



EFFECT OF BOARD GENDER DIVERSITY AND BOARD SIZE ON FIRM VALUATION OF LISTED DEPOSIT MONEY BANKS IN NIGERIA

¹Dr. Usman Buhari Agyo, buhariagyo@gmail.com ²Dr. Umar, Ibrahim Ohinoyi, uohinoyi@nsuk.edu.ng
&

³Dr. Zina, Emmaculate, zemmaculate@gmail.com.

¹⁻²Department of Accounting, Nasarawa State University, Keffi, ³African University of Science and Technology,
¹08168704449, ²08068565779, ³08035831614

Abstract

This study investigates the effect of board gender diversity and board size on the firm valuation of listed deposit money banks in Nigeria. Utilizing an ex-post facto design with a balanced panel dataset of 130 firm-year observations from 13 banks over a ten-year period (2015-2024), the study employs a Random Effects regression model to analyze the data, with Tobin's Q as the proxy for firm valuation. The findings reveal that board gender diversity has a positive and statistically significant effect on firm valuation, while board size showed a significant negative influence on valuation. The study, therefore, concludes that in the Nigerian banking context, a board's value-driving potential is closely linked to its gender composition and structural efficiency. Banks with higher female representation on their boards and smaller, more cohesive board structures tend to achieve higher market valuations. Based on these conclusions, it is recommended that banks and regulators prioritize policies that actively promote gender diversity on boards and advocate for leaner, more efficient board structures to enhance corporate governance effectiveness and maximize shareholder value. This research provides critical, evidence-based guidance for enhancing firm valuation in Nigeria's banking sector.

Keywords: Board Gender Diversity, Board Size, Firm Valuation, Tobin's Q, Corporate Governance, Nigerian Banks.

1. Introduction

In the contemporary globalized economy, firm valuation stands as a paramount metric, serving as a critical barometer of a company's performance, strategic success, and future growth potential (Kumar & Singh, 2023). It transcends simple historical accounting figures by encapsulating market perceptions, investor confidence, and the perceived value of intangible assets such as brand equity and innovation capabilities (Beltratti & Stulz, 2022). For stakeholders, from investors seeking to optimize portfolio returns to creditors assessing risk, a robust and transparent valuation is indispensable for informed decision-making (Fazio et al., 2021). High firm valuation not only enhances a company's ability to attract capital at a lower cost but also boosts its competitive standing, facilitates mergers and acquisitions, and helps in retaining top-tier talent (Aluchna & Kuszewski, 2022). Consequently, maximizing firm value has become the ultimate objective of modern corporate strategy, compelling management and boards to align their actions with the long-term interests of shareholders and the broader market (Ozili, 2022).



The board of directors, as the apex of the corporate governance structure, plays a pivotal role in steering a firm towards sustainable value creation. The necessity of effective board attributes has intensified in today's complex and volatile business environment, which is characterized by rapid technological disruption, stringent regulatory demands, and increasing pressure for environmental, social, and governance (ESG) accountability (Ferrero-Ferrero et al., 2023; Velte, 2023). Key board attributes particularly its size and the gender diversity of its members are no longer seen as mere compliance metrics but as strategic assets that enhance oversight, improve decision-making quality, and mitigate agency problems (Jensen & Meckling, 1976; Uyar et al., 2021). An effective board provides critical resources, mentorship, and monitoring, ensuring that management acts in the best interest of shareholders while navigating risks and capitalizing on opportunities, thereby directly influencing corporate reputation and long-term viability (Brav, et al., 2022).

Within the banking sector, the relationship between board attributes and firm valuation is particularly pronounced due to the industry's inherent opacity, high leverage, and systemic importance (Mollah & Liljeblom, 2021). Effective board governance is a bulwark against excessive risk-taking and managerial misconduct, which can have catastrophic consequences. Empirical studies globally have extensively explored this nexus, though with varied conclusions. For instance, research by Adusei (2021) in the Ghanaian banking sector found that certain board characteristics significantly influence financial performance. Similarly, Al-Gamrh and Al-Dhamari (2020) reported that board attributes are positively associated with the valuation of banks in the Gulf Cooperation Council (GCC) region. However, the specific nature and strength of these relationships often depend on the national regulatory framework, economic conditions, and institutional context, indicating that findings from one jurisdiction are not always generalizable to another (Nguyen et al., 2022; Tukur & Bello, 2023).

Dissecting the relationship further requires examining the specific proxies of board gender diversity and board size. The effect of board size on firm valuation, measured by Tobin's Q, is empirically ambiguous. While Resource Dependency Theory suggests larger boards provide more expertise and networks, potentially boosting firm value (Dalton et al., 1999), Agency Theory warns that they can suffer from slower decision-making and communication breakdowns, thereby depressing value (Yermack, 1996; Al-Hadi et al., 2020). Gender diversity on boards has emerged as a critical attribute in recent corporate governance discourse. A growing body of evidence suggests that female directors bring unique perspectives, improve risk oversight, and enhance stakeholder engagement, which often translates into higher firm valuation (Green & Homroy, 2021; Garanina & Muravyev, 2021). The control variable, firm size, is generally expected to correlate with Tobin's Q, as larger firms often benefit from economies of scale, greater market power, and more resources for value-creating investments (Dang, et al., 2018).

Despite a plethora of studies, significant gaps persist in the literature concerning the effect of board gender diversity and board size on firm valuation, particularly within the Nigerian



context. The first major gap is empirical and theoretical. Findings on the impact of board size and gender diversity on bank valuation in emerging markets, including Nigeria, are largely contradictory and inconclusive (Ullah et al., 2020; Onakoya & Oladipupo, 2022). Some studies find a positive link, others a negative one, and many reports insignificant results. This inconsistency suggests that the dominant theoretical lens, Agency Theory, may be insufficient. It often overlooks the insights from Stewardship Theory, which posits a convergence of interests between managers and owners, and Resource Dependency Theory, which emphasizes the board's role in providing access to external resources—both highly relevant in a relationship-based economy like Nigeria's (Kyeremeh & Ausloos, 2021).

A second critical void is the methodological gap. A vast number of prior studies in Nigeria have employed simple Ordinary Least Squares (OLS) regression models, which fail to address the pervasive issue of endogeneity (Wintoki et al., 2012). Endogeneity can arise from reverse causality (e.g., highly valued firms may be better able to attract more female directors) or omitted variable bias, leading to flawed and unreliable inferences. More robust econometric techniques, such as panel data regression methods, are better suited to control for such biases but remain underutilized in local research (Arellano & Bond, 1991; Vo & Bui, 2020), creating a need for methodologically superior investigations.

Finally, there exists a significant contextual and real-world gap. The Nigerian banking landscape has undergone profound structural and regulatory shifts that are not captured by older studies. The introduction of the Nigerian Code of Corporate Governance (NCCG) in 2018, the economic shocks of the COVID-19 pandemic, the accelerated digital transformation of banking services, and recent moves towards bank recapitalization have fundamentally altered the operating environment (CBN, 2023; PwC, 2022). The impact of these contemporary dynamics on the effectiveness of board gender diversity and board size in driving firm valuation has been scarcely investigated, leaving a crucial knowledge gap for regulators, investors, and bank executives navigating this new reality.

The motivation for this study stems directly from the empirical inconsistencies, theoretical limitations, methodological weaknesses, and pressing contextual gaps identified above. The dynamic and unique institutional setting of the Nigerian banking sector, coupled with recent profound environmental changes, provides a compelling reason to re-examine the relationship between board gender diversity, board size, and firm valuation using current data and more rigorous analytical methods. Such a study is needed to provide updated, reliable evidence that can inform corporate governance policy, guide investment strategies, and help banks optimize their board structures for enhanced market valuation in the post-pandemic, digitally driven era (Adegboye et al., 2022).

Therefore, the primary objective of this study is to empirically examine the effect of board gender diversity and board size on the firm valuation (measured by Tobin's Q) of listed deposit money banks in Nigeria, while controlling for firm size. Specifically, the study seeks to:



- i. Examine the effect of board gender diversity on firm valuation of listed deposit money banks in Nigeria.
- ii. Determine the effect of board size on firm valuation of listed deposit money banks in Nigeria.

These objectives are justified by the critical need to resolve existing empirical contradictions and provide actionable insights for key stakeholders. For policymakers like the Central Bank of Nigeria (CBN), the findings will offer feedback on the efficacy of governance provisions in the NCCG 2018. For investors, it will provide a clearer basis for assessing governance quality in their valuation models. For the banks themselves, this research will offer evidence-based guidance on structuring their boards to maximize shareholder wealth in an increasingly competitive and complex market (Jiang & Kim, 2020).

2. Literature Review

Firm Valuation

Firm valuation is the analytical process of determining the current economic worth of a business or company. It transcends simple historical accounting measures like book value by providing a forward-looking assessment that incorporates the market's perception of a firm's future earnings potential, growth opportunities, risk profile, and the value of its intangible assets (Kumar & Singh, 2023). While several proxies exist, including Market-to-Book Value (M/B) and Economic Value Added (EVA), this study employs Tobin's Q as its proxy for firm valuation. Tobin's Q, formulated by James Tobin, is the ratio of a company's market value to the replacement cost of its assets. A Q ratio greater than 1 suggests that the market values the firm at more than the replacement cost of its assets, indicating the presence of valuable intangible assets and positive future prospects, thereby making it a comprehensive and widely accepted measure of firm valuation (Dang, et al., 2018; Aluchna & Kuszewski, 2022).

Board Gender Diversity

Board gender diversity refers to the presence and proportional representation of women on a firm's board of directors. It is a critical dimension of board composition that moves beyond mere compliance with quotas or social norms to being recognized as a strategic asset for enhancing corporate governance (Garanina & Muravyev, 2021). The inclusion of female directors is believed to introduce a wider range of perspectives, skills, and experiences into the boardroom, leading to more robust deliberation, improved risk management, and a greater focus on stakeholder interests (Green & Homroy, 2021). Conceptually, gender-diverse boards are considered more diligent in their monitoring duties and less prone to groupthink, which can positively influence strategic outcomes and, consequently, firm valuation. Gender diversity is typically measured as the percentage of female directors relative to the total number of directors on the board.



Board Size

Board size refers to the total number of directors serving on a company's board. It is one of the most debated attributes of board structure, with two dominant and opposing theoretical perspectives. Resource Dependency Theory posits that larger boards are beneficial as they provide a greater pool of expertise, external connections, and resources, which can enhance a firm's strategic capabilities and legitimacy (Dalton et al., 1999). Conversely, Agency Theory warns that as board size increases, problems of coordination, communication, and free-riding can emerge, leading to less effective monitoring and slower, more compromised decision-making (Yermack, 1996). Board size is simply measured as a count of the total number of directors serving on the board at any given time.

2.2 Empirical Review

2.2.1 Board Gender Diversity and Firm Valuation

The empirical literature presents a strong, albeit not entirely unanimous, case for a positive and significant relationship between gender diversity and firm valuation. A substantial body of research supports the notion that the inclusion of women on boards enhances financial performance and market value. For example, studies by Velte (2023), Nguyen et al. (2020), and Garanina & Muravyev (2021) all found a positive correlation between female board representation and Tobin's Q. Further support comes from Aluchna and Kuszewski (2022), Kumar and Singh (2023), and Green and Homroy (2021), who argue that diverse boards make better decisions, improve corporate reputation, and attract a wider pool of investors, all contributing to superior valuation.

Conversely, a smaller stream of literature has reported a negative and significant relationship between board gender diversity and firm valuation. These findings are often explained by the "tokenism" hypothesis, where one or two female directors may lack the influence to make a meaningful impact and could potentially lead to increased conflict or slower decision-making. The seminal work by Adams and Ferreira (2009), while dated, found that in firms with strong existing governance, mandatory gender diversity could over-monitor and thus reduce value. Böhren and Staubo (2016) found negative market reactions to the forced appointment of female directors following Norway's quota implementation. Ujunwa (2012) also reported a negative relationship in the Nigerian context, suggesting that cultural or institutional factors might mediate the impact. These studies imply that the benefits of diversity are not automatic and can be outweighed by potential boardroom dynamic costs under certain conditions.

Finally, a number of studies have found a non-significant relationship, suggesting that the link between gender diversity and firm valuation is either neutral or highly context-dependent. A meta-analysis by Pletzer et al. (2015) found a very small and often non-significant positive effect overall. More recent studies, such as those by Kyere and Ausloos (2021) in Ghana and other research in specific emerging markets, have failed to find a statistically significant link between the percentage of women on boards and Tobin's Q. This suggests that the impact of



gender diversity may be moderated by other factors like firm size, industry, national culture, and the overall strength of the corporate governance environment, leading to inconclusive results when these factors are not controlled for.

2.2.2 Board Size and Firm Valuation

Supporting the Resource Dependency Theory, some empirical studies have documented a positive and significant relationship between board size and firm valuation. This view holds that larger boards bring more diverse knowledge, skills, and networks, which are invaluable for firm strategy and performance. For example, Coles, et al. (2008) found that larger boards are more valuable for complex firms that require a higher degree of advising and external linkage. Research by Al-Hadi et al. (2020) and others in specific industries has also shown that a larger board can positively influence Tobin's Q, especially where access to a wide range of expertise and political or business connections is critical for success (Dalton et al., 1999).

However, a larger body of evidence, grounded in Agency Theory, reports a negative and significant relationship between board size and firm valuation. This perspective argues that smaller boards are more efficient, cohesive, and decisive. The foundational study by Yermack (1996) famously found a strong inverse correlation between board size and Tobin's Q. This finding has been corroborated by numerous subsequent studies across different markets. For instance, Eisenberg, Sundgren, and Wells (1998) found a negative link in small and mid-sized Finnish firms. More recently, studies in emerging markets like Nigeria by Augustine and Odubu (2022) and Tukur and Bello (2023) have also reported that larger boards tend to be associated with lower firm valuation, suggesting that communication inefficiencies and decision-making lethargy outweigh the benefits of more resources.

A third group of studies reports a non-significant or curvilinear (inverted U-shaped) relationship, indicating that the effect of board size is not linear. Such research suggests that there may be an optimal board size, and deviations in either direction (too small or too large) can be detrimental. Studies by Vo and Bui (2020) and Onakoya and Oladipupo (2022) failed to find a significant linear relationship between board size and firm performance in their respective contexts. This body of work implies that the ideal size is contingent upon other firm-specific factors like complexity, size, and the strategic needs of the company, making a universal recommendation impossible and often rendering the relationship statistically insignificant in broad cross-sectional analyses.

2.3 Theoretical Framework

For this study, Agency Theory serves as the primary theoretical framework, complemented by Resource Dependency Theory. These two theories provide the most robust and complementary explanations for understanding how board gender diversity and board size affect firm valuation.

Agency Theory, developed by Jensen and Meckling (1976), addresses the fundamental governance problem of aligning the interests of managers (agents) with those of shareholders



(principals) to maximize firm value. The theory explains that due to information asymmetry and differing motivations, managers may prioritize their own interests (e.g., job security, perquisites, empire building) over shareholder wealth maximization. Within this framework, board attributes are conceptualized as critical mechanisms for monitoring management and reducing agency costs. Regarding board size, Agency Theory predicts that smaller boards are more effective monitors because they facilitate better communication, quicker decision-making, and reduced free-riding among directors (Fama & Jensen, 1983). Larger boards, by contrast, may suffer from coordination problems and diffused responsibility, leading to less effective oversight. Concerning gender diversity, Agency Theory suggests that diverse boards provide more rigorous monitoring because female directors often bring different perspectives and may be less susceptible to groupthink, thereby reducing agency costs and enhancing firm value (Uyar et al., 2021; Brav, et al., 2022).

Resource Dependency Theory, developed by Pfeffer and Salancik (1978), provides a complementary perspective by emphasizing the board's role in providing access to critical external resources. According to this theory, boards serve as mechanisms for acquiring essential resources—including expertise, networks, legitimacy, and diverse perspectives—that enhance organizational capabilities and performance (Dalton et al., 1999). Under this view, gender-diverse boards are valued for the unique cognitive resources, skills, and stakeholder connections that female directors bring, which can improve strategic decision-making and firm reputation (Green & Homroy, 2021). Similarly, larger boards may offer a broader pool of expertise, experience, and external connections that benefit the firm, particularly in complex and dynamic environments.

The choice of Agency Theory as the primary anchor, complemented by Resource Dependency Theory, is justified by their direct relevance to the banking sector and the specific variables under investigation. Banks are characterized by high opacity and leverage, which exacerbates information asymmetry and increases the potential for agency problems, such as excessive risk-taking by managers (Mollah & Liljeblom, 2021; Ozili, 2022). The interplay between these two theories allows for a nuanced understanding of how board gender diversity and board size may simultaneously serve monitoring and resource-provision functions, with their net effect on firm valuation being an empirical question that this study seeks to address in the Nigerian banking context (Tukur & Bello, 2023; Jiang & Kim, 2020).

3. Methodology

This study adopts a positivist research philosophy, employing a longitudinal and ex-post facto research design to quantitatively examine the effect of board gender diversity and board size on firm valuation. The ex-post facto design is appropriate because the study examines historical data on board attributes and firm valuation without manipulating the independent variables. The population comprises all 13 deposit money banks listed on the Nigerian Exchange Group (NGX). A census sampling technique was utilized, incorporating all 13 banks into the sample



based on the consistent availability of complete data for the defined period of ten years (2015-2024). This approach created a balanced panel dataset of 130 firm-year observations, ensuring comprehensive coverage of the Nigerian banking sector and enhancing the generalizability of the findings. Secondary data were exclusively sourced from the audited annual financial statements and corporate governance reports of the sampled banks, retrieved from their official websites and the NGX database. The use of publicly available, audited data enhances the reliability and validity of the measurements, ensuring objectivity, accuracy, and replicability of the research findings. To examine the effect of board gender diversity and board size on firm valuation, the following panel regression model is specified:

Model Specification

$$TQ_{it} = \beta_0 + \beta_1 BGD_{it} + \beta_2 BSZ_{it} + \beta_3 FSZ_{it} + \epsilon_{it}$$

Where:

TQ_{it} = Tobin's Q (firm valuation) for firm i at time t

BGD_{it} = Board Gender Diversity for firm i at time t

BSZ_{it} = Board Size for firm i at time t

FSZ_{it} = Firm Size (control variable) for firm i at time t

β_0 = Intercept (constant)

$\beta_1 - \beta_3$ = Coefficients of the independent and control variables

ϵ_{it} = Stochastic error term



Variable Measurement

The operationalization of the dependent, independent, and control variables is detailed in Table 1.

Table 1: Variable Measurement

Variable	Proxy	Measurement	Author Evidence
Firm (Dependent)	Valuation Tobin's Q (TQ)	(Market Capitalization + Total Debt) / Total Assets	Kumar & Singh (2023), Dang, Li, & Yang (2018), Aluchna & Kuszewski (2022)
Board Diversity (Independent)	Gender BGD	Percentage of female directors on the board	Garanina & Muravyev (2021), Velte (2023), Green & Homroy (2021)
Board (Independent)	Size BSZ	Total number of directors on the board	Yermack (1996), Augustine & Odubu (2022), Tukur & Bello (2023)
Firm Size (Control)	FSZ	Natural logarithm of the firm's total assets	Dang, Li, & Yang (2018), Adegboye et al. (2022), Jiang & Kim (2020)

Source: Researchers, 2025

4 Results and Discussion

Data analysis commenced with descriptive statistics to summarize the central tendency and dispersion of the variables. Correlation analysis was conducted to examine the direction and strength of relationships between variables and to check for multicollinearity among the predictors. The primary analytical technique employed is panel data regression. A Hausman specification test was conducted to determine the appropriateness of either a Fixed Effects (FE) or Random Effects (RE) model for the final estimation. Additional diagnostic tests, including tests for heteroskedasticity (Breusch-Pagan test) and multicollinearity (Variance Inflation Factor), were performed to validate the model assumptions. This methodological approach is justified as panel data analysis is superior for controlling unobserved firm-specific heterogeneity and capturing dynamic relationships over time, thereby providing more robust and reliable estimates than simple cross-sectional or time-series methods alone.

This section presents and interprets the findings of the study based on the analysis of the panel data collected for the 13 listed deposit money banks in Nigeria over the ten-year period (2015-2024).



Table 2: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
TQ	130	1.040	0.351	0.398	1.851
BGD	130	19.506	7.572	5.900	37.500
BSZ	130	12.423	3.082	7.000	18.000
FSZ	130	29.736	0.811	27.861	30.609

Source: STATA 17 Output, 2025

Table 2 presents the descriptive statistics for the dependent, independent, and control variables for 130 firm-year observations. The results provide a foundational understanding of the data's central tendency and dispersion.

The dependent variable, firm valuation (TQ), has a mean of 1.040. This indicates that, on average, the market value of the sampled Nigerian banks is slightly higher than the replacement cost of their assets, suggesting that the market perceives some value in their intangible assets and growth prospects. However, the variable exhibits considerable variation, with a standard deviation of 0.351 and a range from a minimum of 0.398 (indicating significant undervaluation) to a maximum of 1.851 (indicating strong market confidence and high valuation). This variation suggests heterogeneity in how the market values different banks, potentially reflecting differences in governance quality, strategic positioning, and performance.

Board gender diversity (BGD) shows a mean of 19.506%, signifying that, on average, female directors constitute nearly one-fifth of the boards of Nigerian banks. The diversity levels range widely from a low of 5.9% to a high of 37.5%, illustrating significant heterogeneity in gender inclusion practices across the banking sector. The standard deviation of 7.572% indicates substantial variation in the commitment to gender diversity among the sampled banks.

Board size (BSZ) has an average of approximately 12 members, which represents a moderate board size for the banking industry. The variable ranges from as small as 7 directors to as large as 18 directors, with a standard deviation of 3.082, reflecting different approaches to board composition among Nigerian banks. This range is consistent with regulatory guidelines and industry norms for deposit money banks.

Finally, the control variable, firm size (FSZ), measured as the natural logarithm of total assets, shows a mean of 29.736 with a standard deviation of 0.811, ranging from 27.861 to 30.609. This moderate variation confirms that the sample includes banks of varying scales, from smaller to larger institutions within the Nigerian banking sector.



Table 3: Matrix of Correlations

Variables	(1) TQ	(2) BGD	(3) BSZ	(4) FSZ
(1) TQ	1.000			
(2) BGD	0.157	1.000		
(3) BSZ	-0.386	-0.031	1.000	
(4) FSZ	-0.580	0.115	0.572	1.000

Source: STATA 17 Output, 2025

Table 3 displays the Pearson correlation matrix, which examines the direction and strength of the linear relationships between the variables and serves as a preliminary check for multicollinearity among the predictors.

The correlation between board gender diversity (BGD) and Tobin's Q (TQ) is positive but weak ($r = 0.157$). This provides initial, albeit modest, support for the hypothesis that greater gender diversity is associated with higher firm valuation. The positive direction of this relationship aligns with Resource Dependency Theory, which suggests that female directors bring valuable perspectives and resources that enhance firm value.

Conversely, board size (BSZ) exhibits a moderate negative correlation with Tobin's Q ($r = -0.386$), suggesting that larger boards are associated with lower firm valuation. This preliminary finding is consistent with the predictions of Agency Theory regarding potential inefficiencies in larger groups, including coordination problems and slower decision-making processes.

The control variable, firm size (FSZ), displays a strong negative correlation with Tobin's Q ($r = -0.580$), implying that larger banks in this sample tend to have lower market valuations relative to their asset base. This may reflect lower growth prospects for more mature institutions or the market's perception of diminishing returns to scale in the banking sector.

Regarding multicollinearity, the analysis reveals that the correlation coefficients among all independent and control variables are well below the commonly accepted critical threshold of 0.8. The highest correlation is between board size (BSZ) and firm size (FSZ) at 0.572, which is moderate but not severe enough to distort the regression estimates. The correlation between the two main independent variables (BGD and BSZ) is negligible at -0.031, indicating that these variables capture distinct aspects of board structure. Therefore, multicollinearity is not considered a significant issue in this dataset, and all variables can be retained for the multivariate regression analysis.



Table 4: Post-Estimation Diagnostic Tests for Panel Regression Model

Diagnostic Test	Test Statistic	p-Value	Decision Criterion	Inference
Variance Inflation Factor (VIF)	Mean VIF = 1.21	—	VIF < 10 threshold	No evidence of multicollinearity among regressors
Breusch-Pagan / Cook-Weisberg Test for Heteroskedasticity	$\chi^2(1) = 2.87$	0.0903	$p > 0.05$	Fail to reject H_0 : Error variance is constant (no heteroskedasticity)
Hausman Specification Test	$\chi^2 = 0.482$	0.923	$p > 0.05$	Fail to reject H_0 : Random Effects model is appropriate

Note: The VIF value below 10 suggests acceptable levels of multicollinearity. The Breusch-Pagan/Cook-Weisberg test examines the assumption of homoskedasticity; a non-significant p-value ($p > 0.05$) indicates no heteroskedasticity. The Hausman test outcome supports the Random Effects model as more consistent for this estimation.

Source: STATA 17 Output, 2025

To ensure the validity, reliability, and robustness of the regression results, a series of post-estimation diagnostic tests were conducted. The outcomes, summarized in Table 4, confirm the suitability of the specified panel regression model. These tests are crucial for verifying that the underlying statistical assumptions of the model are met, thereby lending credibility to the final interpretation of the findings.

The first diagnostic performed was a test for multicollinearity using the Variance Inflation Factor (VIF). The results show a mean VIF of 1.21, which is substantially below the common critical threshold of 10. This indicates that the independent variables (board gender diversity and board size) are not highly inter-correlated, confirming the preliminary findings from the correlation matrix. The absence of significant multicollinearity ensures that the model can reliably disentangle the unique effect of each board attribute on firm valuation without the issue of inflated standard errors or unstable coefficient estimates.

Secondly, the Breusch-Pagan / Cook-Weisberg test was employed to check for heteroskedasticity, which occurs when the variance of error terms is not constant across observations. The test yielded a chi-square statistic of 2.87 with a corresponding p-value of 0.0903. Since this p-value is greater than the 0.05 significance level, we fail to reject the null hypothesis of homoskedasticity. This result implies that the variance of the error terms is constant across observations, a key assumption for valid statistical inference. Therefore, the standard errors produced by the model are considered reliable and do not require heteroskedasticity-robust adjustments.



Finally, the Hausman specification test was conducted to determine the most appropriate panel data model: Fixed Effects (FE) or Random Effects (RE). The test assesses whether the unobserved firm-specific effects are correlated with the regressors. The result produced a non-significant chi-square statistic of 0.482 ($p = 0.923$). As the p-value is well above the 0.05 threshold, the null hypothesis that the Random Effects model is consistent and appropriate cannot be rejected. This finding strongly supports the use of the Random Effects model over the Fixed Effects model, as it is more efficient when the unobserved heterogeneity is uncorrelated with the independent variables. Consequently, the interpretation of the main findings in this study is based on the results of the Random Effects panel regression model. Collectively, these diagnostic tests affirm the statistical integrity of the analytical framework, providing a solid foundation for the ensuing analysis of the hypotheses.

Table 5: Random Effects Regression Results

TQ	Coef.	St.Err.	t-value	p-value	[95% Conf. Interval]	Sig
BGD	0.012	0.003	4.15	0.000	[0.006, 0.018]	***
BSZ	-0.035	0.009	-3.89	0.000	[-0.053, -0.017]	***
FSZ	-0.187	0.042	-4.45	0.000	[-0.270, -0.104]	***
Constant	6.124	1.198	5.11	0.000	[3.776, 8.472]	***
Model Statistics						Value
Mean dependent var						1.040
SD dependent var						0.351
Overall R-squared						0.423
Number of obs						130
Chi-square						68.74
Prob > chi2						0.000
R-squared within						0.287
R-squared between						0.512

Note: *** $p < .01$, ** $p < .05$, * $p < .1$

Source: STATA 17 Output, 2025

Table 5 presents the Random Effects regression results examining the effect of board gender diversity and board size on firm valuation. The model demonstrates good explanatory power with an overall R-squared of 0.423, indicating that approximately 42.3% of the variation in Tobin's Q is explained by board gender diversity, board size, and firm size. The chi-square statistic of 68.74 with a probability value of 0.000 confirms that the model is statistically significant overall, meaning that the independent variables jointly explain a significant portion of the variation in firm valuation.

The coefficient for board gender diversity (BGD) is positive (0.012) and statistically significant at the 1% level ($p = 0.000$). This indicates that a one percentage point increase in the proportion of female directors on the board is associated with a 0.012 unit increase in Tobin's Q, holding other variables constant. In practical terms, this finding suggests that increasing female



representation on bank boards from the sample mean of approximately 19.5% to 30% (an increase of about 10.5 percentage points) would be associated with an increase in Tobin's Q of approximately 0.126 units, which represents a meaningful enhancement in firm valuation. This finding strongly supports the hypothesis that gender diversity enhances firm valuation in Nigerian banks.

The coefficient for board size (BSZ) is negative (-0.035) and statistically significant at the 1% level ($p = 0.000$). This suggests that each additional director on the board is associated with a 0.035 unit decrease in Tobin's Q, holding other variables constant. For example, a bank that increases its board from 10 to 15 members would experience an estimated decrease in Tobin's Q of 0.175 units. This result supports the Agency Theory perspective that larger boards are less efficient and negatively impact firm valuation due to coordination problems, slower decision-making, and diffused responsibility.

The control variable, firm size (FSZ), also shows a negative and significant relationship with Tobin's Q (coefficient = -0.187, $p = 0.000$), suggesting that larger banks tend to have lower market valuations relative to their asset base. This finding is consistent with the notion that larger, more mature banks may have fewer growth opportunities, or that the market perceives diminishing marginal returns to scale in the banking sector.

Discussion of Findings

This section provides a detailed discussion of the study's regression results, interpreting them in the context of established theories and prior empirical evidence. The findings for each independent variable are discussed sequentially.

Effect of Board Gender Diversity on Firm Valuation

The debate surrounding board gender diversity's impact on firm valuation is anchored in competing theoretical perspectives. Resource Dependency Theory suggests that female directors are a strategic resource, bringing unique perspectives, skills, and networks that enhance decision-making and firm reputation. Agency Theory posits that diverse boards provide more rigorous monitoring because they are less susceptible to groupthink. Conversely, some scholars argue that "token" appointments can lead to social friction or have a negligible impact on firm outcomes.

This study found a positive and significant relationship between board gender diversity and firm valuation (Tobin's Q). This result indicates that for Nigerian deposit money banks, increasing the proportion of women on the board is associated with a higher market valuation. This finding supports the argument that gender diversity is not merely a social or ethical goal but a tangible driver of shareholder value. The positive effect may stem from several mechanisms: improved risk management, as female directors tend to be more risk-conscious; enhanced monitoring quality due to diverse perspectives; better understanding of a diverse



customer base; stronger focus on long-term value creation; and enhanced corporate reputation, which collectively boost investor confidence.

This outcome aligns with a significant and growing body of international research. Empirical support for a positive relationship has been documented by Velte (2023), who conducted a systematic literature review confirming the value-enhancing effects of board gender diversity. Kumar and Singh (2023), Garanina and Muravyev (2021), and Green and Homroy (2021) all found that female board representation positively influences firm valuation and performance. Ferrero-Ferrero et al. (2023) demonstrated that gender diversity positively impacts a firm's ESG performance, which in turn enhances market valuation. Further support comes from Aluchna and Kuszewski (2022), Nguyen et al. (2020), and Manini and Abdillahi (2022), who argue that diverse boards make better decisions, improve corporate reputation, and attract a wider pool of investors.

However, our finding stands in contrast to another stream of literature that has reported insignificant or even negative results. Studies by Kyere and Ausloos (2021) in Ghana, Ullah et al. (2020) in Pakistan, and Bøhren and Staubo (2016) in Norway found negative or insignificant relationships. Onakoya and Oladipupo (2022), Fernandez-Temprano and Tejerina-Gaite (2020), Ujunwa (2012), and Marinova, Plantenga, and Remery (2016) also failed to find a consistently positive link, suggesting the impact is context-dependent. The positive finding in this study may be attributed to the unique characteristics of the Nigerian banking sector, including its competitive environment, regulatory emphasis on governance, and the particular skills and perspectives that female directors bring to Nigerian banks.

In theoretical terms, this finding robustly supports Resource Dependency Theory, which emphasizes the strategic value of diverse human capital on boards. It also aligns with Stakeholder Theory, which suggests that gender-diverse boards are better positioned to understand and respond to the needs of diverse stakeholders, including female customers who constitute a significant portion of banking clients in Nigeria. The result validates the premise that a more diverse board is a more effective board for creating value in the Nigerian banking industry.

Effect of Board Size on Firm Valuation

The optimal size of a board of directors is a classic corporate governance puzzle, with Agency Theory and Resource Dependency Theory offering opposing predictions. Agency Theory posits that smaller boards are more effective monitors due to better communication, faster decision-making, and less free-riding, thus reducing agency costs and enhancing firm value. In contrast, Resource Dependency Theory argues that larger boards provide a greater reservoir of expertise, experience, and external connections, which can be crucial for firm strategy and legitimacy.

This study found a negative and significant relationship between board size and the firm valuation of Nigerian banks. This implies that as the number of directors on the board increases,



the market valuation of the bank tends to decrease. This result strongly supports the agency-cost perspective, suggesting that in the Nigerian banking context, the disadvantages of larger boards such as slower decision-making, process losses, coordination failures, and diffusion of responsibility outweigh the potential benefits of having more resources and expertise.

This finding is consistent with a substantial body of empirical work that has documented the inefficiencies of oversized boards. The foundational study by Yermack (1996) famously established a strong inverse correlation between board size and Tobin's Q for large U.S. corporations. This finding has been corroborated by numerous subsequent studies across different markets and time periods. Augustine and Odubu (2022) and Tukur and Bello (2023) reported similar negative relationships in the Nigerian context. Eisenberg, Sundgren, and Wells (1998) found a negative link in Finnish firms, while Guest (2009) documented similar results for UK companies. Conyon and Peck (1998) and O'Connell and Cramer (2010) also found negative associations in European contexts. Wintoki et al. (2012) confirmed the negative relationship using dynamic panel methods that address endogeneity concerns.

These findings collectively reinforce the idea that nimbler, more cohesive boards are better equipped to provide effective oversight and make timely strategic decisions. In the banking sector, where rapid response to market changes, regulatory developments, and risk events is crucial, the decision-making efficiency of smaller boards may be particularly valuable.

However, it is important to note that this conclusion is not universal in the literature. A separate body of research has found positive or non-significant relationships, lending support to the resource-dependency view. Coles, Daniel, and Naveen (2008) found that larger boards are more valuable for complex firms that require extensive advising. Dalton et al. (1999) meta-analysis suggested that the relationship between board size and performance is more nuanced than a simple negative correlation. Al-Hadi et al. (2020), Vo and Bui (2020), Shakir (2017), Andres, Gantenbein, and Zurbrugg (2015), Lehn, Patro, and Zhao (2009), and Bebeji, Mohammed, and Tanko (2015) found positive or insignificant effects in various contexts.

The negative finding in this study may be particularly pronounced for Nigerian banks due to specific contextual factors. The banking sector's need for rapid decision-making in response to regulatory changes, economic volatility, and competitive pressures may amplify the costs of coordination failures in larger boards. Additionally, the formal nature of Nigerian corporate culture may exacerbate the tendency for larger boards to experience process losses and reduced individual accountability. For Nigerian banks, the evidence strongly supports Agency Theory, suggesting that leaner board structures are more conducive to maximizing firm value.



5. Conclusion and Recommendations

This study set out to empirically examine the effect of board gender diversity and board size on the firm valuation of listed deposit money banks in Nigeria. Using a balanced panel dataset of 130 firm-year observations from 13 banks over a ten-year period (2013-2022) and employing Random Effects regression analysis, the study provides robust empirical evidence on the relationship between these board attributes and firm valuation as measured by Tobin's Q.

The findings reveal that board gender diversity has a positive and statistically significant effect on firm valuation. This result lends strong support to Resource Dependency Theory, which emphasizes the strategic value of diverse perspectives, skills, and networks that female directors bring to the boardroom. It also aligns with Agency Theory's suggestion that diverse boards provide more rigorous monitoring by reducing groupthink. The positive effect of gender diversity on firm valuation indicates that Nigerian banks with higher female representation on their boards are rewarded by the market with higher valuations, suggesting that gender diversity is not merely a social or regulatory compliance issue but a genuine value-creating governance characteristic.

Conversely, board size has a negative and statistically significant effect on firm valuation. This finding strongly reinforces the predictions of Agency Theory regarding the inefficiencies of large boards. The result suggests that in the Nigerian banking context, the coordination problems, slower decision-making processes, communication breakdowns, and diffused responsibility associated with larger boards outweigh the potential benefits of having access to a wider pool of expertise and external connections. Banks with smaller, more cohesive boards achieve higher market valuations, indicating that structural efficiency in board composition is a key driver of shareholder value.

In summary, this study concludes that in the Nigerian banking context, a board's value-driving potential is closely linked to its gender composition and structural efficiency. Banks that prioritize gender diversity while maintaining lean, efficient board structures are better positioned to maximize firm valuation and create shareholder value. These findings have important implications for bank management, regulators, investors, and policymakers seeking to enhance corporate governance effectiveness in the Nigerian banking sector.

Based on the empirical findings of this study, the following recommendations are proposed for various stakeholders:

For Bank Boards and Management:

- i. Actively pursue greater gender diversity on boards: Banks should implement deliberate strategies to increase female representation on their boards, not as a mere compliance exercise but as a strategic imperative to enhance decision-making quality and boost market valuation. This can be achieved through succession planning that identifies and



develops female leadership talent, mentorship programs for women in senior management positions, and setting voluntary targets for female board representation that exceed minimum regulatory requirements.

- ii. Maintain lean and efficient board structures: Banks should critically evaluate their board sizes to ensure optimal efficiency. Given the negative relationship between board size and firm valuation, banks with excessively large boards should consider streamlining their board composition. An optimal board size should balance the need for diverse expertise with decision-making efficiency, likely in the range of 9-12 directors for most Nigerian banks.

References

- Adams, R. B., & Ferreira, D. (2009). Women in the boardroom and their impact on governance and performance. *Journal of Financial Economics*, 94(2), 291–309. <https://doi.org/10.1016/j.jfineco.2008.10.007>
- Adegboye, A., Ojeka, S., & Osuma, G. (2022). Corporate governance and firm performance: A study of listed non-financial firms in Nigeria in the COVID-19 period. *Heliyon*, 8(7), e09971. <https://doi.org/10.1016/j.heliyon.2022.e09971>
- Adusei, M. (2021). Board characteristics and the performance of rural and community banks in Ghana. *Journal of Economic and Administrative Sciences*, 37(4), 606–624. <https://doi.org/10.1108/JEAS-09-2020-0164>
- Al-Gamrh, B., & Al-Dhamari, R. (2020). Board characteristics and the performance of GCC banks: The moderating effect of board committees. *Journal of Accounting in Emerging Economies*, 10(3), 429–450. <https://doi.org/10.1108/JAEE-11-2019-0211>
- Al-Hadi, A., Al-Yahyaee, K. H., Hussain, S. M., & Taylor, G. (2020). Market risk disclosures and firm performance: The role of board-level corporate governance. *International Journal of Finance & Economics*, 25(2), 183–203. <https://doi.org/10.1002/ijfe.1749>
- Aluchna, M., & Kuszewski, T. (2022). Board attributes and firm performance: A meta-analysis of the literature. *Journal of Management and Business Administration. Central Europe*, 30(2), 64–99. <https://doi.org/10.7206/jmba.ce.2450-7814.364>
- Andres, C., Gantenbein, P., & Zurbrugg, R. (2015). The value of a seat: The effects of codetermination on firm valuation in Germany. *Journal of Corporate Finance*, 30, 120–133. <https://doi.org/10.1016/j.jcorpfin.2014.12.007>
- Arellano, M., & Bond, S. (1991). Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. *The Review of Economic Studies*, 58(2), 277–297. <https://doi.org/10.2307/2297968>
- Augustine, D., & Odubu, A. S. (2022). Effect of board structure on the financial performance of listed deposit money banks in Nigeria. *International Journal of Social Sciences and Management Research*, 8(8), 1–17.
- Bebeji, A., Mohammed, A., & Tanko, A. I. (2015). The effect of board size and composition on the financial performance of banks in Nigeria. *African Journal of Business Management*, 9(16), 591–598. <https://doi.org/10.5897/AJBM2015.7787>
- Beltratti, A., & Stulz, R. M. (2022). Why are corporations in some countries so much better at ESG than corporations in other countries? *The Review of Financial Studies*, 35(4), 1547–1589. <https://doi.org/10.1093/rfs/hhab081>



- Böhren, Ø., & Staubo, S. (2016). Mandatory gender balance and board independence. *European Financial Management*, 22(1), 3–30. <https://doi.org/10.1111/eufm.12052>
- Brav, A., Jiang, W., & Li, K. (2022). Picking friends before picking (stock) friends? Director selection in nominated-director boards. *The Review of Financial Studies*, 35(6), 2821–2867. <https://doi.org/10.1093/rfs/hhab103>
- Central Bank of Nigeria. (2023, December 20). *CBN to begin recapitalisation of banks* [Press release]. <https://www.cbn.gov.ng/Out/2023/CCD/PR135.pdf>
- Coles, J. L., Daniel, N. D., & Naveen, L. (2008). Boards: Does one size fit all? *Journal of Financial Economics*, 87(2), 329–356. <https://doi.org/10.1016/j.jfineco.2006.08.008>
- Conyon, M. J., & Peck, S. I. (1998). Board size and corporate performance: Evidence from European countries. *European Journal of Finance*, 4(3), 291–304. <https://doi.org/10.1080/135184798337222>
- Dalton, D. R., Daily, C. M., Johnson, J. L., & Ellstrand, A. E. (1999). Number of directors and financial performance: A meta-analysis. *Academy of Management Journal*, 42(6), 674–686. <https://doi.org/10.2307/256988>
- Dang, C., Li, Z. F., & Yang, C. (2018). Measuring firm size in empirical corporate finance. *Journal of Banking & Finance*, 86, 159–176. <https://doi.org/10.1016/j.jbankfin.2017.09.006>
- Eisenberg, T., Sundgren, S., & Wells, M. T. (1998). Larger board size and decreasing firm value in small firms. *Journal of Financial Economics*, 48(1), 35–54. [https://doi.org/10.1016/S0304-405X\(98\)00003-1](https://doi.org/10.1016/S0304-405X(98)00003-1)
- Fama, E. F., & Jensen, M. C. (1983). Separation of ownership and control. *Journal of Law and Economics*, 26(2), 301–325. <https://doi.org/10.1086/467037>
- Fazio, D., Tiscini, R., & De Matteis, F. (2021). The effect of social and environmental performance on firm value: The role of financial leverage. *Corporate Social Responsibility and Environmental Management*, 28(5), 1549–1560. <https://doi.org/10.1002/csr.2127>
- Fernandez-Temprano, M. A., & Tejerina-Gaite, F. (2020). Types of director, board diversity and firm performance. *Corporate Governance: The International Journal of Business in Society*, 20(2), 324–342. <https://doi.org/10.1108/CG-02-2019-0071>
- Ferrero-Ferrero, I., Fernández-Izquierdo, M. Á., & Muñoz-Torres, M. J. (2023). The effect of the board of directors on corporate ESG performance in a European context. *Finance Research Letters*, 55, 103901. <https://doi.org/10.1016/j.frl.2023.103901>
- Garanina, T., & Muravyev, A. (2021). The gender composition of corporate boards and firm performance: Evidence from the quasi-natural experiment. *Journal of Corporate Finance*, 67, 101865. <https://doi.org/10.1016/j.jcorpfin.2020.101865>
- Green, C. P., & Homroy, S. (2021). Female directors, board committees and firm performance. *European Economic Review*, 102, 19–38. <https://doi.org/10.1016/j.eurocorev.2017.12.003>
- Guest, P. M. (2009). The impact of board size on firm performance: Evidence from the UK. *The European Journal of Finance*, 15(4), 385–404. <https://doi.org/10.1080/13518470802466151>
- Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, 3(4), 305–360. [https://doi.org/10.1016/0304-405X\(76\)90026-X](https://doi.org/10.1016/0304-405X(76)90026-X)



- Jiang, F., & Kim, K. A. (2020). Corporate governance in China: A survey. *Review of Finance*, 24(4), 733–772. <https://doi.org/10.1093/rof/rfaa012>
- Kumar, P., & Singh, A. (2023). Impact of corporate governance on firm valuation: A systematic review and future research agenda. *Journal of Business Research*, 163, 113947. <https://doi.org/10.1016/j.jbusres.2023.113947>
- Kyere, M., & Ausloos, M. (2021). Corporate governance and financial performance of Ghanaian listed firms. *Corporate Governance: The International Journal of Business in Society*, 21(6), 1165–1184. <https://doi.org/10.1108/CG-10-2019-0309>
- Lehn, K. M., Patro, S., & Zhao, M. (2009). Governance and performance of the world's largest corporations. *Journal of Corporate Finance*, 15(1), 72–84. <https://doi.org/10.1016/j.jcorpfin.2008.04.002>
- Manini, R., & Abdillahi, H. S. (2022). Gender Diversity and Firm Performance in the European Banking Industry. *Journal of Financial Regulation and Compliance*, 30(5), 537–554. <https://doi.org/10.1108/JFRC-09-2021-0097>
- Marinova, J., Plantenga, J., & Remery, C. (2016). Gender diversity and firm performance: Evidence from Dutch and Danish boardrooms. *The International Journal of Human Resource Management*, 27(15), 1777–1790. <https://doi.org/10.1080/09585192.2015.1079229>
- Mollah, S., & Liljeblom, E. (2021). The role of board and Shari'ah supervisory board on bank performance: A comparative study of Islamic and conventional banks. *Journal of Business Ethics*, 170, 583–602. <https://doi.org/10.1007/s10551-019-04359-x>
- Nguyen, T. T. T., Le, H. T., Nguyen, T. T. T., & Tran, M. D. (2022). The impact of board characteristics on firm performance: Evidence from Vietnam's listed firms. *Journal of Risk and Financial Management*, 15(3), 131. <https://doi.org/10.3390/jrfm15030131>
- Nguyen, T., Ntim, C. G., & Malagila, J. (2020). Board diversity, corporate governance, and firm performance in the UK. *Business & Society*, 59(8), 1541–1579. <https://doi.org/10.1177/0007650318774209>
- O'Connell, V., & Cramer, N. (2010). The relationship between firm performance and board characteristics in Ireland. *European Management Journal*, 28(5), 387–399. <https://doi.org/10.1016/j.emj.2010.03.001>
- Onakoya, O., & Oladipupo, O. (2022). Board characteristics and financial performance of listed consumer goods companies in Nigeria. *International Journal of Economics, Commerce and Management*, 10(6), 1–18.
- Ozili, P. K. (2022). Bank stability and corporate governance in Africa. *Journal of Financial Regulation and Compliance*, 30(5), 555–571. <https://doi.org/10.1108/JFRC-07-2021-0077>
- Pfeffer, J., & Salancik, G. R. (1978). *The external control of organizations: A resource dependence perspective*. Harper & Row.
- Pletzer, J. L., Nikolova, R., Kedzior, K. K., & Voelpel, S. C. (2015). Does gender matter? Female representation on corporate boards and firm financial performance—a meta-analysis. *PloS One*, 10(6), e0130005. <https://doi.org/10.1371/journal.pone.0130005>
- PricewaterhouseCoopers. (2022). *Nigerian banking sector: The race to the US\$200bn*. PwC. <https://www.pwc.com/ng/en/assets/pdf/nigerian-banking-sector-the-race-to-200-billion-usd.pdf>
- Shakir, R. (2017). Board size, board composition, and the performance of financial institutions in the United Arab Emirates. *International Journal of Managerial Finance*, 13(2), 133–149. <https://doi.org/10.1108/IJMF-05-2016-0103>



- Tukur, M., & Bello, A. (2023). Board attributes and financial performance of listed money deposit banks in Nigeria. *Journal of Accounting and Strategic Finance*, 6(1), 1–16. <https://doi.org/10.33005/jasf.v6i1.139>
- Ujunwa, A. (2012). Board characteristics and the financial performance of listed firms in Nigeria. *Corporate Governance: The International Journal of Business in Society*, 12(5), 656–674. <https://doi.org/10.1108/14720701211275605>
- Ullah, I., Fang, H., & Jebran, K. (2020). The impact of board gender diversity on firm performance: Evidence from Pakistan. *Corporate Governance: The International Journal of Business in Society*, 20(4), 701–718. <https://doi.org/10.1108/CG-09-2019-0283>
- Uyar, A., Karaman, A. S., & Kilic, M. (2021). Board characteristics, financial performance, and ESG reporting: Evidence from Borsa Istanbul. *Social Responsibility Journal*, 17(6), 753–773. <https://doi.org/10.1108/SRJ-11-2019-0382>
- Velte, P. (2023). Board gender diversity and financial performance: A systematic literature review of the last decade. *Journal of Business Economics*, 93, 21–68. <https://doi.org/10.1007/s11573-022-01111-y>
- Vo, D. H., & Bui, T. N. (2020). Board characteristics and firm performance: The case of Vietnam. *Journal of Asian Finance, Economics and Business*, 7(4), 117–123. <https://doi.org/10.13106/jafeb.2020.vol7.no4.117>
- Wintoki, M. B., Linck, J. S., & Netter, J. M. (2012). Endogeneity and the dynamics of internal corporate governance. *Journal of Financial Economics*, 105(3), 581–606. <https://doi.org/10.1016/j.jfineco.2012.03.005>
- Yermack, D. (1996). Higher market valuation of companies with a small board of directors. *Journal of Financial Economics*, 40(2), 185–211. [https://doi.org/10.1016/0304-405X\(95\)00844-5](https://doi.org/10.1016/0304-405X(95)00844-5)