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NET INTEREST MARGIN DYNAMICS IN THE TURKISH BANKING SECTOR UNDER HIGH INFLATION

YÜKSEK ENFLASYON ORTAMINDA TÜRK BANKACILIK SEKTÖRÜNDE NET FAİZ MARJININ DİNAMİKLERİ

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Abstract: This study analyses net interest margin dynamics in the Turkish banking sector under high inflation and elevated interest rates. Contrary to conventional expectations that rising rates widen margins, empirical evidence shows that net interest margin has contracted. Policy rate increases exert a negative long-run effect, while higher non-performing loans further compress profitability. A positive relationship has been found between capital adequacy and net interest margin. Short deposit maturities cause funding costs to adjust faster than lending rates, exposing banks to interest rate risk. Macroprudential measures—such as reserve requirements, security-holding obligations, and credit growth restrictions—reduce asset-liability flexibility, amplifying downward pressure on margins. High volatility in inflation and policy rates is complicating margin management. As a result, real returns on equity erode despite nominal profits, creating hidden profitability risks. The findings highlight the need for durable price stability and balanced regulatory design to sustain banking resilience and long-term profitability.

Keywords: Net Interest Margin, Inflation, Capital Adequacy, Non-Performing Loans, Profitability

JEL: G18, G21

Öz: *Bu çalışma, yüksek enflasyon ve yükselen faiz oranları koşullarında Türk bankacılık sektöründe net faiz marjı dinamiklerini incelemektedir. Artan faiz oranlarının marjları genişletmesi yönündeki klasik beklentilerin aksine, ampirik bulgular net faiz marjının daraldığını göstermektedir. Politika faizindeki artışlar uzun vadede olumsuz etki yaratırken, artan takipteki krediler rasyosu kârlılığı daha da baskılamaktadır. Sermaye yeterliliği ile net faiz marjı arasında pozitif yönlü ilişki tespit edilmiştir. Mevduatın kısa vadeli yapısı, fonlama maliyetlerinin kredi faizlerinden daha hızlı uyum sağlamasına yol açmakta, bu da bankaları faiz riskine maruz bırakmaktadır. Zorunlu karşılıklar, menkul kıymet tesis yükümlülükleri ve kredi büyümesine yönelik sınırlamalar gibi makro ihtiyati önlemler, aktif-pasif esnekliğini azaltarak marjlar üzerindeki baskıyı artırmaktadır. Enflasyon ve politika faizlerindeki yüksek oynaklık, marj yönetimini daha da zorlaştırmaktadır. Sonuç olarak, nominal kârlar korunuyor gibi görünse de özkaynakların reel getirisi aşınmakta ve gizli bir kârlılık erozyonu ortaya çıkmaktadır. Bulgular, bankacılık sektörünün dayanıklılığını ve uzun vadeli kârlılığını sürdürebilmesi için kalıcı fiyat istikrarı ile dengeli bir düzenleyici çerçevenin önemini vurgulamaktadır.*

Anahtar Kelimeler: *Net Faiz Marjı, Enflasyon, Sermaye Yeterliliği, Takipteki Alacaklar, Karlılık.*

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1. Introduction

The sustainable profitability of the banking sector is crucial not only for shareholders but also for financial stability and economic growth. Shareholders invest in banks with the expectation of a certain level of income, and profitable banks provide them with both dividends and capital gains. A sufficiently profitable bank strengthens its equity base, creating a buffer against potential future risks and instilling confidence in investors. Ensuring financial stability in an economy likewise requires banks with robust equity structures. The primary means by which banks generate equity is through profitability and the retention of earnings.

Banking sector profitability also carries significant implications for the real economy. The lending capacity of banks, and its expansion over time, is directly linked to their equity base (Akgüç, 2007: 349). Access to credit for firms and households, and the long-term support of economic activity and growth, therefore, depends on a banking sector with sustainable and healthy profitability (Nevin, 2018). Adequate profitability and its retention expand banks' lending capacity, thereby enhancing their ability to support the real sector financially.

Bank profits are derived from two main channels. The most important is net interest income, which arises from the financial intermediation function. The positive difference between the interest paid on collected funds and the interest earned from loans and securities constitutes the core component of bank profitability. A bank's performance in this regard is measured by the net interest margin (NIM), defined as the ratio of net interest income to average assets. NIM reflects the amount of net interest income generated per unit of assets and serves as an indicator of management's ability to allocate and utilize entrusted resources effectively. (Rose and Hudgins, 2013: 171-173). Banks' net interest margins are subject to fluctuations linked to the maturity mismatch between assets and liabilities resulting from the maturity transformation functions they perform, as well as to volatility in interest rates (Matthews et al., 2024: 384). The second channel of bank profitability is net non-interest income, which represents the positive difference between non-interest revenues and non-interest expenses. Non-interest income, which is generated primarily from fee-based services, plays a significant role in enhancing banks' asset profitability. Growth in this area requires little or no increase in equity or liabilities. This means that banks can increase service-related revenues by raising transaction numbers without substantially raising their funding base. As a result, non-interest income provides an efficient channel for improving profitability and diversifying earnings beyond traditional interest margins (Akgüç, 2007: 621).

Recent studies on the profitability of the Turkish banking sector reveal that during periods of rising inflation, banks' nominal return on equity (ROE) increases, while inflation-adjusted real return on equity (RROE) declines. One of the most important factors underlying this adverse development is the downward trend in the sector's NIM (Şahin, 2026: 249).

This study examines how the NIM of the Turkish banking sector is affected by changes in the Central Bank of Turkey's policy interest rate (CBPR), as well as by sector-specific variables such as the Capital Adequacy Ratio (CAR) and the Non-Performing Loans Ratio (NPL), under conditions of high inflation and economic distress. CBPR is the most significant macroeconomic factor influencing both current and long-term interest rates, and it also serves as a proxy for inflation. CAR reflects banks' capitalization levels and their degree of risk aversion, while

NPL is included in the analysis as an indicator of asset quality and sensitivity to risk. The dataset covers the period from 2016 to June 2025.

Inflation in Turkey, already on an upward trajectory by the third quarter of 2021, accelerated sharply when the Central Bank of the Republic of Turkey (CBRT) adopted the unconventional policy of gradually lowering its policy interest rate. While the average inflation rate between 2016 and June 2021 was 13.77 percent, it surged to 64.27 percent in 2022 and 64.77 percent in 2023. An anti-inflationary monetary policy was introduced in the third quarter of 2023. By 2024, inflation began to decline, reaching 35.05 percent at the end of the analysis period. Accordingly, the study's timeframe of 2016–2025 encompasses phases of relatively low inflation, a sharp escalation, and a subsequent decline, thereby providing a suitable environment for analysing the dynamics of the net interest margin (NIM).

This study contributes to the literature by showing that the maturity transformation function of the Turkish banking sector, funding long-term loans with very short-term deposits, creates acute interest rate risk due to Türkiye's unique economic conditions. Rapid repricing of deposits, combined with high inflation volatility and the inverse form of the yield curve, compresses net interest margins rather than widening them. Rising non-performing loans further erode profitability, underscoring Turkey's distinctive vulnerability under volatile macroeconomic conditions. The findings offer practical insights for bank management on sustaining profitability and provide policy guidance on aligning monetary and prudential measures to support not only financial stability but also the banking sector's contribution to economic growth.

For analytical clarity, the study is organized into seven sections. Following the introduction, the second and third sections first discuss the concept of NIM and then present an extensive review of the literature examining the impact of macroeconomic, sectoral, and bank-specific factors on NIM. The fourth section introduces the dataset and methodology employed in the study. The fifth section reports and analyses the empirical findings. The sixth section develops policy and practical recommendations in light of the results. Finally, the paper concludes with a general evaluation and outlines potential avenues for future research.

2. The Concept of Net Interest Margin

NIM is calculated by dividing the difference between a bank's interest income and interest expenses (net interest income) by its average assets. However, there is no universally accepted definition of the denominator. In the UK and US, the total of average interest-bearing assets is typically used, whereas in continental Europe the figure for average total assets is applied (Choundhry, 2022: 22-63). As the most fundamental indicator of how successfully a bank manages its assets, NIM is negatively affected by the share of non-interest-bearing assets within total assets. For this reason, the use of average total assets in the denominator appears more appropriate for a sounder assessment of performance.

A bank's ability to manage interest rate risk directly influences the level of its NIM. When interest rates rise, both interest income and interest expenses increase, as assets and liabilities are repriced at higher rates. The extent and direction of change in NIM depend on how the bank positions its assets and liabilities in response to interest rate fluctuations. In addition to net interest income, the second determinant of profitability is net non-interest income. For banks that can offset non-interest

expenses with non-interest revenues, real profitability—after accounting for inflation and taxes—ultimately hinges on their capacity to generate an adequate NIM. Conversely, when non-interest income is insufficient to cover non-interest expenses, the level of NIM required to achieve overall profitability necessarily increases (Koch and MacDonald, 2000: 119-120).

NIM, which is influenced by the general level of interest rates and their fluctuations, entered a downward trend in both the US and the EU following the low-interest policies implemented after the 2008 global financial crisis. With the normalization of monetary policy, NIM began to recover (Hinton and Polson, 2021: 31). In the US banking sector, NIM in the first quarter of 2025 ranged between 3.10 and 3.60 percent across large, regional, and community banks. Large banks recorded relatively lower NIMs, but they were able to tolerate these lower values thanks to their comparatively higher non-interest income (Jenkins and Zott: 2025). In the European Union banking sector, NIM stood at 1.58 percent in the second quarter of 2025 (European Banking Authority, 2025).

Figure 1 illustrates the evolution of NIM in the Turkish banking sector and across different ownership groups between 2005 and June 2025 based on Banking Regulation and Supervision Agency (BRSA) data. As indicated by the dashed trend line, the sector's NIM has followed a negative trajectory throughout this period. A similar downward trend is observed across banks with different ownership structures. During the period under review, the average NIM for the sector, private banks, state-owned banks, and foreign-owned banks was 4.20 percent, 4.17 percent, 3.84 percent, and 5.08 percent, respectively. The strongest NIM performance was recorded by the foreign-owned bank group, while the weakest performance belonged to the state-owned banks.

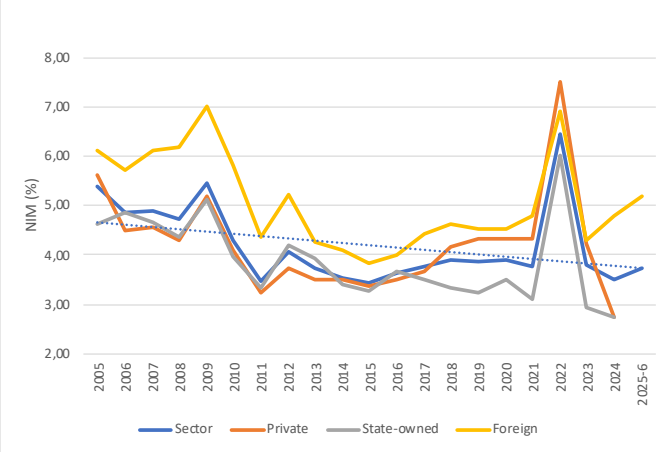


Figure 1. Evolution of NIM in Turkish Banking Sector

When compared with the NIM figures of the US and EU banking sectors, the Turkish banking sector appears to exhibit relatively higher values. However, it should not be overlooked that this relative elevation is largely attributable to Türkiye's exceptionally high inflation, which differentiates it from these countries and regions.

3. Literature Review

There is a rich literature examining the factors affecting NIM. This illustrates the significance of the issue from the banking sector's perspective.

Ho and Saunders (1981) identified four primary factors influencing banks' NIM: the degree of risk aversion, bank size, the structure of the banking market, and the variance, i.e. volatility of interest rates. They found that NIM is negatively associated with risk aversion, bank size, and the level of competition, while it is positively related to interest rate volatility. Banks with higher risk aversion tend to accept lower margins, whereas greater volatility in interest rates increases interest rate risk and leads banks to demand higher net interest margins.

Demirgüç-Kunt and Huizinga (1999) analysed banking data from 80 countries covering the period 1988–1995 to identify the factors influencing NIM and profitability. Their results show that higher levels of bank capitalization are associated with increases in both NIM and profitability. Likewise, a greater share of loans within total assets positively affects NIM. Foreign-owned banks tend to operate with higher NIMs and profitability in low-income countries, while their profitability declines in industrialized economies. This outcome is attributed to the competitive advantages and superior banking techniques that foreign banks possess in less developed markets. High inflation, particularly in developing countries, was also found to generate higher NIMs and profitability, as banks in such environments can expand revenues more than expenses. The absence of interest payments on demand deposits further contributes positively to NIM.

Fungáčová and Poghosyan (2009) examined net interest margins (NIM) in the Russian banking sector with respect to ownership structure and bank-specific factors. Their findings show that banks with higher operating costs tend to pass these costs on to customers through higher NIMs. Institutions with stronger capitalization and greater risk aversion also operate with higher NIMs. As banks expand their assets, economies of scale enable them to function with lower NIMs. Rising NPL ratios increase the perceived riskiness of banks, prompting depositors to demand higher interest rates and thereby compressing NIM. Foreign-owned banks generate higher NIMs than local and state-owned banks, largely thanks to the greater confidence they inspire in the market.

Saksonova (2014) examined the development of NIM in the banking sectors of the Baltic countries in the post-2008 Global Financial Crisis period, focusing on asset quality and financial structures. The study found that increased competition, coupled with efficiency gains driven by financial and technological advances, had generally pushed NIM in the banking sectors of developed countries into a downward trend. Rising levels of NPL also reduced NIMs, as banks lost interest income. The author further identified a negative relationship between the standard deviation of NIM used as a measure of volatility and the Z-score, which reflects the bankruptcy risk of the banking sector. As NIM volatility increases, the likelihood of sectoral distress rises. Moreover, the study emphasized that a contraction in NIM often precedes the emergence of problems in the banking sector, suggesting that declining NIM can serve as an early warning indicator.

Borio et al. (2015) investigated the impact of monetary policy on bank profitability using data from 109 large international banks across 14 countries for the period 1995–2012. They found a positive relationship between the level of interest rates,

the steepness of the yield curve, and bank profitability. Elevated short-term interest rates and a steeper yield curve increase banks' NIMs and the returns from maturity transformation, thereby positively influencing overall profitability.

Busch and Memmel (2017) analysed the impact of interest rate changes on the NIM of the German banking system over the period 1968–2013. Their findings indicate that, in the long run, rising interest rates increase banks' NIMs. Although banks may incur losses in the short term when interest rates rise, they ultimately benefit from higher rates over the longer horizon. The study further shows that within approximately one and a half years, the negative and positive effects offset each other, leading to a re-establishment of equilibrium.

Işık and Belke (2017) analysed the factors affecting NIM for 12 deposit banks listed on Istanbul Exchange in the post-2008 Global Financial Crisis period, focusing on both bank-specific and macroeconomic determinants. Their findings reveal a positive relationship between NIM and credit risk (measured as loan loss provisions to total loans), as well as between NIM and managerial efficiency (operating expenses to gross revenue). In contrast, liquidity (liquid assets to total assets) was found to be negatively associated with NIM. At the macroeconomic level, no significant relationship was identified between NIM and either inflation or economic growth.

Yüksel and Zengin (2017) investigated the factors influencing NIM in the Turkish banking sector over the period 2003–2015. Their analysis revealed a negative relationship between NIM and non-interest income, NPL ratio, and bank size.

Nevin (2018) examined the factors influencing the profitability of the Irish banking sector over the period 2003–2018. The study emphasized that the European Central Bank's low interest rate policy affected NIM and sectoral profitability through two distinct channels. In the short run, low interest rates positively influenced NIM via the maturity transformation function, as banks benefited from long-term loans issued at higher rates. However, in the long run, the flattening of the yield curve exerted a negative effect on NIM. Although the shape of the yield curve remained unchanged, banks' reliance on retail deposits resulted in more rigid deposit rates, causing asset yields to decline faster than liability costs and reducing NIM. Consequently, the impact of low policy rates on NIM was positive in the short term but negative in the long term.

Angori et al. (2019) investigated the determinants of NIM in the eurozone between 2008 and 2014. They found that the normalisation of monetary policy and rising interest rates had a positive effect on NIM following the low-interest environment. This impact was most pronounced during the initial stages of rate increases. Banks with higher capitalisation and stronger risk aversion tended to lend at higher interest rates, thereby achieving higher NIMs. Furthermore, NIMs were observed to remain at relatively higher levels in countries with stricter capital regulations.

Hanzlik and Teply (2019) examined the relationship between NIM and market interest rates in the European Union banking sector during the period 2011–2016, under a low-interest environment. They identified a positive but concave relationship between short-term interest rates and banks' NIMs. As short-term rates increase, NIMs tend to rise, since banks can expand interest income more rapidly than interest expenses, thereby enhancing profitability. However, because the relationship is concave, increases in interest rates at low levels strongly boost NIM,

while at higher levels the positive marginal effect diminishes. This finding demonstrates that the impact of short-term interest rates on NIM is non-linear.

Cruz-Garcia and de Guavera (2019) examined the impact of capital regulations and deposit insurance systems on net interest margins (NIM) across the banking sectors of 31 OECD member countries. Their findings show that both higher capital requirements and greater deposit insurance obligations are associated with higher NIMs, as banks compensate for these costs by increasing margins. According to the authors, stricter capital requirements help shield banks from economic shocks, while stronger deposit insurance obligations serve as a buffer against potential losses for taxpayers in the event of bank failures. Nevertheless, both policies ultimately impose higher costs on financial consumers through elevated NIMs. Achieving an optimal balance between benefits and costs is therefore crucial from the perspective of overall social welfare.

Agoraki and Kouretas (2019) investigated the bank-specific, industrial, and macroeconomic factors affecting NIM in the banking sectors of Southeast European countries during the period 1998–2007. Their findings indicate that inflation negatively influences NIM, as fluctuations in inflation rates make it more difficult for banks to forecast interest rates and manage margins effectively. A positive relationship was identified between CAR and NIM, while industry concentration was found to be negatively associated with NIM. No significant relationship was detected between GDP growth and NIM.

Göçmen Yağcılar and Kalaycı (2020) analysed the factors influencing NIM for 25 deposit banks operating in the Turkish banking sector during the period 2002–2017. Their results indicate a positive relationship between NIM and its lagged values, the share of loans in total assets, and NPL ratio. In contrast, the shares of deposits and equity within total liabilities were negatively associated with NIM.

Klein (2020) examined the effects of negative interest rate monetary policy under which banks are required to pay interest on excess reserves held at central banks on NIM and lending behaviour of Euro area banks. The findings reveal a positive relationship between short-term market interest rates and banks' NIMs. Loan rates respond more strongly to changes in short-term interest rates than deposit rates, thereby enhancing margins when rates rise. However, persistently low interest rates erode banks' NIMs and adversely affect their lending behaviour.

Endri et al. (2020) examined the factors affecting NIM in the Indonesian banking sector during the period 2008–2018. Their results show no significant relationship between CAR and NIM. In contrast, NPL ratio strongly and negatively influences NIM. As NPLs rise, depositors demand higher interest rates on their deposits, thereby compressing margins. Moreover, higher NPLs reduce banks' interest income, further exerting downward pressure on NIM. A positive relationship was identified between the policy interest rate of Bank Indonesia and banks' NIMs. However, no significant relationship was found between inflation and NIM.

Chaudron et al. (2020) investigated how a flattening yield curve and falling interest rates affected Dutch banks' NIM between 2008 and 2016. The study distinguished between the net interest income derived solely from maturity transformation (the margin generated by borrowing short-term and lending long-term) and the effect arising from their ability to use market power to keep lending rates high whilst lowering deposit rates. As the yield curve flattened and interest rates fell, Dutch banks

increased the residual component arising from market power. They were able to offset the decline in net interest income from maturity transformation by utilising market power, thereby maintaining the stability of the NIM. Dreschler et al. (2021) have also examined a similar topic from the perspective of the US banking sector. It has been stated that borrowing on a short-term basis and extending long-term loans exposes the sector to significant interest rate risk and the risk of a narrowing NIM. However, banks successfully manage this risk through their deposit franchise and pricing power. In other words, thanks to their customer relationships, trust, branch network and brand value, banks are able to attract deposits at interest rates that are lower than lending rates and insensitive to market fluctuations.

Sarto and Wang (2022) found that NIM of U.S. banks decreased following the decline in interest rates after the 2007 Global Financial Crisis. Consequently, banks lost the competitive advantage they had enjoyed over non-bank financial institutions during periods of higher interest rates, creating opportunities for shadow banks to increase their market share.

Gentil et al. (2023) projected the impact of rising interest rates on the net interest margins (NIM) of euro area banks by applying an asset–liability management approach. They analysed the maturity and interest sensitivity of both assets and liabilities for "systemically important" banks representing 85% of total assets. Their findings show that higher interest rates increase NIM, largely due to the high share of variable-rate assets and the significant proportion of non-interest-bearing liabilities. Back-testing with data from 2016–2023 confirmed these results. Similarly, Coulier et al. (2023), in their study on banks in the Euro area for the period 2014-2021, concluded that banks' profitability was positively affected by rising interest rates, and that NIM grew in an environment of high short-term policy interest rates and a steep yield curve. A 1% increase in three-month overnight swap rates increased NIM by 4.8 basis points, while a 1% increase in the slope of the yield curve had a positive effect of 5.8 basis points on NIM. They attributed this result to the narrow gap between interest-sensitive assets and liabilities and the use of derivative instruments in interest rate risk management.

Güzel (2023) examined the determinants of NIM in fifteen major Turkish commercial banks using data from 2003Q1–2022Q2. The study found a negative relationship between NIM and TL loan interest rates, inflation, and economic growth, while CAR, TL deposit rates and exchange rates were positively associated with NIM. The relationship found between loan and deposit interest rates and NIM does not appear to be consistent with theory. The adverse effect of inflation was attributed to borrowers' declining repayment capacity, which increased NPL and reduced interest income.

Windsor et al., (2023) investigated ten national banking sectors in developed countries to analyse the impact of falling interest rates on NIM and profitability. Their results indicate that declining rates reduce NIM, as the fall in loan interest income outweighs the reduction in deposit interest expenses. However, the effect on overall profitability is weaker, since lower rates improve borrowers' repayment capacity, encourage cost efficiency, and stimulate efforts to expand non-interest income.

Chen et al. (2024) studied over 2,500 European banks to explain the sharp rise in profitability after 2022. They found that maturity transformation was the main driver: ECB rate hikes were transmitted more quickly to loan rates than to deposit

rates, boosting NIM. However, as deposit rates are repriced, NIM and profitability are expected to narrow in the future.

Olszak et al., (2024) analysed 28 European banking sectors over 1996–2019 and found that monetary tightening negatively affects NIM, primarily through higher funding costs. The effect intensifies as the share of loans in total assets increases.

Obeid (2024) examined selected Arab countries and found that inflation and policy interest rates negatively affect NIM, while no significant relationship was detected between NIM and either economic growth or loan loss provisions.

Bertsatos et al. (2024) investigated the impact of the European Central Bank's ten-stage interest rate hike process, initiated in July 2022 to combat inflation, on the NIM of Greek banks. The findings show that Greek banks rapidly increased lending rates, while deposit rates initially remained unchanged and only rose gradually thereafter, leading NIM to reach historically high levels. The authors attributed this development and the resulting exceptionally high profitability to the high concentration and low competition within the Greek banking sector. They described the phenomenon as "inflation of banking greed" or "bankflation," and recommended policy measures to mitigate the adverse effects of the sector's oligopolistic structure.

Samet and Kirimhan (2025) examined the impact of interest rate increases on NIM of U.S. banks during the period 2023–2024. Their findings indicate that banks with a higher share of loans in total assets and a lower share of interest-bearing deposits in total liabilities were better positioned against rising interest rates, and consequently experienced an increase in NIM.

Fitch Ratings (2025) assessed the Turkish banking sector and noted that the Central Bank of Turkey's tight monetary policy and rising interest rates increased the ratio of non-performing loans. It emphasized that the short maturity of liabilities compared to assets, and their faster repricing, rapidly compressed NIM.

A general overview of the academic literature on NIM reveals that the impacts of macroeconomic, sectoral, and bank-specific factors on NIM vary substantially across countries and economic contexts, and therefore must be evaluated within their respective environments. The impact of inflation and interest rate changes on NIM depends on their initial levels, the shape of the yield curve, the competitive and ownership structure of the banking sector, the ability of institutions to manage interest rate risk and most importantly the consistency and rationality of economic and monetary policy implementation. As economic unpredictability and interest rate volatility increase, banks' capacity to hedge against interest rate risk weakens, which in turn adversely affects NIM, the most critical component of profitability. Taken together, international evidence generally shows that rising interest rates widen NIM, especially in advanced economies with longer deposit maturities and stable regulatory frameworks (Gentil et al., 2023; Coulier et al., 2023; Chen et al., 2024; Samet and Kirimhan, 2025). In contrast, Turkish evidence demonstrates that high inflation and short deposit maturities compress NIM despite rate hikes (Fitch Ratings, 2025).

In general, a positive relationship is observed between banks' risk aversion and their NIM. As capital adequacy increases, NIM tends to rise, both because banks want to offset the cost of holding higher capital and because their increased credibility reduces

the cost of external funding (Demirgüç-Kunt and Huizinga, 1999; Fungáčová and Poghosyan, 2009; Cruz-Garcia and de Guavera, 2019; Agoraki and Kouretas, 2019).

However, the relationship between NIM and non-performing loans (NPLs) varies across countries. Rising NPL ratios may lower NIM by prompting banks to prioritise low-risk, highly creditworthy borrowers to avoid further losses. Furthermore, as noted by Fungáčová and Poghosyan (2009) and Saksonova (2014) that rising rates of non-performing loans increase perceived risk, which in turn prompts depositors to demand higher interest rates and consequently narrows margins. Conversely, banks may increase NIM in response to higher NPLs in an effort to compensate for the negative effects of deteriorating asset quality as indicated by Göçmen Yağcılar and Kalaycı (2020).

Non-interest income also plays a significant role. When non-interest income is high, banks may operate with lower NIMs. Conversely, in banking sectors where structural conditions push NIM downwards, institutions often intensify their efforts to expand non-interest income as a compensatory strategy (DeYoung and Rice, 2003; Williams and Rajaguru, 2011; Le, 2017). A study examining the Turkish banking sector reached the same conclusion (Demirboğa and Şengül, 2025).

Existing studies largely focus on banking systems in stable, low-inflation environments, where rising interest rates typically widen net interest margins through maturity transformation and predictable funding structures. Yet, these conclusions overlook Türkiye's unique economic conditions, where short deposit maturities, very high inflation, interest rate volatility, and the inverse form of the yield curve fundamentally alter the maturity transformation mechanism, make it difficult for banks to manage interest rate risk effectively, and reshape its impact on bank profitability. Studies on Türkiye have also not addressed this dimension of the issue, leaving a gap in understanding how maturity mismatches interact with volatile macroeconomic conditions. This study addresses that gap by providing evidence from the Turkish banking sector, demonstrating how maturity transformation under such conditions leads to margin compression rather than expansion, thereby challenging conventional expectations and enriching the comparative literature.

4. Data and Methodology

4.1 Variables and Data

To examine the dynamics of NIM in the Turkish banking sector under conditions of high inflation, the model employs NIM as the dependent variable and the Central Bank of the Republic of Türkiye's policy interest rate (CBPR) as the main independent variable. The CBPR also serves as a proxy for inflation, reflecting the underlying inflationary dynamics of the economy.

Two bank-specific internal factors are included as control variables: the capital adequacy ratio (CAR) and the lagged value of the non-performing loan (NPL) ratio. The NPL ratio affects banks' profitability and interest margins not immediately but over time, since the process of loans becoming non-performing, provisioning, and recognition in the balance sheet typically occurs with a delay. For this reason, the lagged NPL ratio is expected to exert a more meaningful influence on NIM than its contemporaneous value.

All variables are constructed as quarterly time series, covering the period from the end of 2016 to the end of the second quarter of 2025. Inflation data were obtained from the Central Bank of the Republic of Türkiye's Electronic Data Delivery System, while CAR and NPL values were sourced from the official website of BRSA. This dataset provides the empirical foundation for analysing the interaction between monetary policy, bank-specific factors, and NIM dynamics in the Turkish banking sector.

Table 1. Variables and Abbreviations Used in the Analysis

Category	Variable	Abbreviation
Dependent	Net Interets Margin	NIM
Independent	Central Bank Policy Rate	CBPR
Independent	Capital Adequacy Ratio	CAR
Independent	Non-Performing Loan Ratio	NPL

The descriptive statistics presented in Table 2 provide initial insights into the fundamental structure and key characteristics of the data at the outset of the analysis.

Table 2. Descriptive Statistics of the Variables

	NIM	CAR	CBPR	NPL
Mean	3,908760	17,89363	21,04286	3,022527
Median	3,771435	17,96372	16,50000	3,043223
Maximum	6,460680	20,38536	50,00000	5,356963
Minimum	2,842768	15,56652	8,000000	1,492490
Std. Dev.	0,761139	1,106719	14,36851	1,101824
Skewness	1,796514	0,070975	1,032874	0,270978
Kurtosis	6,337569	2,645432	2,640322	2,123925
Sum Sq. Dev.	19,69729	41,64408	7019,436	41,27653
Observations	35	35	35	35

During the analysis period, NIM and CAR values exhibited relatively low standard deviations, reflecting more stable movements. In contrast, the CBPR displayed an exceptionally high standard deviation, largely driven by sharp fluctuations in inflation. The most important implication of this finding is that in an environment of heightened inflation and interest rate volatility, banks' ability to make reliable forecasts and effectively manage NIM is weakened. As interest rates fluctuate, banks face increasing difficulties in managing both assets and liabilities on their balance sheets.

Although not as pronounced as in the case of the CBPR, the NPL ratio also showed relatively high variability and standard deviation during the period. Given that economic conditions first loosened under accommodative monetary policy and were subsequently tightened in response to rapidly rising inflation, such elevated volatility in NPLs can be considered a normal outcome.

Table 3 presents the relationships among the variables. The table provides valuable information regarding the strength and direction of these relationships, offering important insights for the specification and interpretation of the econometric model.

Table 3. Correlation Matrix of the Variables

	NIM	CAR	CBPR	NPL
NIM	1,000000	0,385650	-0,355462	-0,042448
CAR	0,385650	1,000000	0,094025	-0,027824
CBPR	-0,355462	0,094025	1,000000	-0,531697
NPL	-0,042448	-0,027824	-0,531697	1,000000

The dependent variable NIM and the main independent variable CBPR exhibit a moderate negative relationship. This initial result suggests that increases in inflation, and consequently in CBPR, adversely affect banks' NIM levels, consistent with certain findings in the literature. A moderate positive relationship is also observed between CAR and NIM, supporting previous evidence that a strong capital base contributes to higher NIM in the banking sector. The relationship between NPL and NIM is weak and negative, indicating only a limited adverse effect of asset quality deterioration on margins.

The correlation matrix does not indicate strong relationships among the independent variables, suggesting that multicollinearity is not a concern for model specification. To further validate this, a Variance Inflation Factor (VIF) test was conducted. The calculated VIF values for NIM (2.7434), CBPR (3.3330), CAR (1.4968), and NPL (2.7665) all fall well below the conventional threshold, thereby confirming the absence of multicollinearity in the model.

The stationarity of financial time series is crucial to avoid the problem of spurious regression. In this study, the presence of unit roots and hence the stationarity of the variables was tested using the DF-GLS unit root test, which is known to yield more reliable results in small samples. The outcomes of these tests are presented in Table 4.

Table 4. Unit Root Test Results

	t-Statistic	Test Critical Value	Level
NIM	-3,4175	-2,6369	***
CBPR	-2,1508	-2,6347	
D(CBPR)	-2,8097	-2,6347	***
CAR	-2,6402	-2,6347	***
NPL	-1,5162	-2,6369	
D(NPL)	-2,6533	-2,6369	***
*** indicates statistical significance at the 1% level			

The variables NIM and CAR are stationary at their levels. In contrast, CBPR and NPL become stationary only after first differencing.

4.2 Model Specification

When time series are differenced to achieve stationarity, the original values are altered, making it impossible to identify long-run relationships. To address this issue, the Autoregressive Distributed Lag (ARDL) model is employed, as it is particularly suitable for detecting long-term relationships among variables that are stationary at levels and those that become stationary after first differencing (Peseran and Shin, 1997: 1). The ARDL framework is also robust in small samples. Following the ARDL estimation, the Bounds testing procedure is applied to

determine whether cointegration exists among the variables. In the presence of cointegration, the Error Correction Model (ECM) is utilized to capture both short-run dynamics and long-run equilibrium relationships (Sarıkovanlık et al. 2020: 127). Considering that the variables used in the analysis are stationary either at levels or at first differences, these methods were adopted in the study.

5. Empirical Results and Analysis

The ARDL model was implemented using the EViews statistical software package. Lag lengths were selected automatically by the program according to the Akaike Information Criterion (AIC), which evaluates both model fit (via the likelihood function) and complexity (via the number of parameters). By penalizing excessive lag lengths, the AIC ensures that the chosen specification achieves the lowest possible value, thereby balancing accuracy and parsimony. The initial estimation results are presented in Table 5.

The current values of NIM are found to be statistically significantly influenced by their lagged values. The first lag coefficient (0.748044) exerts a positive effect on NIM, while the second lag coefficient (-0.526689) offsets part of this positive impact. The CAR ratio is positive and statistically significant (0.311241), indicating that a strong capital base supports NIM in the short run. The coefficient estimated for CBPR is negative and statistically significant (-0.024709), suggesting that increases in the policy interest rate contemporaneously reduce NIM. Finally, the coefficient for NPL is negative (-0.276570), showing that rising NPLs reduce NIM with a one-period lag.

Table 5. ARDL Results

Dependent Variable: NIM					
Method: ARDL					
Sample: 2017Q4 2025Q2					
Included observations: 31					
Dependent lags: 4 (Automatic)					
Automatic-lag linear regressors (4 max. lags): CAR CBPR NPL(-1)					
Deterministics: Unrestricted constant and no trend (Case 3)					
Model selection method: Akaike info criterion (AIC)					
Number of models evaluated: 500					
Selected model: ARDL(2,4,0,0)					
Variable	Coefficient	Std. Error	t-Statistic	Prob.*	
NIM(-1)	0,748044	0,156434	4,781846	0,000100	***
NIM(-2)	-0,526689	0,156680	-3,361553	0,003000	***
CAR	0,311241	0,093095	3,343284	0,003100	***
CAR(-1)	0,070551	0,099669	0,707850	0,486800	
CBPR	-0,024709	0,009650	-2,560507	0,018200	**
NPL(-1)	-0,276570	0,109412	-2,527787	0,019600	**
C	0,711398	2,090022	0,340378	0,737000	
R-squared	0,812679	Mean dependent var		3,926920	
Adjusted R-squared	0,732398	S.D. dependent var		0,807869	
S.E. of regression	0,417913	Akaike info criterion		1,348608	
Sum squared resid	3,667670	Schwarz criterion		1,811184	
Log likelihood	-10,903420	Hannan-Quinn criter.		1,499396	
F-statistic	10,122980	Durbin-Watson stat		2,213954	
Prob(F-statistic)	0,000008				
*** and ** indicate statistical significance at the 1% and 5 % levels, respectively.					

Following the initial ARDL estimations, the Bounds test was applied to determine the existence of long-run relationships among the variables. The test confirms a stable long-term association between NIM, CAR, CBPR, and NPL. The calculated F-statistic (6.356) exceeds the upper critical bound (5.0818) at the 5% significance level, indicating the presence of cointegration.

The error-correction term is also statistically significant, with a t-statistic of -4.859, which is more negative than the 1% critical value of -4.370. This result supports the validity of the error-correction mechanism and the adjustment toward long-run equilibrium. Accordingly, the cointegration hypothesis is accepted.

The Bounds test results demonstrate a strong cointegrating relationship between NIM and the explanatory variables CAR, CBPR, and NPL. This finding suggests that beyond short-term fluctuations, these variables move together in the long run, highlighting the structural link between banks' net interest margins, capital adequacy, policy interest rates, and credit risk.

Following the Bounds test, the Error Correction Model (ECM) was employed to separately identify short-run and long-run dynamics. The short-run estimation results obtained within the ECM framework are presented in Table 6.

Table 6. Short Term Dynamics Estimated via Error Correction Model

Dependent Variable: D(NIM)					
Method: ARDL					
Sample: 2017Q4 2025Q2					
Included observations: 31					
Dependent lags: 4 (Automatic)					
Automatic-lag linear regressors (4 max. lags): CAR CBPR NPL(-1)					
Deterministics: Unrestricted constant and no trend (Case 3)					
Model selection method: Akaike info criterion (AIC)					
Number of models evaluated: 500					
Selected model: ARDL(2,4,0,0)					
Variable	Coefficient	Std. Error	t-Statistic	Prob.	
COINTEQ*	-0,778645	0,144454	-5,390275	0,00000	***
D(NIM(-1))	0,526689	0,145411	3,622079	0,00140	***
D(CAR)	0,311241	0,079918	3,894500	0,00070	***
D(CAR(-1))	0,177503	0,095965	1,849666	0,07670	*
D(CAR(-2))	0,168122	0,092675	1,814108	0,08220	*
D(CAR(-3))	0,340340	0,084235	4,040359	0,00050	***
C	0,711398	0,159542	4,459002	0,00020	***
R-squared	0,699206	Mean dependent var		-1,89E-05	
Adjusted R-squared	0,624007	S.D. dependent var		0,637529	
S.E. of regression	0,390921	Akaike info criterion		1,155059	
Sum squared resid	3,667670	Schwarz criterion		1,478863	
Log likelihood	-10,903420	Hannan-Quinn criter.		1,260611	
F-statistic	9,298122	Durbin-Watson stat		2,213954	
Prob(F-statistic)	0,000026				
*** and * indicate statistical significance at the 1% and 10% levels, respectively.					

The negative and highly significant COINTEQ coefficient (-0.778645) provides clear evidence of a long-run cointegrating relationship among the variables and confirms the econometric validity of the model. According to this coefficient, when NIM deviates from its long-run equilibrium, approximately 78% of the disequilibrium is corrected within a single quarter. This indicates that net interest margins possess a rapid and strong adjustment mechanism in response to shocks.

The coefficient for NIM (0.526689) is positive and statistically highly significant, showing that past changes in NIM exert a positive and meaningful influence on current values. This reflects short-term inertia, or momentum, in which net interest margins persist over time, with past improvements carrying forward into the present.

The short-run effects of CAR on NIM are both strong and multi-layered. The contemporaneous coefficient (0.311241) is highly statistically significant, indicating that capital adequacy exerts a positive and substantial impact on NIM in the short run. The one- and two-quarter lagged coefficients are also positive at the 10% significance level, suggesting that the beneficial influence of increased capital persists across subsequent quarters. With a three-quarter lag, the effect of CAR on NIM (0.340340) becomes even stronger, statistically significant, and positive.

This pattern implies that capital increases initially strengthen banks' balance sheets and subsequently translate into higher margins through credit portfolio expansion and pricing behaviour. In short, higher capital adequacy systematically enhances net interest margins in both the short and medium term.

The R-Square value of 0.699206 and the Adjusted R-Square value of 0.624007 indicate that the model can capture short-run variations to a considerable extent and possesses sufficient explanatory power. The overall statistical significance of the model is confirmed by the F-statistic of 9.298122, together with the associated p-value of 0.000026.

The long-run estimation results of the model are presented in Table 7.

Table. 7 Long Term Estimation Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.	
CAR(-1)	0,262364	0,143196	1,832201	0,077600	*
CBPR	-0,031733	0,009228	-3,438881	0,001800	***
NPL(-1)	-0,355194	0,115965	-3,062942	0,004800	***
*** and * indicate statistical significance at the 1% and 10% levels, respectively.					

The long-run coefficients capture the impact of permanent changes in the independent variables on NIM once short-term fluctuations are filtered out. The coefficient for CAR is estimated at 0.262364 and is statistically significant at the 10% level. This implies that better-capitalized banks tend to achieve higher margins over time. In the long run, stronger capital buffers enhance net interest margins.

From an economic mechanism perspective, a robust capital structure translates into lower risk premia, more stable funding, and greater pricing power. Banks can systematically transfer these advantages into sustained improvements in margins over the long term.

The long-run coefficient of CBPR is estimated at -0.031733 and is statistically significant at the 1% level. This result indicates that increases in the policy interest rate exert a strong and persistent negative effect on NIM, reflecting the lasting pressure of tight monetary policy on banking profitability. From an economic perspective, in an environment where deposit maturities are shorter than loan maturities, deposit rates adjust more quickly and fully than lending rates. Competition and regulatory constraints further limit banks' ability to raise lending rates proportionately. As a consequence, monetary tightening leads to a long-run contraction in net interest margins.

The long-run coefficient of NPL is estimated at -0.355194 and is also statistically significant at the 1% level. Rising NPL ratios significantly and persistently reduce NIM over the long term. Higher NPLs trigger more risk-averse lending behavior, diminish interest income, and increase provisioning expenses, thereby weakening net interest margins. Elevated NPL ratios also raise funding costs through higher perceived risk. In summary, deterioration in credit quality permanently undermines banks' net interest margins. Importantly, the adverse impact of NPLs on profitability operates not only through the provisioning channel but also directly through the net interest margin channel.

Based on the estimation, the long-run equation can be specified as follows:

$$NIM\ (-1) = 0{,}262364\ CAR\ (1) - 0{,}031733\ CBPR - 0{,}0355194\ NPL\ (-1)$$

Using this long-run equation, a sensitivity analysis can be conducted. A 1% increase in CAR leads to approximately a 0.26 percentage-point rise in NIM. In contrast, 1% increase in CBPR reduces NIM by about 0.032 percentage points, indicating that higher nominal interest rates do not enhance net interest margins. Similarly, a 1% increase in the NPL ratio results in an approximate 0.36 percentage-point decline in NIM.

The long-run coefficients indicate that net interest margins are positively influenced by capital adequacy, while policy interest rates and credit risk exert negative effects. Among these, the impact of rising non-performing loan ratios is quantitatively more pronounced, underscoring the dominant role of credit quality in shaping margins. Overall, the findings reveal that banking profitability is highly sensitive in the long run to both credit quality and monetary policy conditions.

When the model's results are compared with previous studies, the following can be stated: Unlike the Turkish case, most other studies have identified a positive relationship between CBPR and NIM (Demirgüç-Kunt and Huizinga, 1999; Borio et al., 2015; Busch and Memmel, 2017; Angori et al., 2019; Hanzlik and Teply, 2019; Chen et al., 2024; Bertsatos et al., 2024). In a study on Türkiye, however, a negative relationship was found between TL loan interest rates and NIM, and a positive relationship between deposit interest rates and NIM (Güzel, 2023:620). Our model's result reflects a situation contrary to theoretical expectations. In fact, Türkiye differs from the countries examined in other studies due to its extremely high inflation, short-term deposit structure, and inverted yield curve. High inflation prevents depositors from keeping their savings in TL demand accounts. It is also evident that Turkish banks were unable to utilise the pricing, market, and deposit franchise power, as described in the literature review section employed by Dutch and US banks, to their advantage and to widen their NIM during a period of rising inflation and interest rates (Chaudron et al., 2020: 16; Drecshler et al., 2021: 1092). Taken together, high inflation and interest rate volatility, both through the maturity transformation effect and through the difficulties of managing future uncertainty and interest rate risk, place the Turkish banking sector in a different position from other countries, resulting in a negative relationship between NIM and CBPR.

The positive relationship identified between CAR and NIM in the model has also been predominantly reported in past studies (Fungáčová and Poghosyan, 2009; Cruz-Garcia and de Guavera, 2019; Agoraki and Kouretas, 2019). A high CAR implies high credibility and lower funding costs. Moreover, banks with strong capital structures can apply higher loan interest rates to compensate for the cost of capital.

In the model, a strong negative relationship was found between NPL and NIM. According to previous studies, increases in NPLs generally make banks more risk-averse, leading them to work with lower-risk firms and thereby reducing NIM (Fungáčová and Poghosyan, 2009; Saksonova, 2014; Yüksel and Zengin, 2017; Endri et al., 2020). However, in a study on Turkey, it was stated that an increase in NPLs raised NIM (Göçmen Yağcılar and Kalaycı, 2020).

Ultimately, it can be concluded that, due to the influence of Türkiye's unique conditions, the model's results differ from those of other studies in terms of the

CBPR-NIM relationship, whilst they are similar in terms of the effects of CAR and NPL on NIM.

The robustness of the model was evaluated using several diagnostic tests. The Breusch-Godfrey LM test ($F = 0.682398$, $p = 0.5174$) indicates that there is no autocorrelation among the error terms. This finding is further confirmed by the Durbin-Watson statistic of 2.213954.

The Breusch-Pagan-Godfrey test ($F = 0.682398$, $p = 0.1895$) suggests the presence of homoskedasticity, confirming that the standard errors are reliable. In addition, the Jarque-Bera test results (statistic = 3.538299, $p = 0.170484$) show that the residuals follow a normal distribution.

The stability of the model parameters was analysed using the CUSUM and CUSUM of Squares (CUSUMSQ) tests. The CUSUM test examines whether the mean values of the coefficients remain stable over time, while the CUSUMSQ test evaluates the stability of their variances (volatility).

The CUSUM test results indicate that the mean values of the coefficients are stable throughout the sample period at the 5% significance level. Similarly, the CUSUMSQ test shows no statistically significant structural break in the coefficient variances. The fact that both test statistics remain within the confidence bands demonstrates that the model is stable and reliable in terms of both level and variance.

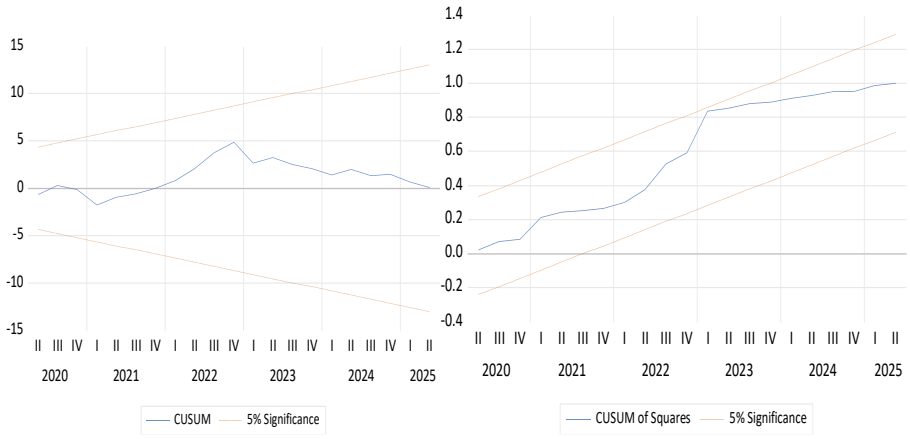


Figure 2. CUSUM Test Results

6. Discussion and Policy Implications

In Türkiye, the recent surge in inflation has been accompanied by a marked increase in both policy and market interest rates. As highlighted in the literature review, higher interest rates are generally expected to widen banks' NIM. However, the empirical findings of this study show that this mechanism does not fully operate in the Turkish context; in fact, rising inflation and interest rates have coincided with a narrowing of NIM. This suggests that the classical transmission channels of banking profitability do not function effectively under high-inflation, high-interest environments.

The results indicate that increases in the policy rate exert a negative long-run effect on NIM, while rising credit risk (NPL) further compresses margins. These findings imply that interest rate hikes are transmitted to bank balance sheets in an asymmetric and cost-driven manner.

The Turkish banking sector engages in maturity transformation by funding long-term loans with very short-term deposits, thereby exposing itself to interest rate risk (Saunders et al., 2024: 188; Alexander, 2019: 19). This risk manifests directly in NIM. Because deposit maturities are much shorter than loan maturities, deposit rates adjust more rapidly to changes in policy rates and inflation expectations than lending rates (CBRT, 2025: 2, 31-32; BAT, 2024: 37). As a result, funding costs rise quickly, while lending rates follow with a lag. At the same time, high interest rates weaken credit demand and reduce the repayment capacity of firms and households, thereby increasing risk. Banks respond by shifting toward shorter-term, lower-risk, but also lower-return loan products. Rising NPLs affect profitability not only through provisioning requirements but also by reducing risk appetite and net interest income.

Descriptive statistics further highlight the high standard deviation of both policy rates and inflation, reflecting elevated volatility. Such volatility reduces predictability, induces shifts in the yield curve, and weakens banks' ability to hedge against interest rate changes, ultimately exerting downward pressure on NIM.

Finally, the slope of the yield curve is closely linked to NIM performance. A positively sloped curve allows banks to borrow short at low rates and lend long at higher rates (Choudhry, 2007: 96-98). However, as a natural outcome of Türkiye's disinflationary policy stance, the yield curve has inverted. This inversion is likely to complicate NIM management in the period ahead.

In recent years, the number and scope of macroprudential policies applied to the Turkish banking sector have expanded considerably. Several regulations directly affect the functioning of market mechanisms. For example, reserve requirements have been imposed on certain loan types to limit the inflationary impact of credit expansion, later replaced by mandatory holdings of government securities. Commercial loan interest rates have been tied to a fixed proportion of the CBPR policy rate, credit card interest rates have been capped, and monthly growth rates of specific loan categories have been restricted, with excess growth triggering additional security-holding obligations. These measures directly influence banks' credit policies and interest rate risk management strategies (Şahin, 2026: 246; CBRT, 2022a; CBRT, 2022b; CBRT, 2026a).

Interest rate ceilings, reserve requirements, security-holding obligations, and credit growth regulations reduce banks' flexibility in asset-liability pricing. Thus, macroprudential regulations act as structural constraints that weaken the classical interest rate transmission channel to bank profitability.

Reserve requirements directly affect banks' ability to transform collected deposits into loans. As reserve ratios increase, the amount of deposits available for lending decreases, exerting a constraining effect on NIM. In Türkiye, reserve requirement ratios applied to TL and FX deposits have been set at relatively high levels compared to international practice, as part of efforts to tighten credit channels in the fight against inflation. Depending on maturity, the ratios range from 10–17% for TL deposits and 26–30% for FX and precious-metal deposits (CBRT, 2026b). By

contrast, since 2012 the European Central Bank has applied a 2% reserve requirement for deposits with maturities up to two years and a zero requirement for longer maturities (ECB, 2026). In Türkiye, FX deposits account for around 40% of total deposits (BRSA, 2026). The extremely high reserve ratios applied to this large share of FX deposits further amplify the adverse impact of reserve requirements on NIM.

Net interest margin (NIM), the primary source of profit for banks, represents both a social cost arising from banks' intermediary role (Olszak et al., 2024: 1) and a key variable for absorbing potential losses, enhancing lending capacity, and supporting financial stability (Gentil et al., 2023: 2). A decline in NIM is associated with lower social costs and thus reflects higher social welfare, as social actors gain access to financial services at reduced cost, strengthening the financial sector's contribution to economic growth. However, excessive fluctuations in NIM, or its decline to levels where the banking sector cannot generate a real return on equity, pose risks to financial stability. It is therefore crucial to ensure that NIM stabilizes at a level that balances social costs with the need to safeguard financial stability, so that the banking sector's intermediation function and economic development can proceed hand in hand. This dual role of NIM, as both a measure of social cost and a buffer for financial stability, becomes particularly critical when considered in the context of Türkiye's idiosyncratic macroeconomic conditions, where inflation and interest rate volatility, short deposit maturities, macroprudential policies and an inverted yield curve intensify the pressures on bank profitability.

In the Turkish banking sector, the inability to expand NIM in the face of rising inflation leads to the erosion of real ROE. Even though nominal profitability may appear to be preserved, in a high-inflation environment the real return on equity becomes negative. This creates a hidden erosion of profitability within the sector. Banks are attempting to partially offset this erosion by increasing their non-interest income. However, such a strategy is unsustainable and carries the risk of weakening the financial intermediation role, which is the fundamental function of banking. (Şahin, 2026: 243).

From a policy perspective, several conclusions can be drawn. Rising inflation and policy interest rates compress NIM, thereby imposing additional costs on the transmission of monetary policy to the real sector through banks. The pressure on NIM and the erosion of real ROE may, in the medium term, weaken banks' capital accumulation, risk-taking capacity, and ultimately their ability to extend credit. This raises the risk of a persistent contraction in credit supply, with adverse consequences for economic growth.

It is therefore crucial that macroprudential policies, while aligned with the objective of price stability, are designed in a way that does not excessively constrain banks' interest rate risk management and margin strategies or generate unintended negative side effects. Otherwise, banks may become overly dependent on non-interest and more volatile income streams to preserve profitability, which represents an additional social cost.

Ultimately, the sustainability of net interest margins and banking sector profitability is contingent upon the effective containment of inflation and the establishment of lasting price stability. In the absence of durable price stability and a predictable, secure investment climate, it is unrealistic to expect the emergence of a robust and resilient NIM structure. Stable macroeconomic conditions are therefore a

prerequisite for the preservation of healthy intermediation margins and the long-term viability of banking profitability.

While enduring price stability remains the fundamental prerequisite for sustainable bank profitability, regulators and practitioners should also prioritize institution-specific resilience. Strengthening capital adequacy requirements will enhance banks' ability to absorb shocks and support margins, whereas effective frameworks to reduce non-performing loans are essential to prevent credit quality deterioration from eroding profitability. A balanced regulatory approach that reinforces capital buffers while promoting proactive NPL management will safeguard intermediation capacity, mitigate hidden profitability erosion, and ensure that monetary and macroprudential policies translate into a more stable and resilient banking sector.

7. Conclusion

This study has examined the dynamics of NIM in the Turkish banking sector under conditions of high inflation and elevated interest rates. The analysis demonstrates that increases in policy rates exert downward pressure on NIM through the channels of credit risk, funding costs, and regulatory constraints. Inflation's adverse impact on the sector, and consequently on the broader economy, underscores the critical importance of effective inflation control. Empirical results further reveal a positive association between CAR and NIM, and a negative association between NPL and NIM, highlighting the role of bank-specific resilience in shaping profitability outcomes.

From a policy perspective, macroprudential measures should be implemented with careful consideration of their side effects, ensuring that the natural functioning of market mechanisms is not unduly impaired. Policies that address symptoms rather than root causes of inflation risk prolonging the disinflation process while constraining banks' ability to perform their core intermediation functions. A balanced regulatory framework that reinforces capital buffers and promotes proactive NPL management, while avoiding excessive restrictions on margin strategies, is essential to safeguard sustainable profitability and credit supply.

By examining the Turkish banking sector under conditions of high inflation, volatile interest rates, short deposit maturities, and heightened interest rate volatility, it is demonstrated that maturity transformation can lead to margin compression rather than expansion. These findings challenge conventional theoretical expectations and provide comparative insights that broaden the understanding of how macroeconomic uncertainty shapes bank profitability across different institutional contexts. In doing so, the paper contributes to the literature by extending the analysis of net interest margins beyond stable environments and highlighting the distinctive role of uncertainty in shaping banking outcomes.

The study also acknowledges several limitations. The sector is not homogeneous: foreign-owned banks exhibit relatively stronger NIM performance, and significant heterogeneity exists both across and within banking groups. Future research could therefore benefit from comparative analyses of performance across bank types, as well as investigations into the effects of specific asset and liability balance sheet items on NIM. Moreover, the high correlation between non-interest income ratios and CBPR prevented the inclusion of this variable in the present analysis, but this issue offers a promising avenue for further inquiry.

Overall, the findings emphasize that durable price stability, balanced prudent regulation, and institution-specific resilience are indispensable for sustaining NIM dynamics and long-term profitability in volatile macroeconomic environments.

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