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The Impact of Non-performing Loans on Bank Profitability

Evidence from Türkiye

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Abstract: Non-performing loans (NPLs) are widely recognised as key indicators of the health of banks and, by extension, the broader economy. This study examines the impact of NPLs on the profitability of banks in Türkiye from 2003 to 2020, using Return on Assets (ROA) as the primary profitability measure. Panel data from 15 deposit banks were analysed using a robust least squares regression (with M-estimation) to address outliers and heteroscedasticity. Key variables include the NPL ratio, ownership concentration (OC), bank size, deposit ratio, consumer price index (CPI) and gross domestic product growth rate. The analysis shows a significant negative relationship between NPLs and ROA, indicating that higher NPL levels are associated with lower ROA. OC and CPI also exhibit negative effects on ROA, whereas bank size, deposit ratio and GDP growth rate have positive impacts on profitability. These findings underscore the need for effective NPL management to maintain the financial health of banks. The results highlight the importance of internal management efficiency, macroeconomic stability and robust regulatory frameworks in improving bank profitability in Türkiye.

Keywords: non-performing loans, bank profitability, return on assets, panel robust regression, Türkiye

1. Introduction

The banking sector is a key component of the economy, serving as a fundamental building block. Banks play a crucial role in ensuring the healthy functioning of the economy by channelling savings into productive activities, thereby supporting industrial growth and efficient capital allocation (Morck et al., 2011). Effective management of banks is essential, as they act as intermediaries transferring funds from those with a surplus to

those with a deficit. The necessity for sound bank management has become evident globally through financial crises, which have shown that any problem in the banking system can rapidly and directly affect the overall economy (Mhadhbi et al., 2020). One of the biggest obstacles to effective bank management is the difficulty in loan repayment faced by borrowers; such problem loans become non-performing loans and negatively impact bank profitability (Kadıoğlu et al., 2017).

NPLs are considered a good indicator of the financial health of both banks and the economy (Jiang & Zheng, 2024). These loans are those for which the borrower has made no interest or principal payments for at least 90 days (Bholat et al., 2016; Espinoza & Prasad, 2010; Louzis et al., 2012; Makri et al., 2014). When loans become problematic and turn non-performing, they cease to generate income for banks, which can lead to serious financial issues if not properly managed (Anita et al., 2012). This not only disrupts banks' cash flow but also poses significant risks to financial stability and economic growth (Khan et al., 2020). Although the exact definition of an NPL may vary slightly by region, in general NPLs are loans in default or close to default, signalling potential losses for lenders (Miglionico, 2017). Early detection and proactive management of these loans help banks avoid larger problems in the future.

Bank profitability essentially measures how well a bank is performing financially – how much it earns relative to what it spends. This is crucial for keeping banks running smoothly, supporting economic growth and maintaining financial stability (Lamothe et al., 2024). Bank profitability is affected by a combination of factors, including the bank's own characteristics, industry conditions and the overall economic environment (O'Connell, 2023). When banks are profitable, they can build up reserves to handle tough economic times and remain resilient in the long run. For example, Dietrich and Wanzenried (2011) found that banks with higher profits before the 2008 financial crisis were better able to withstand the crisis, underscoring the importance of strong profit margins.

Factors affecting bank profitability can be internal (such as management efficiency, capital adequacy and credit risk management) or external (such as economic growth, interest rates and inflation). For instance, Athanasoglou et al. (2008) found that efficient cost management and maintaining high-quality loans significantly boost profitability. Their study on Greek banks showed that well-capitalised banks are more profitable because they can absorb unexpected losses and invest in profitable opportunities.

In Türkiye, where banks are central to the economic system, combating NPLs requires a comprehensive approach that considers both macroeconomic conditions and bank-specific practices. Equally, understanding bank profitability is crucial for policymakers and bank managers in developing strategies to enhance financial performance and stability. Improving profitability through effective management, regulatory reforms and favourable economic policies can significantly strengthen the health and resilience of Türkiye's financial system.

Türkiye's banking sector has undergone significant transformations over the past few decades, marked by periods of crisis followed by reforms. This overview focuses on the sector's structure, the impact of NPLs and recent developments. Türkiye's banking sector

constitutes a substantial part of its financial system, with deposit banks at its core. As of June 2024, 33 deposit banks (Bankacılık Düzenleme ve Denetleme Kurumu, s. a.) controlled 77% of the total assets in the banking sector in Türkiye,[1] highlighting the sector's central role in financial transactions and intermediation. The sector includes state-owned, private and foreign-owned banks, with state banks historically holding significant asset shares due to their public financing roles and specific mandates (such as agricultural lending by the Ziraat Bank). In response to the 2000–2001 economic crises, major reforms were introduced, driven by IMF and World Bank programs. The Banking Sector Restructuring Program launched in 2001 aimed to rehabilitate insolvent banks, restructure state-owned banks for eventual privatisation, and strengthen regulatory institutions (Arı et al., 2024). This program helped cushion Turkish banks from the 2007–2008 global financial crisis, although recent challenges (including the 2018 currency crisis) have posed new threats (Arı et al., 2024; Narin et al., 2023).

NPLs have been a persistent issue in Türkiye's banking sector, reflecting broader economic vulnerabilities. The crises of the 1990s and early 2000s, driven by macroeconomic imbalances and structural weaknesses, saw a significant rise in NPLs. For instance, during the 2001 crisis, banks struggled with large open foreign exchange positions, heavy foreign debt burdens and deteriorating asset quality – including a substantial increase in NPLs (Narin et al., 2023). In the aftermath, substantial regulatory changes were implemented to stabilise the sector. The establishment of the Banking Regulation and Supervision Agency in 2000 was a pivotal step, tasked with ensuring banks' solvency, liquidity and risk management. Despite these efforts, NPLs continue to pose challenges, particularly during periods of economic instability or political tension (Arı et al., 2024; Güzel, 2023). Recent years have seen further consolidation and modernisation in the sector. The number of banks has declined due to mergers and acquisitions, and technological advancements have improved service delivery and efficiency (Güzel, 2023). However, economic volatility – including high inflation and currency devaluation – has strained the sector. For example, the 2018 currency crisis and subsequent economic policy shifts impacted banks' profitability and risk profiles (Arı et al., 2024; Narin et al., 2023).

This study aims to examine the impact of non-performing loans (NPLs) on the profitability of deposit banks operating in Türkiye, with a particular focus on the role of ownership concentration and macroeconomic factors. As the backbone of financial intermediation, banks must manage credit risk effectively to maintain stability and support economic growth. In this context, understanding how NPLs affect profitability is vital for both academic research and policy formulation. By exploring the relationship between key financial indicators and bank performance over a significant period, this study contributes to the literature on banking efficiency and risk management. It also provides insights into how internal bank characteristics and external economic conditions jointly shape the financial outcomes of banks in emerging economies like Türkiye.

[1] Author's calculation.

2. Literature review

Non-performing loans can increase for various reasons, such as economic downturns, poor lending practices and weak risk management. For instance, during times of economic recession, businesses and individuals may struggle to repay loans, leading to a rise in NPLs (Akhter, 2023). Bank-specific issues like inadequate capital positions and weak credit assessments also contribute to higher NPL levels (Zhang et al., 2022). Greece offers a notable example, where NPLs surged during financial crises due to economic instability and certain banking practices (Athanasoglou et al., 2008). In Europe, factors such as economic cycles, bank capitalisation and rapid loan growth are crucial in understanding NPL dynamics (Beck et al., 2015).

In the Gulf Cooperation Council countries, changes in oil prices and global economic conditions significantly affect banking stability. Because these economies heavily rely on oil revenue, major oil price swings directly impact economic performance and loan defaults (Louzis et al., 2012). Klein (2013) emphasised that in Central, Eastern and Southeastern Europe, economic growth, inflation and exchange rates play significant roles in rising NPLs. Additionally, institutional quality and the legal environment influence how well banks manage NPLs, highlighting the need for robust regulatory frameworks (Boudriga et al., 2010).

Bank-specific factors such as efficiency, profitability and size are also important determinants of NPLs. Effective management can reduce NPLs by improving credit risk assessment (Messai & Jouini, 2013). Moreover, high public debt and unemployment rates are associated with increased NPLs. Makri et al. (2014) demonstrate the importance of macroeconomic stability and sound fiscal policies in containing NPL levels in the Eurozone (see also Espinoza & Prasad, 2010). In the United States, local economic conditions and banking sector factors were identified as primary determinants of NPLs (Ghosh, 2017). Developed economies face challenges from financial market stress and economic downturns that elevate NPL levels (Nkusu, 2011). In Sub-Saharan Africa, economic growth, exchange rate stability and governance are key factors affecting NPL levels (Fofack, 2005).

Industry conditions, such as competition and regulation, also play a major role in banking outcomes. García-Herrero et al. (2009) found that in China, intense competition, strict regulations and high NPL levels led to low profitability for banks. They suggested that reducing NPLs and boosting efficiency could significantly improve performance. Macroeconomic factors like economic growth and inflation likewise have considerable impact on bank profitability. Trujillo-Ponce (2013) discovered that in Spain, stable economic growth and low inflation positively influenced bank profits. Similarly, Kosmidou (2008) noted that Greek banks enjoyed higher profits during periods of EU economic integration, attributable to favourable conditions and improved regulations.

Comparing domestic and foreign banks in the EU, Pasiouras and Kosmidou (2007) found that foreign banks face distinct pressures affecting profitability. Their study highlighted the necessity for banks to adjust to local market conditions and regulatory requirements. Sufian and Habibullah (2009) showed that in Chinese banks, both internal factors (like credit risk) and external factors (like GDP growth and inflation) are crucial

to profitability. In the Asian banking sector, Lee and Hsieh (2013) found that well-capitalised banks achieve higher profits and lower risk levels, demonstrating the benefits of strong capital buffers.

One of the most common measures of bank profitability is ROA, which reflects how effectively a bank uses its assets to generate earnings. Higher ROA values indicate better asset utilisation and management efficiency (Dietrich & Wanzenried, 2011).

Türkiye's banking sector, like those of other emerging markets, faces unique challenges and opportunities that affect NPLs and profitability. Several studies have examined these dynamics, offering insights into what drives performance and stability in Turkish banks. Alper and Anbar (2011) examined the drivers of commercial bank profitability in Türkiye, finding that internal factors such as bank size, capital adequacy and operational efficiency are crucial. Additionally, macroeconomic variables like inflation and GDP growth play significant roles. Banks that are well-capitalised and efficiently managed tend to perform better, even during economic turbulence. Sarıtaş et al. (2016) analysed how financial ratios and macroeconomic variables affect bank profitability in Türkiye. They found that interest rates and economic growth significantly impact profitability, suggesting that banks need to adjust their strategies as economic conditions change. Gülhan and Uzunlar (2011) concluded that liquidity, asset quality and capital adequacy are critical factors for profitability in the Turkish banking sector; maintaining a strong capital base and sound asset management is essential for sustained profits. Kılınç et al. (2018) specifically examined the effect of NPLs on bank profitability in Türkiye, and their findings showed a strong negative relationship between NPLs and profitability – underscoring the importance of managing loan quality to ensure financial performance. Turan (2022) investigated how macroeconomic variables and capital structure influence bank profitability in Türkiye, concluding that economic stability (measured by GDP growth and inflation) is crucial and that an optimal capital structure helps banks weather economic fluctuations. Sevim and Eyüboğlu (2016) identified internal factors influencing Turkish commercial bank performance, finding that management efficiency, asset quality and financial leverage are significant; improving internal operations and risk management can enhance performance. Güzel and İltaş (2018) examined determinants of profitability in Turkish commercial banks (2003–2016) and concluded that both macroeconomic stability and sound banking practices are essential for sustained profitability. Okuyan and Karataş (2017) analysed the Turkish banking sector's profitability, emphasising the roles of operational efficiency and risk management. Their findings suggest that continuous improvements in operations and effective risk management are vital for maintaining profitability.

3. Research methods

3.1. Data

The dataset used in this study comprises 15 deposit banks operating continuously in Türkiye from 2003 to 2020. (Participation banks are not included.) Financial data for these banks were obtained from publicly disclosed balance sheets, income statements

and annual reports, primarily through the Banks Association of Turkey's website. Macroeconomic data (consumer price index and gross domestic product) were retrieved from the World Bank database.

Ownership concentration data for each bank were manually compiled using company yearbooks, audit reports and annual reports. Ownership concentration is the percentage of shares controlled by the bank's principal (ultimate) shareholder, including both direct and indirect ownership. Direct ownership refers to shares registered under a shareholder's name, while indirect ownership refers to bank shares held by entities controlled by the ultimate shareholder. Since the main shareholders of banks are often the companies themselves, identifying the ultimate owners requires tracing through multiple layers of ownership to determine the final controlling parties.

3.2. Variables

- *Return on Assets (ROA):* ROA is a ratio indicating how much income a bank generates per unit of assets, reflecting the bank's efficiency. It is calculated as net income divided by total assets (Do et al., 2020; Alshebami et al., 2020; Singh et al., 2021).
- *Non-performing Loans to Gross Loans (NPL):* The NPL ratio is the proportion of a bank's loans that are not being repaid (i.e. loans in default or close to default). It measures the quality of the bank's loan portfolio (Sarıtaş et al., 2016; Khan et al., 2011; Kingu et al., 2018; Chimkono et al., 2016).
- *Ownership Concentration (CON):* The percentage of shares held by the bank's largest (ultimate) shareholder. It represents the total direct and indirect voting rights of the largest owner (Magalhaes et al., 2010; Chun et al., 2011). If this proportion exceeds 20%, the bank is considered to have a major shareholder. When a large fraction of shares is owned by a small number of shareholders, the firm is said to have highly concentrated ownership (Çıtak, 2007).
- *Bank Size (SIZE):* Measured as the logarithm of the bank's total assets. Due to economies of scale, larger banks can reduce average costs, which may positively impact profits (Tan, 2014).
- *Deposit-to-Asset Ratio (DEPOSIT):* The ratio of total deposits to total assets (Turan, 2022). A bank's growth can be indicated by the annual growth rate of its deposits. Banks that grow rapidly are expected to expand operations and increase profitability accordingly (Sarıtaş et al., 2016).
- *Consumer Price Index (CPI):* Annual inflation rate. In periods of high inflation, banks tend to increase loan interest rates and may charge more for services, potentially boosting profitability (Bouzgarrou et al., 2018). However, high inflation also erodes the real value of borrowers' incomes, weakening their repayment capacity and thereby increasing NPLs (Singh et al., 2021).
- *Gross Domestic Product Growth Rate (GDPGR):* Annual GDP growth rate, reflecting overall economic growth. GDP growth affects the supply and demand for credit (Okuyan & Karataş, 2017). During recessions, a drop in GDP growth

increases banks' credit risk and reduces profitability. Conversely, during economic expansions, banks can lend more and widen their net interest margins, resulting in higher profitability (Sarıtaş et al., 2016). Thus, GDP growth is a key indicator of economic activity that can influence bank profitability (Bhattarai, 2016).

Table 1

Deposit banks that operated continuously in Türkiye during the period 2003–2020, used in the study

Akbank T.A.Ş.
Alternatif Bank A.Ş.
Anadolubank A.Ş.
Arap Türk Bankası A.Ş.
Denizbank A.Ş.
Finans Bank A.Ş.
Türkiye Garanti Bankası A.Ş.
Türkiye Halk Bankası A.Ş.
HSBC
Türkiye İş Bankası A.Ş.
Şekerbank T.A.Ş.
Türk Ekonomi Bankası A.Ş.
Tekstil Bankası A.Ş. (ICBC Turkey Bank)
Turkish Bank A.Ş.
Türkiye Vakıflar Bankası T.A.O.

Source: compiled by the author

3.2.1. Model specification

We employ panel data on a sample of commercial banks in Türkiye, with 270 observations over a period of 2003–2020 by applying robust least squares regression with M-estimation to examine the impact of non-performing loan ratio (NPL) on bank profitability (ROA).

- *Dependent Variable:* Return on Assets (ROA)
- *Independent Variable:* Non-Performing Loans (NPL)
- *Control Variables:*
  - Ownership Concentration (CON)
  - Bank Size (SIZE)
  - Deposits (DEPOSIT)
  - Consumer Price Index (CPI)
  - Gross Domestic Product Growth Rate (GDPGR)

Panel Data Model:

$$ROA_{it} = \beta_0 + \beta_1 NPL_{it} + \beta_2 CON_{it} + \beta_3 SIZE_{it} + \beta_4 DEPOSIT_{it} + \beta_5 CPI_{it} + \beta_6 GDPGR_{it} + v_i + \epsilon_{it}$$

The panel data regression model can be specified as follows:

where:

- ROA_{it} is the return on assets for bank i at time t
- NPL_{it} is the non-performing loan ratio for bank i at time t
- CON_{it} is the ownership concentration for bank i at time t
- $SIZE_{it}$ is the size of bank i (log assets) at time t
- $DEPOSIT_{it}$ is the deposit-to-asset ratio for bank i at time t
- CPI_{it} is the consumer price index (inflation rate) at time t
- $GDPGR_{it}$ is the GDP growth rate at time t
- v_i is the unobserved bank-specific effect for bank i
- ϵ_{it} is the error term

3.2.2. Results and discussions

Table 2
Summary of descriptive statistics

Stats	ROA	NPL	CON	SIZE	DEPOSIT	CPI	GDPGR
Mean	0.014479	0.047663	0.711639	16.866870	0.413879	0.102	0.051
Median	0.014573	0.040726	0.735700	17.023940	0.499597	0.090	0.054
Max.	0.044923	0.456516	1.000000	20.365010	0.852151	0.203	0.112
Min.	–0.022097	0.002744	0.258700	12.600280	0.107101	0.061	–0.048
Std. Dev.	0.008493	0.044169	0.233398	1.863169	0.233095	0.038	0.038
Obs.	270	270	270	270	270	270	270

Source: compiled by the author

The ROA values indicate that, on average, the banks in the sample are profitable. The NPL ratio shows that the level of problematic loans varies widely across banks, with some banks experiencing very high NPL levels. The concentration ratio (CON) also varies significantly, reflecting different degrees of ownership concentration among banks. The SIZE figures reveal substantial differences in bank size (total assets), while the DEPOSIT ratio exhibits a wide range, indicating varied reliance on deposit funding. The CPI values suggest that inflation rates were relatively stable over the period. Lastly, the GDP growth rate (GDPGR) was positive on average, despite some fluctuations in the economy.

Table 3
Correlation Matrix with p-values

Variable	ROA	NPL	CON	SIZE	DEPOSIT	CPI	GDPGR
ROA	1.000000						
NPL	−0.012764 (0.8346)	1.000000					
CON	−0.076425 (0.2106)	0.045832 (0.4533)	1.000000				
SIZE	0.158487 (0.0091)	−0.038621 (0.5275)	−0.211960 (0.0005)	1.000000			
DEPOSIT	0.419589 (0.0000)	0.083349 (0.1721)	0.061055 (0.3175)	−0.242197 (0.0001)	1.000000		
CPI	−0.074807 (0.2205)	0.214281 (0.0004)	0.029275 (0.6320)	0.081810 (0.1802)	−0.219405 (0.0003)	1.000000	
GDPGR	0.021776 (0.7217)	−0.075752 (0.2147)	−0.034672 (0.5705)	−0.136234 (0.0252)	0.141770 (0.0198)	−0.106535 (0.0806)	1.0

Source: compiled by the author

ROA shows positive correlations with SIZE and DEPOSIT, and negative correlations with NPL, CON, and CPI (its correlation with GDPGR is near zero). The NPL ratio is positively correlated with DEPOSIT and CPI, and negatively correlated with SIZE and GDPGR. The CON variable is negatively correlated with SIZE and GDPGR, but positively with NPL and DEPOSIT. SIZE is positively correlated with ROA and CPI, and negatively correlated with CON, NPL, DEPOSIT, and GDPGR. The DEPOSIT ratio is positively correlated with ROA, NPL, and GDPGR, and negatively correlated with SIZE and CPI. CPI is positively correlated with NPL and negatively correlated with DEPOSIT and GDPGR. GDPGR is positively correlated with DEPOSIT and slightly negative with CON, SIZE, and CPI. Additionally, ROA and DEPOSIT have a moderately strong correlation of about 41.9%, whereas most other pairwise correlations are relatively weak. Notably, NPL and CPI have a correlation of about 21.4%.

3.3. Regression analysis

Robust least squares estimation is a regression technique that aims to provide more reliable parameter estimates even when outliers or heteroscedasticity are present. Unlike ordinary least squares (OLS), which minimises the sum of squared residuals and can be very sensitive to outliers, robust methods minimise a weighted sum of residuals to lessen the influence of extreme values (Rousseeuw & Leroy, 1987). One common robust method is M-estimation, which employs weighting functions (such as Huber, Tukey, or Cauchy) to assign lower weights to outliers, thereby enhancing the robustness of the results (Alma, 2011). For example, the Cauchy weighting function is effective in handling large residuals, making it suitable for data with heavy-tailed error distributions

(Huber, 1981). Furthermore, advanced robust regression techniques like S-estimation and MM-estimation extend this robustness by optimising both scale and location parameters, ensuring a high breakdown point and resistance to a larger proportion of outliers (Yohai, 1987).

Table 4
Regression results on ROA model with robust statistics

	ROA
C	−0.014918***
	(6.34E-05)
NPL	−0.005890***
	(0.000126)
CON	−0.001226***
	(2.36E-05)
SIZE	0.001375***
	(3.06E-06)
DEPOSIT	0.017613***
	(2.46E-05)
CPI	−0.001455***
	(0.000148)
GDPGR	0.000483***
	(0.000144)
Observations	270
R-squared	0.337849
Adjusted R-squared	0.337849

Source: compiled by the author

The robust least squares regression yields an R-squared of 0.3378, indicating that about 33.78% of the variability in ROA is explained by the independent variables (Table 4). The analysis reveals a negative relationship between NPL and ROA, with a coefficient of −0.005890 ($p \approx 0.0000$), indicating strong statistical significance. In other words, higher NPL levels are associated with lower ROA. Similarly, ownership concentration (CON) has a negative coefficient of −0.001226 ($p \approx 0.0000$), signifying a statistically significant inverse relationship with ROA.

By contrast, bank size (SIZE) shows a positive coefficient of 0.001375 ($p \approx 0.0000$), underscoring a significant positive association with ROA. The deposit ratio (DEPOSIT) likewise exhibits a strong positive relationship with ROA, with a coefficient of 0.017613 ($p \approx 0.0000$). The Consumer Price Index (CPI) has a negative coefficient of −0.001455 ($p \approx 0.0000$), indicating that higher inflation is linked to lower ROA. GDP growth (GDPGR) has a positive coefficient of 0.000483 ($p = 0.0008$), which is also statistically significant. The constant term (C) is negative (−0.014918) with $p \approx 0.0000$, indicating a significant intercept.

In summary, the model demonstrates that NPL, ownership concentration and inflation (CPI) have significant negative effects on ROA, while bank size, deposit ratio and GDP growth have significant positive effects on ROA.

4. Discussion

The findings indicate a significantly negative relationship between NPLs and ROA in Turkish banks. Specifically, a 1% increase in the NPL ratio leads to an approximately 0.589% decrease in ROA, illustrating that high levels of NPLs severely erode bank profitability. This underscores the critical need for banks to effectively manage their loan portfolios to maintain financial health. Additionally, the study shows that bank size and deposit ratios positively affect profitability, whereas ownership concentration and CPI (inflation) negatively impact ROA. These results are consistent with prior research suggesting that well-capitalised, efficiently managed banks tend to perform better even during economic turbulence.

The outcomes of this study correspond to the existing literature on the determinants of bank profitability and the impact of NPLs. The detrimental effects of NPLs on profitability have been documented extensively. For instance, Ozili (2021) found that higher NPLs are significantly and negatively related to ROA, indicating that an increase in NPLs leads to reduced bank profitability. This aligns with Dietrich and Wanzenried (2010), who noted that banks with higher NPL levels tend to exhibit lower profitability because of increased provisioning costs and reduced interest income. Similarly, García-Herrero et al. (2009) emphasise the harmful effects of high NPL ratios and operational inefficiencies on bank performance. Overall, these findings reinforce the notion that poor asset quality (high NPLs) is associated with weaker profitability.

In the context of Türkiye's banking sector, Kılınç et al. (2018) also highlight the adverse effects of NPLs on profitability, and Sarıtaş et al. (2016) find that NPLs negatively affect ROA. Thus, higher levels of NPLs indicate poor credit quality and potential defaults, strain bank resources and reduce overall profitability. Similarly, Aydın (2019) observed a significant negative relationship between credit risk (a major component of NPLs) and profitability. This relationship is attributed to the diminished quality of interest-earning assets and the higher provisioning costs associated with elevated NPLs, which together erode overall profits.

The macroeconomic factors identified in this study (e.g. GDP growth and inflation) are in line with the findings of other studies. For example, Trujillo-Ponce (2013) finds that stable economic growth and low inflation positively influence bank profitability in Spain. Likewise, Kosmidou (2008) noted that Greek banks experienced higher profits during periods of economic integration in the EU thanks to favourable economic conditions and improved regulatory frameworks. Alper and Anbar (2011) and Athanasoglou et al. (2008) similarly find that internal factors (e.g. bank size and operational efficiency) are crucial for profitability, while macroeconomic variables such as inflation also play a significant role.

The impact of ownership concentration on profitability is discussed in the literature. Kevser and Doğan (2021) highlight that higher ownership concentration has a negative linear impact on ROA. This is reflected in the negative relationship between ownership concentration and profitability observed in our study, suggesting that a highly concentrated ownership structure can diminish profitability in the Turkish banking sector, perhaps by hindering effective governance and risk diversification.

Beyond the empirical evidence presented, it is essential to consider the broader macroeconomic environment, particularly the role of monetary policy implemented by the Central Bank of the Republic of Türkiye (CBRT). Elevated policy interest rates, often used to combat inflation and stabilise the Turkish lira, have a dual impact on the banking sector. Policy interest rates both help curb inflation and increase borrowing costs for consumers and firms. As a result, loan demand may decrease, and existing borrowers may struggle to meet repayment obligations. This scenario increases the probability of loan defaults, thereby exacerbating the level of non-performing loans (NPLs) within the banking system (Fitch Ratings, 2025). Accordingly, the monetary stance of the CBRT constitutes a critical factor influencing both the credit risk and profitability of banks in Türkiye, and should be incorporated into any comprehensive assessment of banking sector dynamics.

5. Conclusion

This study's findings are well-aligned with the existing literature, reinforcing the importance of internal management efficiency, macroeconomic stability and effective regulatory frameworks in enhancing bank profitability and managing NPLs. The consistency of our results with previous studies underscores the robustness of our conclusions and the relevance of these factors in the context of Türkiye's banking sector. In particular, the analysis demonstrates the critical importance of effective risk management in banking, given the adverse impact of NPLs on profitability. Banks, therefore, need to adopt stringent credit assessment procedures and proactive loan monitoring practices to minimise issues related to NPLs.

At the policy level, several policy recommendations can be drawn from this study. Policymakers should be well-advised to give top priority to developing stronger regulatory institutions to ensure banks internalise stringent credit risk management practices. Greater supervision and standard risk assessment guidelines can help identify deterioration in credit conditions early on and lower systemic risk. At the same time, promoting macroeconomic stability – particularly through using policies that anchor inflation – is necessary in avoiding the accumulation of non-performing loans.

The other major area of concern for the regulators is that they have to closely monitor ownership concentration in banks. Highly concentrated ownership patterns are likely to reduce governance quality and decrease managerial accountability, ultimately to slow down bank profitability. Moreover, a conservative mix of monetary and fiscal policies should be tried to stabilise the economic environment, reduce uncertainty and alleviate pressure causing the generation of NPLs.

At the banking level, banks will need to develop sophisticated risk assessment systems that can examine borrower profiles and forecast probable credit defaults. Their lending procedures will need to emphasise diversification by industry so as to reduce sector-based vulnerabilities. A solid capital base will further be critical for the absorption of loss as well as for maintaining operational solidity.

Embedding advanced financial technologies in fundamental banking platforms can enhance the precision of risk estimation and accelerate response to emerging loan quality concerns. Thus, instantaneous feedback on borrower behaviour and macroeconomic patterns is provided. In addition, establishing better customer relationships with personalised service and efficient communications can result in enhanced repayment behaviour, which is critical in containing NPL levels.

By implementing these recommendations, policymakers can create an environment conducive to financial stability, and banks can improve their operational practices to manage risks better. Together, such efforts would help in reducing non-performing loans and enhancing the overall profitability and stability of the banking sector in Türkiye.

In summary, this study confirms the significant negative impact of non-performing loans on bank profitability in Türkiye and emphasises the role played by internal governance mechanisms alongside macroeconomic policy complementarities. Important findings include that better credit risk evaluation, optimal regulation of shareholding structures and a well-balanced monetary policy position are necessary to preserve banking sector profits. Both policymakers and bank managers need to come together in order to mitigate risks, while expanding their financial base for the long-run.

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