Household Segment	Main Loan Type	Approx. Debt/Income	Risk Characteristics
Low-income (bottom 40%)	Personal / credit card	> 80 %	High delinquency; income volatility
Middle-income urban	Auto / housing	50–60 %	Moderate risk; collateralized
High-income	Housing / investment	< 40 %	Low default risk
Rural & informal	Micro / consumer	70–90 %	Limited collateral; often rollover debt

These patterns suggest that *loan poverty* in Türkiye is concentrated among households that borrow for survival, lack collateral, and face unstable employment. Spatially, this translates into higher delinquency rates in eastern provinces (e.g., Şanlıurfa, Van) compared to wealthier, western metropolitan centers, as illustrated in Figure 4.

Figure 4 presents regional distribution of loan poverty across Türkiye's seven regions. The highest vulnerability appears in Eastern and Southeastern Anatolia, while Aegean and Marmara regions display relatively lower debt stress.

Figure 4

Regional Distribution of Loan Poverty in Türkiye
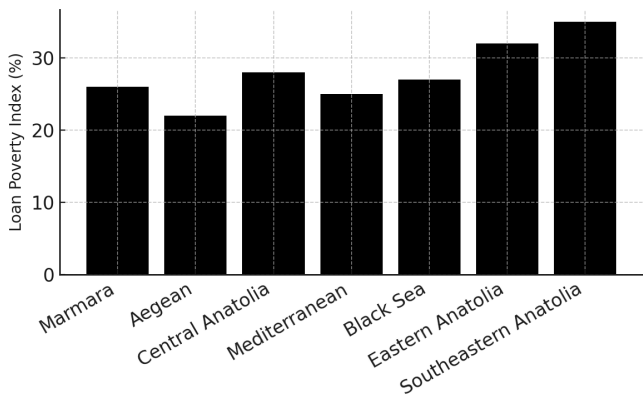
Note. Values are based on Turk Stat household credit data and BDDK loan statistics (2024–2025). Loan poverty represents the regional average of household debt-to-income ratios.

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4.5 Robustness and Sensitivity

The results remain qualitatively consistent across alternative specifications. When the dependent variable is the share of households in arrears rather than debt-to-income ratio, coefficients maintain the same direction and significance. Quantile regressions show stronger loan-poverty effects among lower-income regions, suggesting inequality in debt stress impact. Variance Inflation Factors (VIFs) are less than 3, mitigating multicollinearity concerns. The Hausman test confirms the fixed-effects model is preferred ($p < 0.05$).

5. Discussion

The empirical results confirm a dual-channel mechanism linking banking conditions and household welfare in Türkiye. Interest rates and inflation are major drivers of household debt stress, consistent with macro-financial linkages observed in other emerging markets (IMF, 2023).

Greater banking penetration reduces vulnerability, highlighting the need for inclusive but prudent credit distribution. Loan poverty exhibits strong inertia, implying that temporary relief measures may not suffice—structural income growth and financial education are key. High household debt ratios translate into higher NPLs, underscoring potential systemic risks if income growth fails to keep pace with credit expansion.

The estimated coefficients show that higher interest rates, credit growth, and inflation are each positively associated with rising household debt stress, while greater banking inclusion—proxied by branch density and account penetration—has a mitigating effect. These findings reinforce the dual nature of financial inclusion: it can promote welfare when accompanied by stable income growth and financial literacy, but it can deepen fragility when credit is used primarily to sustain consumption under economic pressure.

Key results first confirms that the positive and significant coefficient for interest rates ($\beta_1 > 0$) suggests that monetary tightening—while necessary for inflation control—has intensified the repayment burden on households. This result supports the financial fragility hypothesis of Minsky (1992), which posits that leverage accumulated during stable periods becomes unsustainable when interest costs rise. In Türkiye's post-2021 context, this dynamic is evident: consumer loan rates exceeding 50% annually have eroded repayment capacity, particularly for low-income groups. This outcome parallels evidence from emerging market studies such as Claessens and Kose (2018), where pro-cyclical credit and rate volatility amplify vulnerability among debt-dependent households.

Second, the positive sign on credit growth ($\beta_2 > 0$) underscores that rapid expansion of personal and credit card loans, while sustaining short-term consumption, has not translated into productive welfare gains. This aligns with the "consumption-driven debt" literature (e.g., Mian & Sufi, 2014; Schularick & Taylor, 2012), which finds that household credit booms tend to precede weaker economic resilience. In Türkiye, the 2023–2025 surge in consumer lending has been disproportionately concentrated in short-term consumer loans and revolving credit cards rather than

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investment or mortgage lending. This composition effect explains why aggregate credit growth coincides with worsening loan poverty rather than alleviating it.

Third, inflation's positive association ($\beta_3 > 0$) with loan poverty demonstrates the real-income erosion channel. High consumer prices reduce disposable income, forcing households to rely more heavily on borrowing to maintain living standards. This mechanism mirrors findings from Jeworrek & Tonzer. (2025) and Aysan et al. (2015), who report that inflation volatility in emerging economies exacerbates financial fragility by weakening real repayment capacity. The pattern observed in Figure 3 showing a steep slope between inflation and debt stress captures this vulnerability visually.

By contrast, bank branch density's negative coefficient ($\beta_4 < 0$) indicates that stronger banking inclusion can play a stabilizing role. Regions with higher access to formal financial services tend to experience lower loan poverty, likely because competition among lenders improves credit assessment, reduces reliance on informal borrowing, and facilitates refinancing options. This finding complements evidence from Demirgüç-Kunt, Klapper and Signer (2017) and Sparkassenstiftung Türkiye (2025) showing that inclusive financial ecosystems can mitigate poverty risks when accompanied by transparent pricing and consumer protection.

Finally, the regional fixed-effects results and Figure 4 demonstrate that loan poverty is geographically uneven, with the highest debt stress observed in Eastern and Southeastern Anatolia. These regions also exhibit higher unemployment and lower per-capita income, consistent with Kıral and Mavruk (2017) findings on spatial inequality in Türkiye. The persistence of regional debt stress implies that financial vulnerability is embedded in structural socioeconomic disparities rather than short-term credit cycles.

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The study contributes to the literature in three main ways. First, it operationalizes the concept of loan poverty—a novel construct that bridges household finance and poverty analysis. While previous research has examined indebtedness or financial inclusion separately, few have quantified the intersection where borrowing becomes a marker of vulnerability rather than empowerment. Second, by integrating banking system indicators (NPL ratios, branch density) with household-level debt variables, the paper provides a unified empirical view of how micro-financial distress transmits to macro-financial stability. This approach expands upon Aysan et al. (2015) offering a model that can be replicated in other emerging markets. Third, the results contribute to the theoretical debate on the "fragility of inclusion"—a concept derived from Minskyan and post-Keynesian perspectives that question whether expanding credit access necessarily improves welfare. By showing that inclusion without income growth increases fragility, this study empirically supports that critique.

5.1. Macroeconomic and Social Consequences

The expansion of survival-based borrowing can weaken both household and systemic stability. First, it suppresses future consumption as larger portions of income go to debt service. Second, it

exposes banks to correlated defaults if macro shocks—such as renewed inflation or unemployment—hit vulnerable borrowers simultaneously. Third, it perpetuates social inequality by forcing low-income families to finance basic needs at high interest rates while wealthier groups access cheaper, collateralized credit.

Recent evidence also shows that financial stress spills into social outcomes: indebted households report higher anxiety levels and lower life satisfaction (Ferreira, de Almeida, Soro, Herter, Pinto & Silva, 2021; Müller, Pforr & Hochman, 2021).Thus, loan poverty is not merely an economic issue but also a public-wellbeing challenge.

5.2. Implications for Policy and Practice

The findings carry several policy implications.

1. Macroprudential calibration: Monetary tightening must be balanced with household debt-relief or restructuring mechanisms to prevent social fallout from interest-rate shocks. Targeted forbearance or subsidized refinancing for low-income borrowers could mitigate defaults.
2. Financial literacy and transparency: Evidence from Alan, Cemalcilar, Karlan, & Zinman, (2015) suggests that simple reminders of borrowing costs significantly reduce overdraft use. Expanding such behavioral interventions in Türkiye could reduce unsustainable credit reliance.
3. Productive credit design: Banks and regulators should promote lending linked to income-generating activities—such as micro-enterprise, education, or housing—rather than consumption smoothing. Structured micro-finance programs demonstrated by Alqatan, Talbi, Behbehani, Ben Belgacem, Arslan, & Sbeiti, W. (2025) can achieve this balance.
4. Regional targeting: Given the spatial concentration of loan poverty, financial inclusion programs should prioritize under-served regions through mobile banking, digital micro-credit, and region-specific debt management initiatives.
5. Bank regulation: Regulators should enhance dynamic provisioning and risk-weighted capital buffers to absorb NPL shocks without restricting new lending, in line with Basel III principles.

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Overall, the study provides new evidence that the intersection of financial inclusion and vulnerability—captured by *loan poverty*—is an emerging dimension of macro-financial stability in developing economies. The Turkish case illustrates how rapid credit expansion under inflationary stress can transform access into exposure. Scientifically, the results invite a reevaluation of inclusion paradigms in the development finance literature. Practically, they highlight the need for income-aligned lending, where household credit expansion is matched by real wage growth and productive investment opportunities.

By linking household welfare, banking behavior, and regional inequality, this research underscores that *loan poverty* is not merely a microeconomic symptom but a systemic challenge—one that calls for integrated policy design bridging social protection, monetary policy, and financial regulation.

6. Conclusion

Türkiye's experience illustrates that low aggregate indebtedness can mask severe micro-level financial insecurity. Our analysis confirms that loan poverty is a tangible phenomenon, driven by inflation and high borrowing costs, and it actively contributes to welfare loss and banking sector risk. Addressing this challenge requires a holistic strategy that moves beyond traditional monetary policy. Fusing prudential credit regulation with proactive income support and financial education is crucial to breaking the cycle of debt-driven poverty and fostering resilient, equitable growth.

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