Assessing the influence of corporate governance on stock return volatility in the Vietnam context

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Abstract

This paper contributes to the literature by examining the impact of corporate governance on the stock return volatility of non-financial firms listed on the Vietnamese stock market. Data on corporate governance and stock return volatility among non-financial firms listed in Vietnam were obtained from the Hanoi and Ho Chi Minh stock exchanges. The study employed ordinary least squares, fixed-effects estimations, and the generalized least squares method. The research demonstrates a positive relationship between corporate governance and stock return volatility. The findings emphasize the sustained positive influence of board size on volatility, suggesting that companies aspiring to diminish the annual average standard deviation of equity returns should consider decreasing the number of directors. Furthermore, the results also show the absence of a discernible relationship between board independence and volatility, and the negative effects of both foreign ownership and managerial ownership on volatility. This study provides practical implications for companies and market participants aiming to reduce stock return volatility through good corporate governance within developing capital markets.

Keywords: Corporate governance, Firm value, Non-financial listed firms, Stock return volatility, Vietnam stock market

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1. Introduction

Certain scholars assert that corporate governance holds a pivotal role in influencing stock return volatility, as it governs the relationships between managers, boards, shareholders, and stakeholders (Mitton, 2002; Nguyen and Le, 2021). Morck *et al.* (2000) argue that weak governance limits stock price discovery, increasing volatility. Research shows a link between governance practices and stock fluctuations, with factors like ownership structure and corporate performance influencing volatility (Huang *et al.*, 2011). Independent investors can help stabilize volatility (Rhee and Lee, 2008; Cardoso *et al.*, 2019), while weak governance reduces transparency, further elevating volatility (Morck *et al.*, 2000). Sias and Starks (2006) also found that institutional ownership can affect stock price volatility.

Board independence is a fundamental requirement for companies in various countries (Bhagat and Black, 2001; Kumar and Sivaramakrishnan, 2008) and plays an important role in reducing agency costs (Tran, 2020). Previous studies have identified the supervisory role of independent directors within the corporate governance system as an effective means of stabilizing the volatility of stock returns (Desender and Lafuente, 2009; Chen *et al.*, 2013). However, these studies showed different empirical findings regarding the effectiveness of board independence in influencing different decision-making processes within a firm (Zhang *et al.*, 2018; James *et al.*, 2023). The link between independent directors and stock return volatility in this sector is relatively examined in Vietnam. Consequently, this study is driven by various motivations, with the first motivation being the extensive literature that revolves around whether board independence impacts stock return volatility. Additionally, most research on ownership in Vietnam tends to emphasize its effect on performance rather than on stock return volatility, except for Vo (2015) and Nguyen *et al.* (2020). However, these studies have solely investigated companies listed on the Ho Chi Minh City stock exchange. Therefore, the secondary impetus for this study lies in utilizing data from the Vietnamese stock market to provide a comprehensive understanding of foreign investors' impact on stock return volatility within the framework of an emerging market. Furthermore, this study enhances the analytical rigor by incorporating time-fixed effects into the firm-fixed effects model. This methodological innovation controls for time-varying factors, such as macroeconomic conditions, policy changes, or market-wide events that could affect all firms simultaneously, thus isolating the specific impact of corporate governance on stock return volatility. Combining these elements, the paper offers a more robust and nuanced understanding of how corporate governance practices influence stock price fluctuations in Vietnam's unique economic and regulatory environment.

As a developing country, Vietnam possesses an emerging capital market and an incomplete legal system (Nguyen, 2021), making its corporate sector susceptible to information asymmetry and agency costs, which could delay firms' access to the capital market. The Vietnamese stock market emerged in the early 2000s and has become an increasingly important channel for raising capital. In recent years, the market has expanded significantly, with a notable rise in the number of listed companies and the overall market capitalization. Foreign ownership in the

Vietnamese stock market has also grown steadily, with foreign investors holding a substantial share of the total market value. According to the Vietnam Bond Market Association (2023), foreign investment attraction remained a bright spot in the economic landscape of Vietnam. Specifically, disbursed FDI reached its all-time high of 23 billion USD, and net foreign direct investment reached 13 billion USD in 2023, reflecting the increasing confidence in Vietnam's market potential. This rise in foreign participation not only strengthens market liquidity but also brings expertise in corporate governance practices, often associated with improvements in financial transparency, managerial efficiency, and overall profitability (Nguyen *et al.*, 2020). Ongoing economic reforms by the Vietnamese government, aimed at enhancing the legal and regulatory environment, have further attracted foreign investment. These changes have sparked increased research on the role of corporate governance in influencing stock market behavior, particularly stock price volatility. Therefore, given the increasing role of foreign investors and the heightened interest in corporate governance, understanding these dynamics is essential for adjusting regulatory policies that foster market stability and growth in Vietnam.

This paper aims to make a significant contribution to the existing literature by systematically examining the association between board characteristics and ownership structure, and stock return volatility within non-financial firms listed on the Vietnamese stock market. The overarching goal is to contribute valuable insights to the existing literature by scrutinizing the specific dynamics of corporate governance and its repercussions on stock return volatility in Vietnam, a country in the developmental stage. The outcomes and recommendations drawn from this study are anticipated to be pertinent and applicable to companies navigating similar economic landscapes. In addition, this research presents a novel approach to corporate governance selection by conducting alternative fixed effects for analyzing its impact on stock return volatility, drawing insights from the characteristics of the board characteristics and ownership structure. Leveraging an expansive dataset comprising 499 Vietnamese non-financial companies from 2008 to 2020, this research provides comprehensive insights into the intricate interplay between corporate governance and stock return volatility in the Vietnamese business landscape.

The remainder of this paper is structured as follows. Section 2 reviews the theoretical literature. Section 3 examines previous empirical studies and formulates the study's hypotheses. Section 4 outlines the data sources and the procedure for constructing variables. Section 5 presents empirical findings on the relationship between corporate governance and stock price volatility. Finally, section 6 concludes the study.

2. Theoretical literature review

Volatility is the risk or uncertainty to stock prices, which can be measured using the annualized standard deviation of daily changes in stock price or security (Ahmad and Ramzan, 2014). This uncertainty can be influenced by several factors, including macroeconomic conditions (Ahmad and Ramzan, 2014), institutional settings (Khandaker and Farooque, 2020), and corporate governance structures (Lee *et al.*, 2019). While traditional explanations for market

volatility focus on external economic or market factors (Bollerslev, 2006), recent literature suggests that internal governance mechanisms, such as the composition of the board, ownership structure, and managerial decisions, can play a significant role in shaping firm-level stock volatility (Aloui and Jarboui, 2018).

One key factor contributing to stock price volatility is the leverage effect, which occurs when adverse news or economic shocks cause a decline in stock prices. This, in turn, exacerbates leverage, leading to higher volatility. Conversely, the volatility feedback hypothesis suggests that as volatility increases, it triggers an upward adjustment in future risk, creating a feedback loop that further elevates volatility (Bollerslev, 2006).

Additionally, macroeconomic announcements and institutional factors can influence how corporate governance interacts with equity volatility. Positive or negative announcements - such as changes in interest rates, regulatory shifts, or earnings reports - may have asymmetric effects on stock volatility, amplifying the risks faced by companies with weaker governance structures (Kalyvas *et al.*, 2019; Yen and Cheng, 2020; Li *et al.*, 2020).

However, beyond these macroeconomic factors, corporate governance mechanisms can influence how companies respond to external shocks and manage internal risks, affecting equity volatility. For example, effective corporate governance practices - such as an independent board, strong risk management frameworks, and transparency - are hypothesized to reduce firm-level volatility. When boards are independent, they are better positioned to oversee management actions impartially and ensure that strategic decisions align with shareholder interests. This reduces managerial discretion in risk-taking, which may otherwise increase stock price volatility (Adams and Ferreira, 2007; Doku *et al.*, 2023). Conversely, when corporate governance is weak or when there is a misalignment of interests between managers and shareholders (e.g., due to high managerial ownership), decision-making can become more erratic, leading to greater uncertainty and increased volatility.

The literature suggests that while macroeconomic and market-based explanations for volatility are important, corporate governance structures must also be considered key determinants of firm-specific equity volatility. This paper seeks to explore how specific governance characteristics, such as board size, board independence, foreign ownership, and managerial ownership, affect stock return volatility and whether these mechanisms can mitigate or amplify the inherent risks within financial markets.

3. Empirical literature review and hypothesis development

3.1 Board size and stock return volatility

Henri and Héroux (2019) emphasized the critical role of board members in enhancing governance efficacy by refining governance committee characteristics. Doku *et al.* (2023) found that larger corporate boards reduce stock return volatility, aligning with agency theory. Similarly, Cheng (2008), Nakano and Nguyen (2012), and Huang and Wang (2015) reported a negative relationship between board size and stock return volatility.

On the other hand, Aloui and Jarboui (2018) showed a positive correlation between board size and stock return volatility, suggesting that a larger board indicates suboptimal corporate governance and contributes to heightened stock return volatility. Doku *et al.* (2023) argued that smaller boards are predisposed to increasing volatility due to expeditious and more radical decision-making processes. Furthermore, they may exhibit a deficiency in the capacity to monitor managerial actions incongruent with shareholders' interests.

Given these mixed findings, it is clear that the relationship between board size and stock return volatility is complex and context-dependent. The hypothesis is grounded in the belief that larger boards, by virtue of their diversity and increased capacity for oversight, generally lead to lower stock return volatility, as they are better positioned to manage risks and align managerial actions with shareholder interests. However, the potential drawbacks of very large boards, such as coordination issues or diminished decision-making agility, are also important to consider. Therefore, based on the existing literature, the following hypothesis is proposed:

H1: Board size has a negative impact on stock return volatility.

3.2 Board independence and stock return volatility

A corporate board is considered independent when a majority of its members are external directors not involved in daily operations (Doku *et al.*, 2023). While independent boards can enhance governance, their limited access to firm-specific information may weaken monitoring, increasing volatility (Adams and Ferreira, 2007). Doku *et al.* (2023) and Huang and Wang (2015) found a positive correlation between board independence and stock return volatility, supporting the risk-seeking hypothesis (Sá *et al.*, 2017; Zhang *et al.*, 2018).

Aloui and Jarboui (2018) found that independent directors reduced stock return volatility in the French market during the 2006-2012 financial crisis, highlighting the benefits of sound corporate governance. Literature suggests independent boards enhance monitoring, stabilize stock prices, and reduce earnings volatility (Dechow *et al.*, 1996; Klein, 2002; Huang *et al.*, 2011). Firms with more independent directors tend to adopt risk-mitigating policies, increasing firm value and lowering volatility (Jiraporn and Lee, 2018).

Contrary perspectives are evident among scholars, as some did not identify a substantial correlation between board independence and stock volatility (Cheng, 2008; Sila *et al.*, 2016). Given these mixed findings, it is important to consider why some studies report a positive relationship between board independence and volatility while others suggest a stabilizing effect. The proposed hypothesis reflects this complexity and aims to test the potential positive impact of board independence on stock return volatility, which is in line with the risk-seeking perspective observed in some studies. Therefore, based on the literature review and the mixed evidence, the following hypothesis is proposed:

H2: Board independence has a positive impact on stock return volatility.

3.3 Foreign ownership and stock return volatility

Various factors exert influence on stock volatility, including ownership by foreign corporations and individuals (Chen *et al.*, 2013). Foreign investors, as asserted by Vo (2015), play a stabilizing role in emerging stock markets. Their participation is posited to enhance the quality of information within local stock markets, instill better control over companies and standard reporting practices, and contribute to an improved corporate governance environment. This, in turn, results in significant reductions in transaction costs, information costs, and overall risk exposure (Aloui and Jarboui, 2018).

Several studies have demonstrated a positive impact of foreign investment on firm-level volatility (Kim and Singal, 2000; Bae *et al.*, 2004; Bohl and Brzeszczynski, 2006). Bae *et al.* (2004) specifically propose that foreign ownership introduces considerable volatility to firm-level returns in emerging markets, making stock returns more susceptible to global market risk.

Contrastingly, Li *et al.* (2010) identified a negative relationship between large foreign ownership and stock return volatility at the firm level. This suggests that foreign investors, confronted with additional cross-border investment risks, may selectively target firms with characteristics linked to lower volatility, seeking to mitigate inherent risks.

Analyzing the Vietnam case between 2006 and 2012, Vo (2015) discovered empirical evidence suggesting that firm ownership by foreign investors correlates with a decrease in firm stock price volatility within the Vietnamese stock market. Nonetheless, conflicting results exist in the literature; there is no significant influence of foreign ownership on stock market volatility (Bekaert and Harvey, 1997; De Santis and Imrohoroglu, 1997; Kim and Singal, 2000).

Given these conflicting findings, the relationship between foreign ownership and stock return volatility remains ambiguous. While some studies point to a stabilizing effect of foreign investment, particularly in terms of improving governance and reducing risk exposure, others argue that foreign ownership may heighten volatility, especially in emerging markets where external factors can amplify stock price fluctuations. The proposed hypothesis reflects this complexity and aims to test the potential negative impact of foreign ownership on stock return volatility. Based on the reviewed literature, the following hypothesis is proposed:

H3: Foreign ownership has a negative impact on stock return volatility.

3.4 Managerial ownership and stock return volatility

Eng and Mak (2003) showed a link between reduced managerial ownership and heightened disclosure. That result is in line with Khlif *et al.* (2017) who demonstrated a negative impact of managerial ownership on voluntary disclosure. Zhong (2022) suggested that the inverse correlation between managerial ownership and stock volatility is more conspicuous in companies with lower transparency and less pronounced in those with higher transparency.

As managerial ownership increases, corporate transparency improves, resulting in decreased stock return volatility. Based on the reviewed literature, the following hypothesis is proposed:

H4: Managerial ownership has a negative impact on stock return volatility.

3.5 Control variables and stock return volatility

Li *et al.* (2010), Aloui and Jarboui (2018), and Doku *et al.* (2023) incorporated firm size as a control variable in their respective studies. Their findings revealed a negative and statistically significant relationship between firm size and stock return volatility, aligning with previous studies conducted by Pástor and Pietro (2003), Vo (2015), and Doku *et al.* (2023). This implies that larger firms exhibit greater volatility in terms of stock returns compared to smaller firms, as indicated by Doku *et al.* (2023).

The leverage, measured as the ratio of total debt to total assets, was employed in these studies. Firms with higher leverage tend to experience greater stock price volatility due to the presumed elevated risk of bankruptcy (Wei and Zhang, 2006; Chen *et al.*, 2013). Additionally, Vo (2015) introduced the market-to-book ratio as a control variable, calculated by dividing the stock price by the book value per share of the firm at year-end. Some studies have analyzed the relationship between control variables for firms, such as debt-to-equity ratio (Lee *et al.*, 2019), trading volume, earnings per share (Lee *et al.*, 2019), and stock return volatility, demonstrating a significant impact on price fluctuation. Among these control variables, researchers have found stock return volatility to be the most significant factor (Stoll, 1978; Kim and Verrecchia, 2001; Ajina *et al.*, 2015).

4. Research design

4.1 Model specification and variables

The model (1) is developed based on theories related to corporate governance on stock return volatility and a literature review to develop research hypotheses. This approach helps to identify the independent, dependent, and control variables in the model. The effect of corporate governance and stock return volatility was examined by estimating the baseline regression model in model (1) as follows:

$$Stock\ return\ volatility_{i,t} = \beta_0 + \beta_1 Corporate\ governance_{i,t} + \delta Control_{i,t} + \varepsilon_{i,t}. \qquad (1)$$

Stock return volatility represents the dependent variable, proxied by volatility for firm i in year t. The coefficient β_1 denotes the effect of corporate governance on stock return volatility. Control encompasses the set of control variables outlined in Table 1. All control variables in the regressions are measured in year t. The error term $\varepsilon_{i,t}$ captures all factors not explicitly included in the model but still influence the stock return volatility. It accounts for any variation in volatility that cannot be explained by the model, such as firm-specific shocks, market conditions, or other omitted factors.

4.2 Sample and methodology

Data on corporate governance and stock return volatility from Vietnam-listed firms were collected from Vietstock for the period spanning from 2008 to 2020. Financial firms were excluded from the study due to differences in accounting practices. As a result, the sample comprises 3,752 observations from 499 Vietnamese non-financial firms listed on both the Hanoi (HNX) and Ho Chi Minh (HOSE) stock exchanges over the specified timeframe.

In model (1), potential misspecifications related to heteroscedasticity and serial correlation may arise. Heteroscedasticity occurs when the variance of the error term ($\varepsilon_{i,t}$) is not constant across firms or over time, while serial correlation arises when error terms are correlated across time within the same firm or across firms within a given year. Both issues can lead to biased standard errors, which in turn affect the reliability of statistical tests. To address these problems, we use standard errors clustered by firm and year, accounting for both heteroscedasticity (allowing for varying variances across firms and time) and serial correlation (by adjusting for correlations in errors within firms over time). This clustering improves the robustness of the standard errors, leading to more reliable inference about the model's parameters. The reported t-statistics are then computed using these adjusted standard errors clustered at the firm level.

4.3 Variable measures

Many researchers suggest that the annual average standard deviation of equity return calculates stock return volatility (Ajina *et al.*, 2015). Volatility, denoted as the dispersion of the probability density function, signifies growing uncertainty with an increasing term, elevating its variance and leading to a more dispersed distribution of returns (Alexander, 2001).

Several studies have employed different approaches to measure volatility. For instance, Bushee and Noe (2000) utilize the logarithm of the standard deviation of daily stock returns as their primary measure of stock return volatility. Ajina *et al.* (2015) gauge volatility through the annual average of the standard deviation of equity returns. Aloui and Jarboui (2018) assess volatility via the standard deviation of annual stock returns. Doku *et al.* (2023) quantify stock return volatility by the annualized standard deviation of weekly stock returns. This study chooses the annual average standard deviation to capture broader, more persistent trends in stock return volatility while minimizing the effect of short-term fluctuations. This approach provides a more reliable estimate of the stock's risk profile over an extended period, facilitating clearer volatility comparisons across firms or time periods, and reducing the noise associated with daily market movements.

To account for firm attributes, the study includes firm size, firm leverage, market to book, debt, volume, and EPS as control elements. Therefore, the effect of corporate governance on stock return volatility can be more clearly highlighted.

Table 1. Variable descriptions

Variable	Symbol	Description	References
Stock return volatility	Volatility	The annual average standard deviation of equity return	Ajina *et al.* (2015)
Board size	Bsize	Number of members on the board of directors	Opler *et al.* (1999), Kuan *et al.* (2011)
Board independence	Bindep	Number of independent members on the board of directors	Ozkan and Ozkan (2004)
Foreign ownership	FO	That is calculated by the shares owned by investors who are foreigners divided by the total shares	Chen *et al.* (2013), Vo (2015), Aloui and Jarboui (2018)
Managerial ownership	MO	That is calculated by the shares owned by managers divided by the total shares	Zhong (2022)
Firm size	Firmsize	Natural logarithm of total assets	Kuan *et al.* (2011), Liu *et al.* (2015)
Firm leverage	Firmlev	That is calculated by the scale of total liabilities divided by total assets	Kuan *et al.* (2011), Ranajee and Pathak (2019)
Market to book	Market-to-book	That is calculated by the market value of equity divided by the book value of equity	Ranajee and Pathak (2019)
Debt to equity ratio	Debt	That is calculated by the scale of total liabilities divided by stockholders' equity	Lee *et al.* (2019)
Trading volume	Volume	The annual average daily trading volume	Stoll (1978), Kim and Verrecchia (2001), Ajina *et al.* (2015)
Earnings per share	EPS	Total earnings per share as at the end of each fiscal year	Lee *et al.* (2019)

Source: Author's compilation

5. Empirical results and discussions

5.1 Summary statistics

Table 2 reports the descriptive statistics of variables included in this study.

Table 2. Descriptive statistics

Variable	Obs.	Mean	Std. dev.	Min	Max
Volatility	4,299	0.029	0.009	0	0.080
Bsize	5,538	5.468	1.160	0	11.000
Bindep	4,289	0.576	0.931	0	5.000
FO	4,866	10.057	13.532	0	86.500
MO	5,051	5.189	9.955	0	76.480
Firmsize	5,303	27.017	1.537	21.873	33.631
Firmlev	5,303	0.100	0.141	-0.004	0.800
Market-to-book	5,304	1.096	1.721	-101.008	35.438
Debt	5,304	2.052	3.868	0.0003	85.933
Volume	4,299	213,587.400	785,992.300	0.003	16,400,000
EPS	4,299	2,160.319	3,150.154	-28,679.000	51,411.000

Source: Author's estimation

The dependent variable, volatility, has a mean of 0.029 and a standard deviation of 0.009. This suggests that, on average, the firms in the sample exhibit relatively low volatility in their stock returns. The small standard deviation indicates that the stock return volatility values are fairly consistent but still have some degree of spread.

The independent variable, Bsize, has a mean of 5.468 and a standard deviation of 1.160. This suggests that, on average, the firms in the sample have a board size of approximately five members, with a moderate level of variation in board size across firms. The range of board sizes across firms is reasonably diverse, and the standard deviation suggests some flexibility in how firms structure their boards.

The variable Bindep ranges from 0 to 5, with a mean of 0.576 and a standard deviation of 0.931. This indicates that most firms have very few independent directors on their boards, though some firms have a larger number of independent directors, with a maximum of 5. The low mean and the considerable standard deviation reflect a skewed distribution where most firms have a low number of independent directors, but there is notable variability in the extent of independent oversight across the firms.

The minimum value for the variables FO and MO is 0, while the maximum values are 86.5 for foreign ownership and 76.48 for managerial ownership. These large ranges suggest considerable variation in how much foreign and managerial ownership is held across the firms in the sample. The standard deviation of foreign ownership is 13.532; for managerial ownership, it is 9.955, indicating substantial variability in ownership structures. This suggests that some firms are predominantly owned by foreign investors or management, while others have very little foreign or managerial ownership.

The average firm size is 27.017, which means that the firms in the sample are moderately sized on average. The minimum size is 21.873, and the maximum size is 33.631, indicating that the firms in the sample span a wide range of sizes, from relatively small ones to much larger ones.

Firm leverage, calculated as total liabilities divided by total assets, has an average of 0.1, indicating that, on average, firms in the sample use relatively low levels of debt compared to their total assets. The standard deviation of 0.141 shows that there is moderate variability in leverage across firms. However, the minimum value of -0.004 is unusual, as leverage cannot typically be negative, which may suggest issues with negative equity in some firms.

The market-to-book ratio has a mean of 1.096, suggesting that, on average, firms in the sample are valued slightly above their book value by the market. However, the high standard deviation of 1.721 indicates considerable variability in market valuations across firms. The minimum value of -101.008 is extremely low and likely reflects significant financial distress or extreme undervaluation.

The debt-to-equity ratio, which measures the proportion of a firm's debt relative to its equity, has a mean of 2.052, suggesting that firms, on average, rely heavily on debt financing compared to equity. The high standard deviation of 3.868 indicates significant variation in the debt levels across firms, with some firms having relatively low levels of debt (as indicated by the minimum value of 0.0003) and others being highly leveraged, as seen in the maximum value of 85.933.

Trading volume, with a mean of 213,587, reflects the average level of market activity for the sample firms. However, the very high standard deviation of 785,992 indicates substantial variation in trading volumes across firms, with some firms having very low trading activity (as shown by the minimum value of 0.003) and others experiencing very high trading volumes, as seen in the maximum value of 16.4 million. This large variation suggests that while most firms have moderate liquidity, a few firms are subject to significant market interest or speculation.

Finally, the earnings per share (EPS) has a mean of 2,160, with a standard deviation of 3,150.154. This implies that the average earnings per share across firms is relatively high, but there is considerable variation between firms. The large standard deviation indicates that the profitability of firms in the sample differs widely, with some firms posting much higher EPS than others.

In this study, a pairwise correlation coefficient analysis was conducted on the variables, with results shown in Table 3. All pairwise correlation coefficients are below 0.45, suggesting no significant collinearity issue in the regression model. Additionally, Table 3 includes the variance inflation factor (VIF) test results, with all VIF coefficients under 2, further indicating an absence of multicollinearity in the model.

Table 3. Pairwise correlations and variance inflation factor test (VIF)

Variables	Volatility	Bsize	Bindep	FO	MO	Firmsize	Firmlev	Market-to-book	Debt	Volume	EPS	VIF
Volatility	1.000											
Bsize	-0.029**	1.000										1.060
Bindep	-0.024	0.199***	1.000									1.040
FO	-0.011	0.037***	0.016	1.000								1.120
MO	-0.028*	0.012	-0.004	-0.033**	1.000							1.010
Firmsize	-0.001	0.044***	-0.011	0.294***	0.002	1.000						1.310
Firmlev	0.028*	0.032**	-0.026	-0.037***	-0.059***	0.372***	1.000					1.220
Market-to-book	-0.009	0.071***	0.058***	0.018	0.005	0.035**	0.010	1.000				1.140
Debt	0.077***	-0.117***	-0.088***	0.006	0.010	0.016	-0.005	-0.139***	1.000			1.110
Volume	-0.074***	0.033**	0.025*	0.000	-0.016	0.003	0.035**	0.002	-0.002	1.000		1.000
EPS	-0.073***	0.108***	0.071***	-0.002	0.015	0.022	0.014	0.234***	-0.224***	-0.049**	1.000	1.140
Mean VIF												1.120

Notes: *, **, and *** denote statistical significance at 10%, 5%, and 1%, respectively.

Source: Author's estimation

The study then examines whether the results vary across different estimation approaches. First, ordinary least squares (OLS) estimation with firm dummies is used to regress the model (1). Next, the robustness of the model is assessed by re-estimating model (1) using an alternative fixed-effects specification.

5.2 Empirical results and discussions

Table 4 presents the estimation results of model (1). The positive coefficient of board size and volatility in column (1) of Vietnam-listed firms is significant at the 1% level. The current study's finding is consistent with Jensen (1993), who criticized larger boards' difficulty in coordination and effective communication, which affects real-time decision-making and results in poor firm performance. Nonetheless, certain studies indicate a different direction. For instance, Doku *et al.* (2023) found that larger boards are more capable of reducing stock return volatility due to the pool of skills, expertise, effective monitoring capacity, and efficient decision-making machinery.

Besides this, Table 4 shows that board independence has no impact on volatility, suggesting that if the company increases or decreases the number of independent directors on the board matter, the annual average standard deviation of equity returns has no change. This result aligns with Cheng (2008) and Sila *et al.* (2016), who found no meaningful relationship between board independence and stock volatility. However, other existing evidence shows that an independent and well-functioning corporate board is expected to exhibit a high level of monitoring that could reduce the volatility of a firm's earnings (Dechow *et al.*, 1996; Klein, 2002), whereas others (Huang and Wang, 2015; Sá *et al.*, 2017; Zhang *et al.*, 2018), observed a positive relationship between board independence and stock return volatility.

Contrasting this, the results give evidence of the negative relationship between foreign ownership and volatility; thus, for companies with a higher ratio of shares held by foreign investors, the volatility decreases at the 1% level. The finding is similar to the results of Wang (2013) and Vo (2015), who show that firm ownership by foreign investors decreases firm stock price volatility, implying the stabilizing role of foreign investors in emerging stock markets, and this can be considered as one of the potential benefits of increasing the exposure of domestic stock markets to foreign investors.

In Table 4, managerial ownership has a negative impact on volatility, meaning the higher the ratio of shares held by managers, the lower the annual average standard deviation of equity returns is. This result is consistent with Piosik and Genge (2019) and Zhong (2022), who concluded that higher managerial ownership enhances transparency, reducing stock price volatility. When managers have a larger stake in the company, their interests align more closely with those of shareholders, leading to better decision-making, increased disclosure, and greater market confidence.

The study also shows, in Table 4, that the size of companies and the ratio of debt to equity have a positive impact on volatility, while firm leverage, trading volume, and earnings per share affect volatility in a negative direction. The market-to-book has no relationship with volatility in Table 4.

Table 4. Pooled OLS regression and tests for fixed and random effects

VARIABLES	Volatility
Boardsize	0.00034***
	(0.00013)
Boardindep	-0.00006
	(0.00017)
FO	-0.00004***
	(0.00001)
MO	-0.00003*
	(0.00002)
Firmsize	0.00105***
	(0.00003)
Firmlev	-0.00250**
	(0.00113)
Market-to-book	-0.00023
	(0.00016)
Debt	0.00011***
	(0.00004)
Volume	-0.00000***
	(0.00000)
EPS	-0.00000**
	(0.00000)
Firms	499
Observations	3,752
R-squared	0.907
Tests for Fixed and Random Effects	
	Volatility
White's test	
Heteroskedasticity	112.200(0.000)
Skewness	85.520(0.000)
Kurtosis	3.880(0.049)
Wooldridge test	
	$F(1, 498) = 3.639$
	$Prob > F = 0.057$
Hausman test	
	$chi^2(9) = 19.430$
	$Prob > chi^2 = 0.021$

Notes: Robust t-statistics are reported in parentheses. *, **, and *** denote statistical significance at 10%, 5%, and 1%, respectively. Standard errors clustered at the firm-year level.

Source: Author's estimation

The White test for heteroskedasticity shows a test statistic of 112.200 with a p-value of 0.000, indicating the presence of heteroskedasticity. Additionally, the skewness test reports a statistic of 85.520 with a p-value of 0.000, suggesting that the residuals are skewed. The Kurtosis test shows a statistic of 3.880 with a p-value of 0.049, indicating excess kurtosis in the residuals. The Wooldridge test for autocorrelation reports an F-value of 3.639 with a p-value of 0.057, slightly above the 0.050 threshold, suggesting no strong evidence of autocorrelation. Thus, the model exhibits heteroskedasticity, but autocorrelation is not clearly identified. Finally, the Hausman test, with a Chi-squared statistic of 19.430 and a p-value of 0.021, indicates that the fixed effects model is more appropriate than the random effects model. Therefore, to address these issues in the model to some extent, this study uses fixed effects to control for unobserved confounding factors at the firm level and time dimension and to control for heterogeneity. The generalized least squares (GLS) method is chosen to resolve the issue of heteroskedasticity that persists in the model.

5.3 Sensitivity tests

The study conducts further analyses to confirm the robustness of the baseline findings across alternative fixed-effect specifications. Specifically, the fixed-effect setting in model (1) is replaced with alternative specifications. Consistent with the baseline results, the coefficient estimates for the alternative fixed-effect dimensions remain positive and statistically significant when corporate governance variables are the independent variables and volatility is the dependent variable. This demonstrates the robustness of the primary findings across different analytical methods for assessing the impact of corporate governance on stock return volatility.

To further control variations in corporate governance, an extended-form regression is executed, introducing additional control variables: firm size, firm leverage, market to book, debt, volume, and EPS. This expanded regression is reported in column (1) of Table 5.

In column (1) of Table 5, an alternative fixed-effects model was presented, incorporating both year and firm fixed effects. This specification addressed potential cross-sectional residual dependence and controlled for time-specific factors that may affect all firms. In column (2), an "alternative analysis regression" model was used, which includes firm, sector, and time fixed effects. This approach was employed to examine the impact of corporate governance on stock return volatility across different sectors and time periods.

The outcomes in column (1) reinforce the consistently positive and significant impact of board size on volatility at the 10% significance level. These findings imply that companies aspiring to diminish the annual average standard deviation of equity returns should consider decreasing the number of directors. Columns (1) and (2) presented the negative impact of foreign and managerial ownership on stock return volatility. These results are consistent with previous empirical outcomes in Table 4. In conclusion, the findings emphasize the sustained positive influence of board size on volatility, the absence of a discernible relationship between

board independence and volatility, and the adverse effects of both foreign ownership and managerial ownership on volatility.

Table 5. Robustness check results

VARIABLES	(1) Alternative fixed-effect setting	(2) Alternative analysis regression (GLS)	
	Volatility		
Boardsize	0.00025*	0.00027**	0.00025***
	(0.00012)	(0.00013)	(0.00010)
Boardindep	0.00011	0.00008	-0.00006
	(0.00016)	(0.00017)	(0.00013)
FO	-0.00004***	-0.00003***	-0.00003***
	(0.000)	(0.00011)	(0.00000)
MO	-0.00003*	-0.00003*	-0.00003***
	(0.00001)	(0.00001)	(0.00001)
Firmsize	0.00111***	0.00105***	0.00106***
	(0.00003)	(0.00003)	(0.00003)
Firmlev	-0.00313***	-0.00294***	-0.00292***
	(0.00111)	(0.00111)	(0.00095)
Market-to-book	-0.00013	-0.00009	-0.00014
	(0.00015)	(0.00016)	(0.00011)
Debt	0.00012***	0.00007**	0.00012***
	(0.00004)	(0.00004)	(0.00004)
Volume	-0.00000***	-0.00000***	-0.00000***
	(0.00000)	(0.00000)	(0.00000)
EPS	-0.00000***	-0.00000**	-0.00000***
	(0.00000)	(0.00000)	(0.00000)
Firm FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Sector FE	No	Yes	Yes
Firms	499	499	499
Observations	3,752	3,752	3,752
R-squared	0.911	0.911	

Notes: Robust t-statistics are reported in parentheses. *, **, and *** denote statistical significance at 10%, 5%, and 1% levels, respectively. Robust standard errors clustered at the firm-year level.

Source: Author's estimation

The findings demonstrate a positive relationship between board size and stock return volatility, suggesting that the H1 hypothesis is rejected. This result is in line with the research of Aloui and Jarboui (2018), meaning that board size is considered a sign of poor corporate governance and helps increase stock return volatility. The expansion of board size is associated with heightened price volatility and overreaction during political crises, stemming from the compromised monitoring mechanism and a concurrent erosion of investor confidence in firms. Additionally, the study explores that there is no relationship between board independence and volatility. Thus, the H2 hypothesis is rejected. This finding is consistent with a substantial body of academic research regarding corporate governance and volatility (Cheng, 2008; Sila *et al.*, 2016). In this paper, the H3 hypothesis is accepted. This result aligns with Vo's (2015) and Zhong's (2022) studies, which show a negative impact of foreign ownership and managerial on stock volatility, respectively. In 2015, Vo asserted that heightened foreign investor involvement in local firms reduces stock volatility for the invested companies. Additionally, the H4 hypothesis is accepted. This result is in line with Khafid and Arief (2017) which indicate that an increase in managerial ownership has a positive impact on financial performance, leading to a decrease in stock volatility as management shareholding rises.

Moreover, these findings may be attributed to the distinctive attributes of the Vietnamese market, including concentrated ownership, ineffective board structures, and the ongoing developmental stage of the stock market. These characteristics could hinder the efficient implementation of corporate governance standards, even when Vietnamese firms demonstrate compliance. It is imperative for corporate governance frameworks to exhibit greater adaptability in order to accommodate the nuanced requirements of businesses and the dynamic shifts within the business environment. Additionally, shareholders need to adopt more vigilant monitoring roles, while regulatory authorities should institute stringent measures to safeguard minority shareholders against the potentially exploitative conduct of dominant shareholders.

6. Conclusions

This paper analyzes the effect of corporate governance on stock return volatility in non-financial firms. The study uses a comprehensive dataset of Vietnamese non-financial firms from 2008 to 2020 and employs various tests to establish a causal link between corporate governance and stock return volatility. The results offer valuable insights for prospective studies delving into the economic consequences of corporate governance on stock return volatility and underscore its practical significance. Despite constraints related to data availability and control variables, this study advances our comprehension of the intricate dynamics associated with the relationship between corporate governance and stock return volatility. Subsequent investigations could broaden the applicability of these insights to other nations and incorporate supplementary measures to evaluate the interactions between corporate governance and stock return volatility. Potential endogeneity concerns could also be addressed through the application of instrumental variable techniques, including the GMM or 2SLS methods, to enhance the reliability of the analysis.

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