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Ownership Concentration and Bank Risk Taking: Evidence From Turkish Banks

Göktürk Kalkan^{1a}¹ İslahiye Faculty of Economics and Business Administration, Gaziantep University, Türkiye

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This study examines the impact of ownership concentration (OC) on bank credit risk in Türkiye, using panel data from 14 commercial banks covering the period 2003–2020. Employing panel regression analysis, the findings show a positive and significant effect of OC on non-performing loans (NPLs), suggesting that higher OC increases credit risk. Control variables include bank size, return on assets, deposits, consumer price index (CPI), and GDP growth. The results highlight OC's dual role in both enhancing monitoring and increasing risk-taking.

I. Introduction

The internationalization and financial liberalization of markets have amplified the transmission of financial crises, as seen in the Asian crisis of the late 1990s and the 2007 global financial crisis. These crises exposed weaknesses in risk management, especially in banking, where complex products and inadequate oversight emphasized the need for robust frameworks (Van Greuning & Bratanovic, 2020).

Banks possess a unique ability to take on risks swiftly, often without immediate visibility to managers or investors (Holmstrom & Tirole, 1997). This characteristic, combined with their intermediary role, makes corporate governance crucial for sector stability. A core aspect of corporate governance is ownership structure, which shapes risk-taking and performance (Dong et al., 2014).

The motivation for this study stems from the unique characteristics of the Turkish banking sector, where ownership structures are often highly concentrated and the regulatory environment is evolving. While previous studies have explored the relationship between ownership concentration and risk-taking in various emerging markets, limited empirical evidence exists for Türkiye. Given the dominance of large shareholders in Turkish banks and their potential for moral hazard, understanding this relationship is critical for designing effective governance frameworks.

The following research question is investigated in this study: Does ownership concentration significantly influence credit risk, as measured by non-performing loans, in Turkish commercial banks? Ownership concentration (OC) offers both benefits and risks. While large shareholders can

enhance monitoring and reduce agency problems (Shleifer & Vishny, 1986), high concentration may also lead to conflicts, as dominant shareholders pursue personal gains over minority interests (Burkart & Panunzi, 2006). This increases the risk of moral hazard in banking, where controlling shareholders engage in riskier behaviors, expecting others to bear potential losses (Holmstrom & Tirole, 1997).

The empirical literature presents mixed findings on the relationship between ownership concentration and risk-taking. While some studies see it as enhancing monitoring (Iannotta et al., 2007), others argue it leads to greater risk for private gain (Morck et al., 2000). This highlights the need for governance that balances the benefits and drawbacks of ownership concentration (Huang, 2023; Jabbouri et al., 2023).

Emerging markets, including Türkiye, face higher macroeconomic volatility, regulatory uncertainties, and evolving institutional quality, which contribute to increased credit, market, and liquidity risks (Claessens & Laeven, 2003). Studies show that ownership concentration affects bank risk differently in these markets. Srairi (2013) found varying impacts in MENA countries, while Naili & Lahrichi (2022) revealed that non-performing loans (NPLs) are primarily influenced by macroeconomic variables and bank-specific factors in the MENA region. In Türkiye, ownership concentration's influence on bank risk-taking should be considered due to the presence of large shareholders in banks and limited minority shareholder protections (La Porta et al., 1999). Recent studies continue to examine this dynamic, particularly in emerging markets. Huang (2023) found that high ownership concentration negatively affects bank sta-

bility in China, while Jabbouri et al. (2023) reported that concentrated ownership correlates with higher credit risk in MENA region banks, suggesting that dominant shareholders may encourage riskier lending practices for private gains.

This study examines how ownership concentration influences credit risk in Turkish banks, where concentrated ownership is common. Using panel data analysis, it offers insights for corporate governance and supports regulatory frameworks that promote bank stability.

The present study contributes to the literature in three significant ways. First, it provides novel empirical evidence of the relationship between ownership concentration and risk-taking in the context of Türkiye, an underexplored emerging market setting. Second, the study presents a manually constructed ownership concentration dataset that facilitates more accurate measurement of control rights. Third, by utilizing heteroskedasticity-robust estimation methods and drawing implications for governance, the study contributes to both the scholarly debate and policy reforms aimed at improving bank stability in emerging economies.

II. Methodology

This study utilizes a dataset comprising financial data from 14 commercial banks in Turkey that operated continuously from 2003 to 2020. As of March 2024, the total assets of these banks amount to 15,288,120 billion Turkish Liras, representing 65% of the total assets of all Turkish commercial banks. The financial data, including balance sheets, income statements, and annual reports, were obtained from the publicly disclosed documents on the Banks Association of Turkey's website. Consumer price index (*CPI*) and gross domestic product (*GDP*) growth data were sourced from the World Bank database. Ownership concentration was manually calculated from yearbooks, audit, and annual reports, based on direct and indirect control rights. Direct ownership refers to registered shares, while indirect ownership involves shares held through companies controlled by the ultimate shareholder. Identifying main shareholders often requires tracing multiple corporate layers as is in typical pyramid structures.

Descriptive statistics for the variables are presented in Table 1. The average non-performing loan (*NPL*) ratio is 0.047, with a standard deviation of 0.045. Ownership concentration (*CON*) has a mean of 0.692 and ranges from 0.259 to 1.000, indicating a high degree of ownership concentration among Turkish banks. Other variables, including bank size (*LOGSIZE*), return on assets (*ROA*), deposit ratio (*DEPOSIT*), *CPI*, and *GDP* growth rate (*GDPGR*), display expected variability, supporting their inclusion as control variables in the regression model.

The study employs a panel data regression model to investigate the impact of ownership concentration (*OC*) on bank credit risk in Türkiye. The dependent variable, *NPL*, is calculated as the ratio of non-performing loans to gross loans. The independent variable is ownership concentration (*CON*), defined by the total direct and indirect voting rights held by the largest shareholder.

NPL is a primary measure of credit risk as they directly reflect a bank's loan portfolio quality and default risk management (Jabbouri et al., 2023). While alternatives like the Z-score and capital adequacy ratio (*CAR*) provide broader financial stability insights, they are less focused on credit risk (Iannotta et al., 2007; Srairi, 2013). *NPLs* are particularly effective in assessing the impact of ownership concentration on bank risk profiles in Türkiye, where managing credit risk is vital for financial stability.

The control variables used in the model include *LOGSIZE*, represented by the natural logarithm of total assets; *ROA*, calculated as net income relative to total assets; *DEPOSIT*, measured as the ratio of deposits to total assets; the *CPI*; and the *GDPGR*.

The model was estimated using heteroskedasticity-robust standard errors (White cross-section) with cross-section fixed effects to mitigate potential heteroskedasticity and ensure robustness. The model function for the given cross-sectional SUR estimation is represented as follows:

$$\begin{aligned} NPL_{it} = & \beta_0 + \beta_1 CON_{it} + \beta_2 ROA_{it} \\ & + \beta_3 DEPOSIT_{it} + \beta_4 \log(SIZE_{it}) \\ & + \beta_5 CPI_{it} + \beta_6 GDPGR_{it} \\ & + \mu_i + \epsilon_{it} \end{aligned} \quad (1)$$

Following Srairi (2013), Zheng et al. (2017), Shehzad et al. (2010), Liu et al. (2020), Jabbouri et al. (2023), Dong et al. (2014), we utilize the ratio of nonperforming loans to gross loans as dependent variable representing bank risk. The level of nonperforming loans is vital to the steadiness of the banking sector and a higher ratio of nonperforming loans to gross loans is associated with greater credit risk (Jabbouri et al., 2023; Liu et al., 2020).

III. Results

The results, as reported in Table 2, indicate that *CON* has a positive and statistically significant effect on *NPL*, with a coefficient of 0.091747 ($p < 0.0001$). This suggests that higher ownership concentration is associated with increased credit risk in banks. This finding aligns with Liu et al. (2020), who reported that concentrated ownership could lead to greater risk-taking behavior in Chinese commercial banks. Similar evidence was provided by Huang (2023), who showed that ownership concentration negatively impacts bank stability in China, and supporting findings by Shehzad et al. (2010) and Jabbouri et al. (2023).

Based on the descriptive analysis and regression results, it can be concluded that when ownership concentration exceeds 0.80, banks tend to exhibit excessive risk-taking behavior. This finding identifies a critical threshold where the advantages of increased monitoring by large shareholders are outweighed by the risks of moral hazard and aggressive lending practices.

ROA displays a negative and significant effect on *NPL* (coefficient: -0.329446, $p < 0.0005$), meaning that more profitable banks generally have lower levels of nonperforming loans. This result is consistent with previous research by Liu et al. (2020) and Dong et al. (2014), as well as findings by Srairi (2013) and Zheng et al. (2017), which emphasize that higher profitability can help mitigate credit risk.

Table 1. Descriptive statistics

Variable	Mean	Median	Maximum	Minimum	Std. Dev.
<i>NPL</i>	0.047319	0.039844	0.456516	0.002744	0.045068
<i>CON</i>	0.691637	0.660250	1.000000	0.258700	0.228813
<i>LOGSIZE</i>	16.87724	17.05620	20.36501	12.60028	1.919610
<i>ROA</i>	0.014629	0.014746	0.044923	-0.022097	0.008167
<i>DEPOSIT</i>	0.414275	0.487198	0.852151	0.107101	0.234515
<i>CPI</i>	0.102572	0.090550	0.203000	0.061600	0.038499
<i>GDPGR</i>	0.071278	0.064700	0.309500	-0.157300	0.134994
Observations	252	252	252	252	252

Note: This table reports descriptive statistics of all variables used in this study.

Table 2. Panel EGLS (Cross-section SUR) and Fixed Effects (FE) Model Results

Variable	Panel EGLS (Cross-section SUR) β (Std. Error)	Fixed Effects (FE) β (Std. Error)
<i>CON</i>	0.0917 (0.0052) ***	0.1095 (0.024) ***
<i>ROA</i>	-0.3294 (0.0772) ***	-0.3908 (0.476)
<i>DEPOSIT</i>	-0.0366 (0.0046) ***	-0.0452 (0.019) **
<i>LOGSIZE</i>	-0.0211 (0.0016) ***	-0.0238 (0.005) ***
<i>CPI</i>	0.2486 (0.0519) ***	0.2929 (0.065) ***
<i>GDPGR</i>	-0.0152 (0.0143)	-0.0233 (0.028)
Constant	0.3349 (0.0267) ***	0.4136 (0.101) ***
Observations	252	252
R-squared	0.8199	0.333
Adjusted R-squared	0.8052	0.279
S.E. of regression	1.006	0.017
Sum squared resid	234.789	0.067
F-statistic	55.59	6.104
Prob(F-statistic)	0.0000	1.61e-12
Durbin-Watson stat	1.739	0.984

Note: ***, **, * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. Standard errors are reported in parentheses. Model statistics may differ in scale due to robust estimation in EGLS versus classical FE.

The *DEPOSIT* variable also demonstrates a significant negative relationship with *NPL* (coefficient: -0.036581, $p < 0.0001$), indicating that banks with higher deposit ratios experience reduced credit risk. This aligns with the results reported by Zheng et al. (2017).

Bank size (*LOGSIZE*) has a negative and highly significant effect on *NPL* (coefficient: -0.021061, $p < 0.0001$), suggesting that larger banks are associated with lower credit risk, potentially due to economies of scale and stronger risk management practices. This observation is consistent with findings by Srairi (2013), Zheng et al. (2017), and Shehzad et al. (2010), who noted that larger banks typically maintain better control over credit risk.

The *CPI*, which represents inflation, shows a positive and significant relationship with *NPL* (coefficient: 0.248585, $p < 0.0002$), implying that higher inflation rates are linked to increased levels of nonperforming loans.

The *GDPGR* variable, although showing a negative coefficient of -0.0152, is not statistically significant. This lack

of significance may reflect the Turkish banking sector's resilience during the study period. Strong risk management and ownership concentration likely had a greater influence on risk-taking than macroeconomic conditions, diminishing the impact of *GDP* growth on credit risk (Liu et al., 2020).

Comparative analysis with other emerging markets further highlights the broader relevance of these findings. Studies in China (Liu et al., 2020), the MENA region (Srairi, 2013), and South Asia (Zheng et al., 2017) reveal a consistent pattern: high ownership concentration is associated with elevated risk-taking behavior. These results reflect a wider trend across emerging economies, where governance structures may not adequately counterbalance the incentives for risk-taking among major shareholders. Unlike other regions, Turkish banks operate in a unique regulatory environment that combines European banking standards with emerging market features. This combination may ex-

plain the particularly strong influence of ownership concentration on risk-taking observed in this study.

As a robustness check, we also estimated a classical panel fixed effects (FE) model alongside the baseline Panel EGLS (Cross-section SUR) specification with White cross-section standard errors. The estimated coefficients for the key explanatory variables—*CON*, *DEPOSIT*, *LOGSIZE*, and *CPI*—are comparable in both magnitude and statistical significance across the two models. This indicates that the primary results are robust to alternative panel data estimation techniques. The only notable difference arises with *ROA*, which is no longer statistically significant in the FE model, although its negative direction remains consistent. Taken together, these findings confirm the robustness of our main results.

IV. Conclusion

This study demonstrates that ownership concentration has a significant impact on risk-taking behavior in Turkish banks. Elevated ownership concentration is associated with increased credit risk, as reflected in higher levels of *NPL*. While concentrated ownership can enhance monitoring, it also enables self-serving actions by major shareholders. These findings underscore the importance of robust corporate governance mechanisms to balance the dual effects of ownership concentration and maintain financial stability in Türkiye.

To bolster the resilience of the Turkish banking sector, governance reforms should carefully balance the improved oversight provided by concentrated ownership with the elevated risks of excessive risk-taking. Strengthening board independence and empowering audit committees are critical steps to limit the outsized influence of dominant shareholders and prioritize long-term stability over short-term gains.

It is essential to protect minority shareholders through mechanisms such as cumulative voting and pre-emptive

rights. These measures can help reduce conflicts between principal shareholders and deter risky strategies pursued by large stakeholders. Additionally, implementing strong risk management frameworks and enhancing financial transparency will better align risk-taking incentives with the goal of sustaining bank stability.

Regulatory initiatives—such as regular stress testing and stricter capital requirements, particularly for banks with high ownership concentration—can help mitigate potential losses. These policies are designed to harness the benefits of concentrated ownership while minimizing moral hazard and curbing excessive risk-taking.

Türkiye's current regulatory environment is less stringent than those in developed markets like the United States and the Eurozone, which may permit more aggressive financial practices by controlling shareholders. Therefore, the study highlights the necessity for governance reforms in Türkiye that are tailored to its specific context. By strengthening monitoring while mitigating associated risks, such reforms would help align domestic practices with international standards and contribute to a more robust and sustainable financial system.

Data and Replication Statement

The data used in this study were obtained from the Banks Association of Turkey and the World Bank database. Ownership data were manually compiled from public reports. Full details of the data sources and processing methods are available upon request.

CRedit Statement

Göktürk Kalkan: Conceptualization, Methodology, Data curation, Writing – Original Draft, Formal analysis.

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