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THE IMPACT OF CORPORATE GOVERNANCE ON RISK AND PERFORMANCE IN TURKISH BANKS[1]

Yusuf ELKOCA[2] (Orcid ID: 0000-0003-3811-7610***)**
****Nurullah CIFTCI** *(Orcid ID: 0000-0002-4198-6705)*
*****Enes Cengiz OGUZ (***Orcid ID: 0000-0002-1250-309X***)**
**Royal Holloway,[3] University of London, Egham/UK*
*** University of Exeter, Exeter/UK*
****Anglia Ruskin University, Cambridge/UK*

ABSTRACT

Corporate governance (CG) refers to the practices and processes used to control firms and mitigate managerial opportunism and excessive risk-taking, particularly in the financial sector. This study investigates whether board structure (e.g., board size, independent directors, and gender diversity) and ownership concentration (e.g., largest shareholder, foreign investors, and traded equity rate) influence financial performance and risk-taking in Turkish commercial banks. Using a fixed-effects model on panel data from 20 banks between 2006 and 2012, we find that smaller board sizes are associated with lower risk-taking and improved financial performance. Conversely, independent directors and gender diversity show no statistically significant relationship with risk-taking or performance. Foreign investors and large shareholders—increases risk-taking and reduces financial performance while stock exchange listings are associated with significantly lower risk-taking and higher financial performance. These findings highlight the importance of balanced board structures, effective ownership controls, and market discipline in fostering long-term financial stability in the Turkish banking sector. Policymakers and regulators in emerging markets should address these corporate governance challenges to promote a stable and resilient banking system.

Keywords: Board Structure, Ownership Concentration, Risk Taking, Financial performance, Bank

INTRODUCTION

Corporate governance (CG) has become a prominent area of study in business and economics since the 1990s, especially after various financial crises highlighted its role in mitigating risks. CG refers to the board structure practices, processes, and relations used to control firms, primarily to address agency problems and manage risk in the financial sector (Mallin, 2010). Strong CG practices are essential for curbing managerial opportunism and reducing excessive risk-taking (Peni & Vahamaa, 2012). For instance, the global financial crisis of 2008 and 2009 was partially attributed to inadequate CG implications in preventing the financial collapse (US Government Office, 2011; Kirkpatrick, 2009). Consequently, banking supervisory authorities and central banks have increasingly stressed the importance of robust governance mechanisms in the banking sector (Peni & Vahamaa, 2012). The role of corporate governance in banking has been highlighted not only by academics but also by regulators and policymakers (Basel Committee on Banking Supervision, 2010; OECD, 2010). Banks, in particular, present unique governance challenges. Their operations are inherently complex, involving financial instruments such as mortgage-backed securities, which contributed to the 2008 financial crisis by expanding credit and amplifying risk (Dionne, 2013). Additionally, banks are typically more leveraged than non-financial firms, with debt levels exceeding 90%, compared to around 40% in other industries

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[2] Corresponding author

[3] PFTM012@live.rhul.ac.uk

(Mehran, Morrison, and Shapiro, 2011). This high debt ratio and the perception of government protection through "too big to fail" policies exacerbate moral hazard in banks, encouraging riskier behaviours. Therefore, understanding whether CG can influence risk-taking behaviors and its financial returns in banks is crucial.

This study aims to address this gap by analysing the impact of board structure (e.g., board size, independent directors, and gender diversity) and ownership concentration (e.g., largest shareholder, foreign investors, and traded equity rate) impact financial performance and risk-taking in banks. Using a fixed-effects model to analyse panel data from 20 Turkish commercial banks between 2006 and 2012, we find that smaller boards are associated with higher risk-taking and improved financial performance. While gender diversity shows a positive relationship with financial performance and risk-taking, board independence has a negative, though statistically insignificant, effect. Additionally, ownership concentration factors, including foreign investors and the largest shareholder*, rate of traded equity in the stock market*, significantly impact banks' risk-taking and performance.

This study contributes the litareture for several ways. First, Despite the importance of CG implications in banks, the existing literature often focuses on non-financial firms (Hermalin & Weisbach, 2003; Yermack, 1996). Banks are highly leveraged firms. It can raise the probability of bank failures and depositors as well as other debtholders will demand a higher risk premium from banks as compensation for the higher insolvency risk. Moreover, the banking industry is quite different from other industries in its regulations and operating environment. Therefore, it requires special treatment regarding corporate governance issues (Bektaş & Kaymak, 2009). While some studies have examined CG's effect on banks' financial performance (Andres & Vallelado, 2008; Adams & Mehran, 2012), research on can CG features influence risk-taking in banks is more limited.

Second, most of these studies concentrate on firms in developed economies, particularly in the US and Western Europe. It leaves a significant gap in understanding how corporate governance affects risk-taking in emerging markets, where financial systems and governance structures may differ substantially. Turkey provides a fascinating case for studying corporate governance in the banking sector. Its capital markets are less developed than those in advanced economies, which may affect the relationship between CG features, financial performance, and risk-taking. While Turkey's banking sector was notably resilient following the 2001 domestic banking crisis and the global financial crisis of 2008 and 2009 (Taskin, 2014; Laeven & Valencia, 2012), researcher have underestimated examining the corporate governance structures influence risk-taking in Turkish banks.

Third, previous studies have investigated the effect of board structure and ownership concentration on the financial performance of Turkish commercial banks (Bektas & Kaymak, 2009; Guduk, 2012; Beycan, 2013), but there remains a gap in research on how gender diversity and independent directors on bank boards affect risk-taking in Turkey's banking sector. Mehran et al. (2011) suggest that increased risk-taking in banks can be driven by shareholder interests and incentives for CEOs and other board members to enhance their compensation through higher risk exposure. Therefore, independent and female directors on bank boards may mitigate such behaviour and influence risk-taking and performance. By addressing critical gaps in the literature, we suggest that CG mechanisms must be adapted and controlled by emerging markets' specific regulatory. Policymakers, bank managers, and investors should seek to governance practices for the sake of financial stability.

The remainder of the paper proceeds as follows. Section 2 summarizes the Literature Review and formulates the study hypothesis. Section 3 outlines the methodological tools and techniques used in the study. Section 4 presents the analysis and findings of the empirical examination. Section 5 ends with the discussion and conclusion.

THEORETICAL BACKGROUND

The study of corporate governance and performance relationship is based on various conflicting theoretical perspectives such as the agency theory, the stewardship theory, the resource dependence theory, the institution theory, and the managerial theory. Agency Theory and Managerial Theory offer critical insights into the relationship between corporate governance, performance, and risk-taking in the banking sector. Agency Theory identifies the conflicts that arise from the separation of ownership and control, where managers (agents) may act in their self-interest rather than in the best interests of shareholders (principals). In banking, this problem is exacerbated by the sector's complexity and high

leverage. Managers might pursue excessive risk-taking to maximize short-term gains or avoid necessary risks to protect their positions, potentially destabilizing institutions during financial crises (Jensen & Meckling, 1976; Pathan, 2009). Robust governance mechanisms, such as independent boards and incentive-aligned compensation, are essential to mitigate these issues. For instance, banks with strong governance practices often experience better alignment between managerial actions and shareholder interests, reducing agency costs and fostering sustainable financial performance (Adams & Mehran, 2012; Shleifer & Vishny, 1997).

In contrast, Managerial Theory examines how managerial discretion and power influence corporate governance and organizational outcomes. Managers in the banking sector, given their autonomy, can either drive innovation and strategic growth or exacerbate risks through self-serving behaviors. For example, during periods of high financial innovation, unchecked managerial power contributed to reckless lending and the proliferation of risky financial instruments, as seen in the 2008 global financial crisis (Mehran et al., 2011). Effective governance systems that balance managerial discretion with accountability are essential to prevent such behaviors. Managerial Theory underscores the dual necessity of empowering managers to innovate while ensuring they operate within a framework of oversight and transparency (Fama & Jensen, 1983). Together, these theories highlight the need for well-designed governance structures in banking, which can balance risk and performance, fostering resilience in a dynamic financial environment.

Board Structure, Financial Performance, and Risk-Taking

The structure of a company's board is a key aspect of corporate governance (CG) features, and it includes factors such as board size, the presence of independent directors, and gender diversity. Boards serve as a crucial component of corporate governance, performing three key functions: (1) making strategic decisions, such as selecting which projects to pursue; (2) overseeing and evaluating management in a supervisory capacity; and (3) providing guidance and counsel in an advisory role (Fernandes et al., 2017). These responsibilities are particularly significant in the banking sector compared to other industries due to several factors: (i) directors are accountable not only to shareholders but also to a broader set of stakeholders, including depositors and regulators (Macey & O'Hara, 2003); (ii) the inherent complexity of banking operations, with opaque lending practices that limit the ability of shareholders and creditors to enforce governance effectively (Levine, 2004); and (iii) the unique characteristics of the industry, such as intense regulation, limited competition, and greater informational asymmetries (De Andres & Vallelado, 2008). This section reviews the relevant literature and how board structure elements influence financial performance and risk-taking in the banking sector.

Board Size

One of the primary concerns in corporate governance is determining the optimal board size. Researchers such as Lipton and Lorsch (1992) and Jensen (1993) argue that smaller boards are generally more efficient, improving communication and decision-making, which helps firms respond more quickly to managerial challenges. Smaller boards also reduce coordination costs, allowing for better control over management decisions. However, smaller boards may lack the necessary diversity of skills and perspectives, which is critical in complex industries like banking (Coles, Daniel, and Naveen, 2008). Studies on non-financial firms, such as those by Yermack (1996) and Cheng (2008), found a negative relationship between board size and firm performance, with larger boards linked to lower profitability and efficiency. Guest (2009) echoed these findings in his study of UK firms, showing that larger boards negatively impact profitability, Tobin's Q, and share returns. The relationship between board size and performance is more nuanced in the banking sector. Andres and Vallelado (2008) found a U-shaped relationship, where performance improves with larger boards up to a point but declines when the board size exceeds 19 members. Adams and Mehran (2012) also found that larger boards in banks improve performance by providing more expertise, which is crucial in complex organisations. On the other hand, Pathan and Paff (2013) observed that smaller boards are more effective in US banks, suggesting that large boards can still lead to inefficiencies. Given these mixed findings, this study investigates the relationship between board size and performance in Turkish banks, where smaller boards may enhance efficiency, but larger boards might offer critical expertise for handling the complexities of the banking sector.

H1a: Small board size is positively related to firm performance.

Board size has also been linked to risk-taking behaviour, particularly in the banking sector, where shareholders often incentivise boards to pursue higher returns through increased risk-taking (Jensen, 1993). Smaller boards, with more streamlined decision-making, may adopt high-risk strategies more quickly, while larger boards tend to be more cautious due to diverse perspectives and longer deliberation processes. Several studies have explored this relationship across various contexts. For example, Koerniadi, Tourani-Rad, and Krishnamurti (2013), analysing 326 firms from the New Zealand Exchange between 2004 and 2008, found a weakly significant negative impact of board size on risk-taking. Similarly, Nakano and Nguyen (2012), using a sample of 1,450 Japanese financial firms, found that board size was negatively related to various risk measures, including the standard deviation of ROA, Tobin's Q, stock returns, and Z-scores. They suggested that the low volatility of ROA might explain the small effect of board size on risk. Focusing on banks, Pathan (2009) analysed 212 large US bank holding companies from 1997 to 2004, showing that smaller boards are positively associated with increased risk-taking. Rachdi and Ameur (2011) found similar results in 11 Tunisian commercial banks, concluding that smaller boards were linked to higher risk-taking and improved performance. These findings are consistent with the work of Koerniadi et al. (2013), Nakano and Nguyen (2012), and Pathan (2009), who all reported a negative relationship between board size and risk-taking. Conversely, Adams and Mehran (2011) argue that larger boards promote more conservative risk-taking as the decision-making process becomes less extreme with more members. It may explain why larger boards are often associated with reduced risk-taking (Koerniadi et al., 2013; Nakano & Nguyen, 2012). However, it is also possible that the relationship between board size and risk reflects an equilibrium shaped by external factors. Therefore, reducing board size may not necessarily lead to higher risk-taking if other environmental variables remain unchanged. Based on these findings, this study hypothesises that smaller boards in Turkish banks will be associated with higher levels of risk-taking.

H1b: Small board size is positively related to bank risk-taking.

Independent Directors

Board independence refers to the presence of non-executive directors who are not involved in day-to-day management and are expected to provide objective oversight and limit managerial opportunism. Regulations like the US's Sarbanes-Oxley Act (SOX) mandate a higher proportion of independent directors, particularly in sectors like banking, to strengthen corporate governance (Pathan & Paff, 2013). According to agency theory, Fama and Jensen (1983) argue that independent directors enhance monitoring, reducing self-serving behaviours by managers. Studies generally indicate that independent directors positively impact firm performance by improving oversight and advising on risk management. For instance, Coles et al. (2008) found that independent directors play a key role in risk management, especially in complex industries, and their presence is more prominent in bank boards than in non-financial firms. Similarly, Adams and Mehran (2011) and Andres and Vallelado (2008) concluded that independent directors improve bank performance by offering external expertise and perspectives, which help banks navigate complex financial landscapes. However, not all studies show a positive relationship between board independence and firm performance. Agrawal and Knoeber (1996) reported a negative relationship, suggesting that too many independent directors may hinder decision-making due to coordination issues. Adams and Mehran (2012) also found no significant impact of board independence on bank performance, while Bhagat and Black (2001) observed statistically insignificant results across various performance metrics, including ROA and Tobin's Q. Similarly, Van Essen, Engelen, and Carney (2013), using a sample of 1,197 firms across 26 countries, found no significant relationship between board independence and financial performance during the financial crisis. These mixed findings suggest that the impact of independent directors on firm performance may vary depending on factors such as the regulatory environment, industry, and specific performance measures used.

H2a: Independent directors are negatively related to firm performance.

The relationship between board independence and risk-taking has been examined in various studies with mixed results. Some researchers argue that independent directors tend to adopt more conservative approaches, reducing a firm's exposure to risk. For example, Pathan (2009) found that independent directors were negatively associated with unsystematic risk in US bank holding companies, although their influence on insolvency risk (measured by the Z-score) was limited. Similarly, Ashbaugh-Skaife et al. (2006) analysed 1,500 firms from 1996 to 2003 and reported that independent directors were negatively related to several risk measures, including idiosyncratic risk, systematic risk (beta), and the cost of equity.

They suggest that this cautious approach may stem from information asymmetry, where insider directors hold more detailed knowledge about the firm's operations. However, the relationship between board independence and risk-taking is not universally supported. Koerniadi et al. (2013) found no significant relationship between the proportion of independent directors and risk-taking in their study of New Zealand firms. Their findings suggest that independent directors may improve overall governance, but their direct influence on risk-taking may be limited or context dependent.

H2b: Independent directors are negatively related to risk-taking

Gender diversity

Gender diversity in corporate governance refers to the representation of women on corporate boards, either as executive or independent non-executive directors. In recent years, countries like Sweden, Norway, and Spain have implemented legal mandates to increase female board representation, with the belief that female directors enhance decision-making by offering diverse perspectives and improving oversight. However, empirical evidence on the relationship between gender diversity and firm performance and risk-taking remains mixed. Some studies suggest a positive relationship between gender diversity and firm performance. Carter et al. (2003) and Campbell and Minguez-Vera (2008) found significant positive correlations between the percentage of female directors and firm performance, arguing that diverse boards improve decision-making and bring fresh insights that boost company value. Similarly, Liu et al. (2014), examining over 2,000 Chinese firms from 1999 to 2011, found a positive impact of female executives on performance, mainly when at least three women were on the board, indicating that a critical mass may be necessary to influence outcomes. Liu et al. also noted that female executive directors had a more significant impact than female independent directors, suggesting that women in decision-making roles are especially influential. Boone et al. (2007) also reported a positive link between gender diversity and firm performance in Australian firms, reinforcing the argument that female directors can enhance governance outcomes. However, other studies present a more cautious view of gender diversity's impact. Adams and Ferreira (2009) found that while gender-diverse boards engage in more monitoring, this can sometimes result in overly cautious decision-making, reducing shareholder value. Similarly, Ahern and Dittmar (2012), examining Norway's 40% female board quota, found that increased gender diversity was linked to a decline in firm value, which they attributed to the lower experience levels among women appointed under the quota. These mixed findings suggest that the impact of gender diversity on firm performance may depend on several factors, including the proportion of women on the board, their experience, and the regulatory environment.

H3a: Gender diversity is positively related to firm performance.

In addition to influencing firm performance, gender diversity has been linked to risk-taking behaviour in firms. Several studies suggest that female directors tend to adopt more conservative approaches, which can reduce firm risk. Almazan and Suarez (2003) found that bank risk decreases when more female executives are present, as women are generally more risk-averse in decision-making. Similarly, Berger et al. (2014), analysing 1,500 firms from Standard and Poor's, found that companies with more gender-diverse boards were less likely to file for bankruptcy, suggesting that female directors help curb excessive risk-taking through improved oversight and risk management. Female directors are also more likely to serve on monitoring committees, and their higher attendance rates compared to male counterparts may enhance the board's ability to manage risks (Berger et al., 2014). However, some studies indicate that gender diversity can increase risk-taking under certain conditions. Liu et al. (2014) found that female executive directors directly involved in decision-making were more inclined to pursue risky but potentially profitable strategies. This contrasts with the generally more conservative approach of female non-executive directors. Women's roles on the board—whether as executives or independent directors—may, therefore, shape the firm's risk profile. While female directors are often linked to lower risk, their impact on risk-taking may depend on their specific role within the firm and the organisational context.

H3b: Gender diversity is positively related to risk-taking.

Ownership Concentration, Financial Performance and Risk-Taking

Corporate Governance mechanisms including board structure, and ownership, function in complementary ways, addressing specific aspects of agency issues. In this study, ownership concentration is measured through three key variables: the percentage held by the first largest shareholder (LSH), the rate of equity

trading in the Istanbul Stock Exchange (SM), and the presence of foreign shareholders (Foreign). This section reviews the literature on the relationship between ownership concentration and firm performance and risk-taking.

Largest Shareholder (LSH)

The impact of the largest shareholder on firm performance and risk-taking has been widely studied, though the results are mixed. In Turkey, Guduk (2012) analysed 16 listed banks between 2005 and 2011 and found that the ownership rate of the largest shareholder (LSH) was negatively associated with financial performance, measured by both return on assets (ROA) and return on equity (ROE). Similarly, Gürsoy and Aydogan (2002) examined Turkish firms between 1992 and 1998 and concluded that higher ownership concentration, including that of the largest shareholder, had a significantly negative relationship with financial performance. They argued that large shareholders may prioritise their interests, potentially at the expense of overall firm performance. However, Gürsoy and Aydogan (2002) also found that ownership concentration is positively associated with risk-taking. Firms with a dominant shareholder were more likely to take on higher levels of total risk, suggesting that large shareholders may have a greater incentive to engage in riskier strategies, potentially to maximise returns. This finding is consistent with other studies, such as Nakano and Nguyen (2012), who reported that ownership concentration is correlated with higher idiosyncratic risk in Japanese firms. Similarly, Koerniadi et al. (2013) found that block holders (those owning more than 5% of shares) in New Zealand firms had a positive and statistically significant impact on risk-taking. These mixed findings suggest that while concentrated ownership can lead to increased risk-taking, it may also result in poorer firm performance due to conflicting interests between shareholders and managers. It raises questions about whether the Turkish banking sector holds similar patterns, where ownership structures can be highly concentrated.

H4: The first largest shareholder is negatively related to firm performance and risk-taking.

Foreign Shareholders

Foreign ownership is another important aspect of ownership concentration that has been shown to influence firm behaviour. In the Turkish context, Guduk (2012) found that the presence of foreign shareholders was positively related to both ROA and ROE, indicating that foreign investment may improve firm performance. This finding is consistent with Gürsoy and Aydogan (2002), who reported a significant positive relationship between foreign ownership and financial performance in Turkish firms. One possible explanation for this positive effect is that foreign investors may bring better corporate governance practices, thereby improving firm management and efficiency. In addition, foreign investors often have access to more resources and international expertise, which can enhance a firm's competitive advantage. However, foreign ownership has also been linked to higher levels of risk-taking. Gürsoy and Aydogan (2002) found that foreign shareholders were associated with higher total risk, possibly due to their exposure to additional risks such as exchange rate volatility and political uncertainty. Similarly, Nakano and Nguyen (2012) reported that foreign ownership was correlated with higher idiosyncratic risk in Japanese firms. It suggests that foreign investors may be willing to accept greater risk in pursuit of higher returns, especially in emerging markets like Turkey. These findings raise important questions about the role of foreign shareholders in the Turkish banking sector, where increased foreign investment in recent years may have both positive and negative implications for performance and risk.

H5: Foreign shareholders are negatively related to firm performance and risk-taking.

Rate of Equity Trading (SM)

The rate of equity trading, or stock market liquidity, is another key factor in ownership concentration that can affect both firm performance and risk-taking. In the Turkish context, Beycan (2013) found that the rate of equity trading in the Istanbul Stock Exchange (SM) was positively related to ROA, indicating that greater liquidity in the stock market improves firm performance. Similarly, Kasap (2010) reported that higher rates of equity trading were positively associated with performance measures such as the price-to-book ratio in European banks, including Turkish banks. Greater stock market liquidity can lead to better corporate governance by increasing the accountability of managers to shareholders. When shares are more easily traded, shareholders can more quickly respond to poor managerial decisions by selling their stock, thereby exerting pressure on managers to improve performance. At the same time, higher rates of equity trading may also be associated with greater risk-taking. Gürsoy and Aydogan (2002) suggested

that firms with more liquid stocks may be more likely to engage in risky strategies, as active markets allow shareholders to quickly exit their positions if the firm takes on excessive risk. This increased liquidity may, therefore, encourage managers to take bolder decisions, knowing that shareholders have the option to sell their shares in response to poor performance. These findings suggest that the rate of equity trading may have a dual impact on firm performance and risk-taking, especially in emerging markets like Turkey, where stock market development is still maturing.

H6: The equity trading rate is positively related to firm performance and risk-taking.

ECONOMETRIC METHODOLOGY

This section outlines the data selection process, the definitions of the dependent and independent variables, and the econometric model used to test the hypotheses related to corporate governance, firm performance, and risk-taking in Turkish banks.

Data Selection and Definitions of Variables

Since the early 2000s, Turkey has implemented CG practices. The Capital Market Board introduced a corporate governance code in 2003, which was later revised in 2005. During this period, independent regulatory and supervisory agencies, including the Banking Regulation and Supervision Agency (BRSA), were established. Turkish banks have adhered to the International Financial Reporting Standards (IFRS) for accounting and reporting since 2006, under BRSA's regulation. Additionally, the Basel Committee's corporate governance principles are integrated into banking practices. Corporate governance regulations for the Turkish banking sector were formalized in October 2005, with data collection for this study covering the period from 2006 to 2012 across 20 Turkish banks. Financial data were sourced from The Banks Association of Turkey (www.tbb.org.tr), while governance-related variables, such as board structure and ownership details, were obtained from Turkey's Public Disclosure Platform (www.kap.gov.tr) and annual reports available on banks' websites. CG in emerging markets like Turkey differs significantly from that in developed economies. Key distinctions include ownership concentration, the prevalence of business groups comprising interconnected firms, and the economic reliance on such structures (Ararat, Black, & Yurtoglu, 2017). Specific challenges in Turkey include opaque control mechanisms, weak enforcement, and deficiencies in risk management and internal auditing practices. Between 1990 and 2003, numerous bank failures occurred due to structural economic problems and vulnerabilities in the banking sector. However, extensive reforms following the early 2000s economic crisis reshaped Turkey's banking system, addressing some of these weaknesses (Inci, 2018).

Dependent variables are risk-taking and financial performance. The banks' risk-taking is the Z-score, which measures the distance to default from insolvency, indicating that losses exceed the bank's equity. A higher Z- score means a bank has a lower risk (Rachdi & Ameur, 2011). ROE is an indicator of financial performance that shows how much profit a company generates with the shareholders' money and a corporation's profitability (Pathan & Paff, 2013). Five independent variables are related to banks' board structures used in this research (e.g., Guduk, 2012; Beycan, 2013; Gürsoy & Aydogan, 2002; Pathan, 2009; Pathan & Paff, 2013). These are board size (BS), independent directors (IND) and gender diversity (Female). Bhagat and Black (2001) explain that board size is often endogenous with other control variables that may correlate with performance; therefore, including different variables might lead to different results. The features of the ownership concentration variables are a percentage of the first largest shareholder (LSH), the rate of the equity trading in the Istanbul Stock Exchange (SM) and the existence of the foreign shareholders (Foreign**),** which are used as proxies of corporate governance in the empirical analysis to increase the model's significance level. IND is not an existing or former bank employee and has no significant business/ familial ties with the bank. The LSH could significantly affect the firm's performance because they can be more interested in the company. LSH has enormous voting power in the board of directors and management decisions. Foreign Investors are the presence of foreign institutional ownership, which decreases agency costs. To increase the significance levels of the models, following previous studies (e.g., Andres and Vallelado, 2008; Adams & Mehran, 2012; Pathan, 2009 and Pathan and Paff, 2013), three other variables are included to control for bank size or total asset (TA), bank capital (Capital) and bank cash ratio (Cash).

A fixed-effects model controls unobservable bank-specific characteristics that may influence the results, following the approach of Pathan (2009) and Andres and Vallelado (2008). The fixed-effects model

allows for the control of time-invariant characteristics across banks, ensuring that the impact of corporate governance variables is isolated. The following econometric equation model is used to evaluate the above hypothesis:

Performance (ROE) and Risk (z-score) i,t = α + β1 (Board-size)i,t + β 2 (independent)i,t + β 3 (female)i,t + β 4 (% the biggest share)i,t + β 5 (trade share in SM)i,t + β 6 (TA)i,t + β7 (Capital)it + β 8 (Cash)i,t + β 9 (foreign investor as a dummy)i,t + β 10(time)+ ε i,t

Table 1. Definitions of the Variables

	Variables	Calculation	Symbols
Dependent	Return on Equity	Net Income / Shareholders' Equity	ROE
	Z-score	Z-score = ROA + *CAR/std(ROA) *CAR = E/A (where E is equity and A is assets)	Z-score
Independent + **Control**	Board Size	The Number of Directors on The Board	BS
	Gender Diversity	The Percentage of Total Directors on The Board That Are Women	Female
	Independent director	The Percentage of Total Directors That Are Independent	INDIR
	Largest share holder	The Percentage of The First Largest Shareholders	LSH
	Stock Market	Rate Of the Equity Which Is Traded in The Istanbul Stock Exchange	SM
	Ln (Total Asset)	The Natural Logarithm Of The Book Value Of Total Assets	TA
	Bank Capital	Equity/ Total Assets	Capital
	Cash ratio	Liquid Assets / Short-Term Liabilities	Cash
Dummy	Foreign investors	Foreign investor=1, otherwise is 0	Foreign

Descriptive Statistics

Table 2 presents the descriptive statistics for the independent variables related to bank board structure, ownership concentration, and control variables in the study of Turkish banks. The average board size in these banks is nine members, ranging from 5 to 14 members. The mean percentage of independent directors is 24%, while female representation on boards remains notably low at around 7%. Some banks have no independent or female directors, with the highest observed percentages being 56% for independent directors and 33% for female directors. Ownership concentration is high, with the largest shareholder holding an average of 73%, indicating a heavily concentrated ownership structure. In contrast, the equity trading rate on the Istanbul Stock Exchange is relatively low, averaging 13%, suggesting limited liquidity and market activity. In terms of control variables, the average total assets of the banks are approximately 160 billion Lira, with capital ratios reflecting the overall financial strength of these institutions.

Table 3 presents the correlation matrix, illustrating relationships among corporate governance characteristics, firm performance, and risk-taking in Turkish banks. A strong positive correlation (r = 0.73) between Z-score and ROE suggests that lower risk is linked to higher financial returns. Ownership concentration (LSH) shows negative correlations with board size (BS) (r = -0.39) and stock market equity trading (SM) (r = -0.59), indicating reduced liquidity and smaller boards in highly concentrated banks. ROE correlates positively with Z-score (r = 0.73) and total assets (TA) (r = 0.61), implying that larger, lower-risk banks achieve better performance. Z-score also correlates with TA (r = 0.65) and foreign ownership (r = 0.38), while SM correlates positively with Z-score (r = 0.57) and TA (r = 0.59). Given the significant correlations between these variables, multicollinearity tests were conducted.

Therefore, in order to avoid possible multicollinearity, those higher correlated group variables are tested by joint hypothesis. To test whether two coefficients are jointly different from zero, the command test was used. To test the null hypothesis, both coefficients (β-LSH= 0 and β-SM=0) do not have any effect on ROE and Z-score. The p-value is 0.0002 (please see appendix), therefore, the null hypothesis is rejected and it is concluded that both variables have indeed a significant effect on ROE and Z-score. Also, control variables, i.e. TA, Capital and Cash, are not equal to 0 (p= 0.0002), thus three variables have significant effect on the dependent variable in the model. Keeping together these variables in the model should be better. Descriptive analysis is investigated in detail to better understand the samples. For this reason, an essential assumption for the multiple regression model is that independent variables are not perfectly multicollinear. One regressor should not be a linear function of another. When multicollinearity is present, standard errors may be inflated., VIF (variance inflation factor) was used to check for multicollinearity. VIF tests confirm no multicollinearity issues (VIF < 10 or 1/VIF > 0.10), validating the regression model's reliability. We found that VIF result is 2. 02 which is lower than 10.

Table 2. Descriptive Statistic

	140			1	20
Independent variables					
BS	140	8.992857	1.668569	5	14
Female	140	.0732143	.0826823	0	.33
IND	140	.2400714	.0937661	0	.56
Dependent variables					
ROE	140	12.93121	9.329789	-24.72	34.39
Control variables					
TA	140	16.32214	1.808217	12.8	19
Capital	140	13.55214	6.220845	6.7	49.2

Table 3. Correlation matrix of all variables

	BS	Female	IND	LSH	SM	ROE	Z	TA	Capital	Cash	Foreign
BS	1.0000										
Female	-0.0092	1.0000									
IND	-0.2915	0.0807	1.0000								
LSH	-0.3989	-0.0481	-0.0202	1.0000							
SM	0.2191	0.0637	0.0674	-0.5972	1.0000						
ROE	0.1887	-0.0417	-0.1647	-0.0925	0.3243	1.0000					
Z	0.2567	0.0116	-0.0394	-0.2919	0.5708	0.7386	1.0000				
TA	0.3365	-0.0114	-0.0451	-0.1868	0.5963	0.6119	0.6537	1.0000			
Capital	-0.0743	0.0491	-0.4280	-0.0046	-0.2156	-0.1904	-0.1959	-0.4904	1.0000		
Cash	-0.0491	-0.1662	-0.4788	-0.0153	-0.1462	-0.0852	-0.2006	-0.3133	0.5898	1.0000	
Foreign	0.0403	-0.0195	-0.2194	0.0356	-0.0745	-0.3232	-0.3820	-0.3274	0.2720	0.1544	1.0000

3.3. Unit Root Tests and Tests for Fixed Effects Regression Models

The ROE and Z-score are applied to test the stationarity of the dependent variables using the Levin-Lin-Chu unit root test and Hadri LM test. The Levin–Lin–Chu refers to no requirement for a time trend. As the output indicates, the Levin–Lin–Chu test assumes a common autoregressive parameter for all panels, so this test does not allow some banks' performance and risk to contain unit roots while other banks do not. The unit root tests above show that ROE and Z-score panels do not contain unit roots and have stationary characteristics. P values of the Levin–Lin–Chu test for the first two analyses are less than 0.05. Therefore, the null hypothesis is rejected, and the alternative hypothesis is accepted. An alternative test, such as Hadri LM, shows that all panels are stationary because the p-value is greater than 0.05 for the last two analyses. Therefore, the null hypothesis was accepted, and the alternative hypothesis was rejected.

The Hausman test shows that the preferred model should be a random or fixed effect. The result for ROE is Prob>chi2 = 0.0084, and for Z-score is Prob>chi2 = 0.0009. If the p-value is less than 0.05, the fixed effect is used. To test the time-fixed effects for ROE and Z-scores, it suggested that bank-specific characteristics that may affect or bias the performance variable should be controlled using the fixed effects model. The joint test is to see if the dummies for all years are equal to 0. If they are, then no time-fixed effects are needed. After running the fixed effect model, the result is Prob > F = 0.0398 for ROE and Prob > F = 0.0001 for Z-score. The Prob>F is < 0.05, so it is concluded that both null hypotheses are rejected and that fixed effects are needed to control the unobservable effects of years. The effects of time-invariant characteristics added from the independent variables. The Modified Wald Statistic tests heteroscedasticity. This test is suitable even if the assumption of normality is violated. The null hypothesis is homoscedasticity (or constant variance). The above test result is Prob>chi2 = 0.0000 for ROE and Prob>chi2 = 0.0101 for Z- score. Therefore, the null hypothesis is rejected. The model has a presence of heteroscedasticity; thus, the 'robust' option was used to solve the heteroscedasticity problem.

RESULTS

Financial Performance Results

Table 4 reveals that several significant relationships between governance variables and bank financial performance, as measured by ROE. Larger board sizes are associated with lower financial performance, as indicated by the negative coefficient (-1.547, $p < 0.1$). The negative sign suggests that larger board sizes reduce ROE, implying that banks with larger boards tend to be less profitable. In other words, smaller boards are associated with higher performance. Other board structure variables, such as gender diversity and independent directors, their influence on financial performance is inconclusive. The positive

coefficient for gender diversity (12.6224) is statistically insignificant, suggesting that the presence of female directors has no measurable impact on ROE in this study. Similarly, the negative coefficient for independent directors (-15.8696) indicates a potential relationship between independent directors and reduced financial performance, but the result is not statistically significant.

Concentrated ownership by the largest shareholder significantly reduces financial performance, reflected in a strong negative coefficient (-24.5409, $p < 0.01$). Foreign ownership also significantly reduces financial performance, with a negative coefficient (-9.2194, $p < 0.05$). The negative sign indicates that an increase in foreign ownership lowers ROE. In contrast, being listed on a stock exchange significantly improves financial performance, as shown by a positive coefficient (51.4173, $p < 0.05$). Lastly, the positive coefficient for total assets (3.9676), and cash cash (0.0377) suggests a potential positive relationship with ROE, but both are insignificant. total assets capital (-0.0348) shows negative correlations with insignificant effects on financial performance, indicating their direct influence on ROE is inconclusive in this analysis.

Risk-Taking Results

Table 4 shows that the regression analysis reveals several significant relationships between governance variables and bank risk-taking, as measured by the Z-score. Larger board sizes are associated with increased risk-taking, as indicated by the negative coefficient (-0.1913, $p < 0.1$). The negative sign indicates that larger board sizes reduce the Z-score. Since a lower Z-score corresponds to higher risk, this means that larger boards are associated with higher risk-taking. In other words, smaller board size is associated to lower risk taking. Other variables, such as gender diversity and independent directors show no statistically significant effects on risk-taking, indicating their influence is inconclusive. The coefficient of gender diversity (-0.0007) is very close to zero, and it is statistically insignificant. This suggests that the presence of female directors has no measurable impact on the Z-score or risk-taking in this study. The negative sign of independent director (-2.3463) indicates that a higher proportion of independent directors reduces the Z-score, but the result is not statistically significant. This suggests a potential relationship between independent directors and increased risk-taking, but the evidence is inconclusive.

Concentrated ownership by the largest shareholder significantly increases risk-taking, reflected in a strong negative coefficient (-3.5811, $p < 0.01$). The negative sign indicates that an increase in the share of ownership by the largest shareholder reduces the Z-score. Since a lower Z-score corresponds to higher risk, this means that a larger ownership share by the largest shareholder is associated with higher risk-taking. Foreign ownership also significantly raises risk, with a negative coefficient (-1.0977, $p < 0.01$). The negative sign indicates that an increase in foreign ownership reduces the Z-score, suggesting that foreign ownership is associated with higher risk-taking. In contrast, stock exchange listings substantially reduce risk, shown by a positive coefficient (7.4056, $p < 0.05$). The positive sign indicates that being listed on a stock exchange increases the Z-score. Since a higher Z-score corresponds to lower risk, this means that listed banks take on less risk. Also, higher capital levels similarly lower risk, with a positive coefficient (0.0673, $p < 0.01$). The positive sign indicates that higher capital levels increase the Z-score. Since a higher Z-score corresponds to lower risk, this means that banks with higher capital take on less risk. The positive coefficient sign of larger total assets (0.9852) suggests that increase the Z-score, implying lower risk-taking, but the result is not statistically significant. The positive coefficient sign of higher cash levels (0.0099) suggests that increase the Z-score, implying lower risk-taking, but the effect is not statistically significant.

Table 4: Fixed Effect OLS Regression Result

Variables	**Financial Performance (ROE)**		**Risk-Taking Z-score**	
	Coefficient (Std. Error)	**Significance**	**Coefficient** (Std. Error)	**Significance**
Board Size	-1.547 (0.8165)	*	-0.1913 (0.1091)	*
Independent Director	-15.8696 (9.6693)		-2.3463 (1.4962)	
Female Director	12.6224 (8.9567)		-0.0007 (1.5778)	
Largest Shareholder	-24.5409 (5.7668)	***	-3.5811 (0.8374)	***
Foreign Shareholder	-9.2194 (3.4164)	**	-1.0977 (0.3385)	***
Stock Exchange	51.4173 (18.6672)	**	7.4056 (3.5203)	**
Total Asset	3.9676 (4.2379)		0.9852 (0.5998)	
Capital	-0.0348 (0.1476)		0.0673 (0.0236)	***
Cash	0.0377 (0.0452)		0.0099 (0.0074)	
_cons	-18.4435 (60.8282)		-9.1652 (8.7952)	

DISCUSSION

Financial Perfromance Discussion

Table 5 reveals several significant relationships between governance variables and bank financial performance, as measured by ROE. Larger board sizes are associated with lower financial performance, as indicated by the negative coefficient (-1.547, $p < 0.1$). The negative sign suggests that larger board sizes reduce ROE, implying that banks with larger boards tend to be less profitable. This could reflect inefficiencies in decision-making or diluted accountability within larger boards. Thus, we find support for the idea that smaller board size increased bank performance. The negative impact of Boardsize is consistent with previous studies (Yermack, 1996; Guest, 2009; Kasap, 2010; Guduk, 2012), suggesting that smaller board-size firms are more efficient than large ones. However, BS is statistically significant when the FE model is used, which contrasts with the findings of insignificant impact by Pathan and Paff (2013), Kutlu-Furtuna (2013), and Beycan (2013) and also in contrast to the findings of a positive FE coefficient by Adams and Mehran's (2012) as well as Bektas and Kaymak (2009).

Other board structure variables, such as gender diversity and independent directors, show no statistically significant effects on financial performance, suggesting their influence is inconclusive. The estimated coefficient of Independet directors (-15.8696) is negative which is consistent findings with Kasap (2010), Kutlu-Furtuna, (2013), Aebi *et al.* (2012), Adams and Mehran (2012), Bhagat and Black (2001), Van Essen *et al*., (2013), but our results are in contrast to Pathan and Paff, (2013) and Beycan, (2013). The positive coefficient for gender diversity (12.6224), suggesting that the presence of female directors might positively impact on ROE in this study. Finding a positive correlation between female directors and bank performance is consistent with Kutlu-Furtuna (2013), Pathan and Paff (2013), Carter *et al*. (2003) and Campbell and Minguez-Vera (2008), but they found statistically significant result.

Although the rate of equity traded in the Stock market (SM) is positively related to financial perfromance, the ownership rate of the biggest owner (LSH) and the existence of a foreign partner (Foreign) are negatively related to the performance. All these variables (SM, LSH, and Foreign) are statistically significant at the 1 % level, which is consistent with Gursoy and Aydoğan (2002), Beycan (2013), and Guduk (2012). Concentrated ownership by the largest shareholder significantly reduces financial performance. The negative sign indicates that an increase in ownership share by the largest shareholder lowers ROE, suggesting that concentrated ownership may prioritize personal benefits over profitability, consistent with principal-agent theory. Foreign ownership also significantly reduces financial performance, reflecting potential misalignments between foreign investors' strategies and local management objectives. In contrast, being listed on a stock exchange significantly improves financial performance. The positive sign indicates that stock exchange listings increase ROE, likely due to the

benefits of external monitoring, enhanced governance, and better access to capital markets. The effects of all control variables (i.e. TA, Capital, Cash) are insignificant to the banks' performance.

Risk Taking Discussion

Contrary to our hypotheses, a small bank board is associated with higher performance and lower risk-taking. This result is opposite with the findings of Pathan (2009) in the case of US banks, Rachdi and Ameur (2011) for Tunisian banks, Nakano and Nguyen (2012) for Japanese banks and Koerniadi *et al*. (2013) for New Zealand firms. The negative sign of independent director (-2.3463) indicates that a potential relationship between independent directors and increased risk-taking. It illustrates that independent board directors follows also bank executive directors, which resulted in higher risk-taking, but the presence of independent directors has no significant effect on risk-taking. This finding was found to be consistent with Pathan (2009), Rachdi and Ameur (2011), Koerniadi *et al*. (2013) and Ashbaugh-Skaife *et al*. (2006). The coefficient on Female directors is also negative (-.0007) and statistically insignificant for risk-taking. this suggests that the presence of female directors has no measurable impact on the Z-score or risk-taking in this study, which in turn was found to be consistent with Adams and Ferreira (2009), Berger *et al*. (2014) and Pathan (2009).

Ownership concentration variables (SM, LSH, Foreign) are statistically significant with risk taking. The largest shareholder significantly increases risk-taking, reflected in a strong negative coefficient (-3.5811). Foreign ownership also significantly raises risk, with a negative coefficient (-1.0977). These negative signs indicate that an increase in a larger ownership and foreign ownership reduces the Z-score, suggesting that foreign ownership and the largest shareholder is associated with higher risk-taking. LSH and Foreign results were consistent with Gursoy and Aydoğan's (2002) finding that was reported to be significant for total risk. In contrast, the rate of equity traded in the stock market (SM) is shown by a positive coefficient (7.4056, $p < 0.05$). The positive sign indicates that being listed on a stock exchange increases the Z-score. Since a higher Z-score corresponds to lower risk, this means that listed banks in stock exchange take on less risk. The coefficients of all control variables (TA, Capital, Cash) are positive, but only capital is significant. Higher capital levels similarly lower risk, with a positive coefficient (0.0673, $p < 0.01$). Similarly, Capital's results were consistent with Pathan's (2009).

Table 5: Regression Outcomes

Variables	Risk Taking	Financial Performance	Correlation Type	Significant
Higher Board Size **Small Board Size**	Higher Risk Lower Risk	Lower performance Higher performance	Negative for both outcomes	Yes
Independent Director	Slightly higher risk	No significant impact	Negative for both outcomes	No
Gender Diversity	No significant impact	No significant impact	Positive for performance, Negative for risk taking	No
Largest Ownership	Higher risk	Lower performance	Negative for performance, positive for risk-taking	Yes
Foreign Investor	Higher risk	Lower performance	Negative for both outcomes	Yes
Listed in Stock Market	Lower risk	Higher performance	**Positive** for both outcomes	Yes

CONCLUSION

This study investigated the relationship between corporate governance (CG) features such board structures, and ownership concentration with financial performance and risk-taking. By analysing 20 Turkish commercial banks from 2006 to 2012, we found that larger board sizes are associated with higher risk-taking and lower financial performance, highlighting inefficiencies in governance and decision-making. Conversely, smaller boards can reduce risk taking and increase financial performance. Thus, it indicates that small board more agile to make more efficient decisions while it may also lack the

necessary diversity of perspectives to properly mitigate risk. This reflects a potential trade-off for bank governance: smaller boards might boost short-term performance but could expose banks to greater long-term risks, particularly in volatile markets like Turkey.

Contrary to expectations, the role of independent directors was found to be statistically insignificant in influencing both financial performance and risk-taking. This result diverges from the widely held belief, supported by agency theory (Fama & Jensen, 1983), that independent directors effectively monitor managerial behaviour and reduce agency costs. One possible explanation for this finding is that, in the Turkish banking context, independent directors may lack sufficient power or influence to substantially alter the board's risk appetite or drive better financial outcomes. This result is consistent with studies in other emerging markets (e.g., Rachdi and Ameur, 2011), which suggest that regulatory requirements alone do not guarantee the effectiveness of independent directors. It may also reflect the need for more robust regulatory frameworks in emerging markets to ensure that independent directors can exercise absolute authority in shaping corporate governance. The study also found that gender diversity on boards—measured by the percentage of female directors—was insignificant in its relationship with financial performance and risk-taking. While prior studies, such as Carter et al. (2003) and Campbell and Minguez-Vera (2008), suggest that gender diversity improves governance outcomes by introducing diverse perspectives, these effects were not observed in Turkish banks. It could reflect the broader cultural and institutional challenges of implementing gender diversity in corporate boards in Turkey. Despite global efforts to increase female representation, the presence of women on Turkish bank boards may still be too limited to have a measurable impact on strategic decisions. Furthermore, the fact that female directors remain relatively rare in Turkish banks suggests that tokenism might dilute their influence, a common challenge in emerging markets.

Ownership structure plays a pivotal role such as concentrated ownership by the largest shareholder and foreign ownership significantly increases risk-taking and reduces financial performance. Large shareholders seeking to maximise returns may prioritise short-term gains through riskier investments, potentially jeopardising long-term bank stability (Gursoy & Aydogan, 2002). Foreign ownership may struggle to effectively monitor and influence bank management due to the additional exchange rate and political risks in Turkey or cultural or regulatory differences complicate oversight. In contrast, stock exchange listing significantly reduces risk-taking and enhances financial performance, suggesting that more liquid markets provide better governance and reduce risky behaviour by facilitating shareholder monitoring. It highlights the role of market transparency and liquidity in improving governance outcomes, particularly in emerging markets where ownership is often highly concentrated. This finding has important implications for CG practices, suggesting that bank regulators and managers may need to balance efficiency and risk oversight when determining optimal board size.

This study is not without limitations. The analysis is limited to 20 Turkish banks over six years, and the data does not account for directors' professional attributes, such as experience or networks, which may play an important role in board effectiveness. Additionally, this study focuses on a single emerging market, and the findings may not be generalisable to all emerging economies. Future research could extend this analysis by incorporating director characteristics (e.g., education, experience) to better understand the dynamics of board composition. Expanding the dataset to cover a longer period or additional banks. Using alternative performance and risk measures, such as Tobin's Q, shareholder returns, or systematic risk, provides a more comprehensive view of bank governance. Conducting comparative studies across multiple emerging markets to determine whether the findings are consistent in other contexts.

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