

Macroeconomic Determinants of Bank Profitability (An Evidence from the Turkish Banking Sector)

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ABSTRACT

This study investigates how selected macroeconomic variables affect banking-sector profitability in Türkiye. Return on assets (ROA) is used as the indicator of profitability, while inflation, GDP growth, the official exchange rate, and the real interest rate are treated as explanatory variables. Annual data for 1980-2024 are analyzed using unit-root tests, residual-based Engle-Granger cointegration tests, and an error-correction perspective for short-run adjustment. The reported coefficients suggest that inflation is negatively associated with ROA, GDP growth has a positive association, exchange-rate volatility is economically relevant but only weakly significant in the direct regression, and the real interest rate is linked to profitability in the long run through the residual-based test. At the same time, the unit-root results indicate mixed integration orders across variables, so the long-run findings should be interpreted with methodological caution and validated through a robustness check based on an ARDL framework. Overall, the paper supports the view that macroeconomic stability is central to the profitability and resilience of the Turkish banking sector.

Keywords: bank profitability, Turkish banking sector, macroeconomic variables, ROA, Engle-Granger, cointegration.

1. Introduction

The profitability of banks is closely connected to the broader macroeconomic environment in which they operate. In economies characterized by inflation volatility, exchange-rate pressures, and changing monetary conditions, banking-sector performance can shift rapidly because lending margins, asset quality, funding conditions, and credit demand all respond to macroeconomic shocks.

For Türkiye, this issue is especially important because the banking system has operated through repeated episodes of inflation, exchange-rate instability, and policy adjustment.

This paper examines the relationship between macroeconomic conditions and bank profitability in the Turkish banking sector.

The study focuses on four macroeconomic indicators—inflation, GDP growth, the official exchange rate, and the real interest rate—and evaluates their relationship with return on assets (ROA).

By doing so, the paper aims to identify whether these variables are linked to bank profitability in the long run and to clarify the direction of their reported effects.

2. Research Problem and Hypotheses

Although a large body of literature discusses the determinants of bank profitability, the Turkish case remains important because macroeconomic instability can alter lending behavior, balance-sheet quality, and earnings capacity in ways that are not always captured by cross-country evidence alone.

The central research problem is whether selected macroeconomic variables have a statistically meaningful long-run relationship with banking-sector profitability in Türkiye.

Accordingly, the study addresses the following hypotheses: H1, inflation has a significant effect on bank profitability; H2, GDP growth has a positive effect on bank profitability; H3, exchange-rate fluctuations significantly influence bank profitability; H4, the real interest rate has a significant effect on bank profitability; and H5, a long-run equilibrium relationship exists between the selected macroeconomic variables and bank profitability.

3. Brief Literature Review

Previous studies generally show that bank profitability is shaped by both internal bank-specific factors and external macroeconomic conditions. Economic growth is often associated with stronger loan demand, better repayment performance, and higher profitability, whereas inflation can erode real returns and intensify uncertainty if banks cannot fully adjust their pricing. Exchange-rate volatility may weaken balance sheets when banks or borrowers are exposed to foreign-currency risk, and real interest rates can affect profitability through net interest margins, funding costs, and credit demand.

In this context, the existing literature supports the expectation that macroeconomic stability matters for financial-sector performance. The Turkish case remains relevant because profitability outcomes may differ across periods of monetary tightening, exchange-rate pressure, and domestic economic expansion or contraction.

4. Data and Method

The paper uses annual time-series data for 1980-2024, producing 45 observations. The dependent variable is bank profitability, measured by return on assets (ROA). The explanatory variables are inflation (INF), economic growth (GDP), the official exchange rate (EXR), and the real interest rate (INT).

The study reports that the data were obtained from the World Development Indicators database and related official banking statistics.

The baseline model is specified as:

$$ROA = \beta_0 + \beta_1 INF + \beta_2 GDP + \beta_3 EXR + \beta_4 INT + \varepsilon$$

The empirical procedure begins with Augmented Dickey-Fuller (ADF) unit-root testing.

The paper then applies a residual-based Engle-Granger cointegration framework to examine long-run relationships, followed by an error-correction interpretation for short-run adjustment.

However, the reported ADF results indicate mixed integration orders: inflation, GDP growth, and the real interest rate are reported as stationary at level, whereas the exchange rate becomes stationary after first differencing.

Because Engle-Granger is most defensible when variables are integrated of the same order, this mixed-order result should be acknowledged explicitly as a limitation. For that reason, the findings below are presented as reported results that would benefit from a robustness check using an ARDL bounds-testing approach.

5. Empirical Findings

The reported coefficient for inflation is -0.0203 with a p-value of 0.021, indicating a negative and statistically significant association between inflation and ROA in the estimated long-run equation.

The residual-based test is reported as significant as well, suggesting a long-run relationship under the paper's specification.

Substantively, this result is consistent with the argument that inflation may weaken bank profitability by increasing uncertainty, reducing the real value of returns, and worsening borrowers' repayment capacity.

GDP growth has the strongest reported direct effect in the paper. Its coefficient is 0.212348 with a p-value of 0.0004, which implies a positive and statistically significant relationship between economic growth and banking profitability.

This is consistent with standard theory: stronger economic activity tends to support credit expansion, reduce non-performing loans, and improve the income-generating capacity of banks.

For the exchange rate, the reported coefficient is 0.121865 with a p-value of 0.0770. This means the direct regression effect is not statistically significant at the 5 percent level, although it is weakly significant at the 10 percent level. The residual-based cointegration test is reported as significant, which the original draft interprets as evidence of a long-run association.

A more careful interpretation is that exchange-rate movements are economically relevant for the Turkish banking sector, but the direct statistical evidence in the regression is weaker than for inflation and GDP growth.

The real interest rate shows a reported coefficient of -0.023701 with a p-value of 0.1022.

This coefficient is not statistically significant at conventional levels in the direct regression, but the residual-based test is again reported as significant. Accordingly, the safest interpretation is not that the direct effect has been firmly established, but rather that profitability and real interest conditions may be linked over time in the reported specification.

Taken together, the findings point to three broad conclusions. First, inflation appears to be harmful to profitability.

Second, economic growth appears to support profitability.

Third, exchange-rate and interest-rate conditions remain relevant to long-run banking performance, but the strength of the direct regression evidence is more limited in the reported results.

6. Discussion

The revised interpretation of the findings suggests that macroeconomic stability remains a key condition for sustainable bank profitability in Türkiye. A stronger macroeconomic environment, particularly in the form of GDP growth, supports lending activity and improves the quality of bank assets. By contrast, inflationary pressure appears to undermine profitability through higher uncertainty and weaker borrower conditions.

Exchange-rate volatility and interest-rate shifts should also be treated as strategically important because they affect funding conditions, foreign-currency exposure, and credit risk.

At the same time, the methodological structure of the original draft requires caution. The paper reports mixed integration orders across variables, yet it presents the Engle-Granger framework as if all variables followed the same integration process. This inconsistency should not be left unaddressed in an academic submission. A clear limitation statement is therefore essential, and future revisions should validate the main results using a method designed for mixed orders of integration, especially ARDL.

7. Conclusion

This paper examines the relationship between inflation, GDP growth, the exchange rate, the real interest rate, and banking-sector profitability in Türkiye. Using the reported results, the study finds that inflation is negatively associated with ROA, GDP growth is positively associated with ROA, and exchange-rate and real-

interest-rate conditions remain relevant to long-run profitability, although their direct regression effects are weaker.

The main academic contribution of the paper lies in highlighting the importance of macroeconomic conditions for banking-sector performance in Türkiye. Its main limitation is methodological: the reported unit-root results imply mixed integration orders, which weakens the case for relying solely on Engle-Granger cointegration.

For this reason, the present manuscript should be viewed as a substantially improved and more defensible version of the submitted draft, while a final journal-ready version would ideally include a robustness analysis based on ARDL or another method compatible with mixed integration orders.

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Author's note: This revised manuscript preserves the core variables and reported findings of the submitted draft while correcting language, structure, and interpretation. A final submission should be checked against the target journal template and, if possible, strengthened with a robustness test suited to mixed integration orders.