

Board Attributes and Firm Profitability: Moderating Role of Board Diversity

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Abstract

The study investigates the association between board attributes and firm profitability. To illustrate the links, the case of listed nonfinancial companies on the Dhaka Stock Exchange is examined between 2018 and 2022. To effectively manage the concern of endogeneity, the generalised method of moments (GMM) is used as the econometric technique in this research. The study reveals that, among the attributes of the board, board size and gender diversity have positive and significant effects on profitability; however, the effect of directors' independence on profitability is not significant. Further, the study finds that gender diversity enhances the relationship between board size and profitability, with a compounding effect. The outcome of this study suggests that although gender diversity enhances the power of board size, it has yet to demonstrate effectiveness in the power of board independence.

Keywords: Board Attributes, Gender Diversity, Firm Performance, Generalised Method of Moments

1. INTRODUCTION

When it comes to tackling corporate governance (CG) issues, boards play a crucial role (Fauver et al., 2017). According to Singh et al. (2018), the roles and duties of a board come from two main theories: agency theory and resource dependency theory. The resource dependency theory suggests that board members can offer valuable support and guidance (Pfeffer & Salancik, 1978), helping companies gain a competitive edge (Barney & Clark, 2007). Meanwhile, agency theory sees the board as a watchdog to keep management's actions in check, especially those that might harm shareholders' interests. This approach can help reduce agency problems (Fama & Jensen, 1983) and boost company performance (Jiang et al., 2024).

The board's strategic capabilities are greatly influenced by the often-overlooked diversity of its members (Harjoto et al., 2019). Today, the topic of board member diversity is getting a lot of attention because it's seen as a key part of effective corporate governance (Khan et al., 2024; Ali et al., 2021). Papangkorn et al. (2021) argue that having a diverse board allows for a more thorough review of management activities, which helps reduce potential conflicts of interest between management and ownership, as highlighted by Adams and Ferreira (2009). Additionally, resource provisioning theory suggests that diverse boards are important for protecting valuable company resources by building connections with the outside world (Assenga, 2021; Estélyi and Nisar, 2016; Pfeffer, 1972).

However, Pandey et al. (2023) point out that a company's financial performance isn't just affected by board gender diversity; it's also influenced by a mix of other board and company traits. There's

not much research looking at how diversity and board characteristics together affect company outcomes, even though many studies have explored the link between board traits and performance (Singh et al., 2018). Researchers generally agree that empirical work isn't valued as much anymore, leading to the neglect of important factors, as noted by Carpenter et al. (2004). This study investigates the impact of boardroom diversity and related CG variables on company profitability, filling the research gap mentioned earlier.

Board diversity, including aspects like gender, ethnicity, age, and professional experience, is believed to enhance organizational performance in various ways. The resource dependence hypothesis (Khatib et al., 2020) suggests that diverse boards can access a broader range of resources, perspectives, and networks, improve decision-making and optimize organizational performance. The upper echelons hypothesis (Noja et al., 2021) asserts that the demographic traits of board members might affect their cognitive biases and decision-making, hence impacting organizational effectiveness.

According to Islam et al. (2023), the composition of Bangladeshi boards is heavily skewed towards males and domestic directors; consequently, corporations in Bangladesh exhibit a limited inclination towards the appointment of directors from varied backgrounds. The corporate sector of Bangladesh has seen the enactment of three CG codes, regrettably, none of the CG regulations in Bangladesh has imposed conditions regarding board diversity in the boardroom. Therefore, this study aims to propose policy suggestions to design governance and operational norms that can effectively widen the path to include directors from assorted backgrounds, thereby safeguarding the interests of minority shareholders.

Based on the research gap on Bangladesh, the key purpose of this study is to analysis of one of the notable temporal and contextual factors, board diversity, influencing the performance of firms in a developing nation, Bangladesh. This study is believed to be the maiden empirical research that fills the void of moderation research in the vein of corporate governance. The project has the following two research objectives.

Firstly, the study will analyse the impact of board attributes on firm profitability.

Secondly, unlike the other governance studies, it will further examine the moderation effect of diversity and board characteristics on the performance of firms.

This study utilizes a quantitative research approach to examine the potential moderating effect of board diversity on the relationship between board attributes and firm profitability in Bangladesh, employing a comprehensive dataset and rigorous analytical methods to yield empirical insights relevant to both academic and practitioner perspectives in this significant field of study. The outcomes of the investigation comprise theoretical, methodological, and empirical developments. *First*, the study's findings will contribute to the current understanding of agential and resource dependence perspectives by examining the relationship between the moderating influence of diversity and corporate governance domains on firm performance. *Second*, to adequately mitigate endogeneity concerns, the study will employ the Generalised Method of Moments (GMM). GMM is a robust statistical technique that efficiently handles issues related to dynamic endogeneity, omitted variable bias, and simultaneity. *Third*, this study will contribute to the existing body of knowledge on moderation-mediation research within the specific setting of a developing nation such as Bangladesh, particularly about the dynamic nature of corporate governance legislation.

The remaining part of this report is organized as follows. Chapter 2 outlines the literature review on the study, followed by the hypothesis development. Data, method, and methodology are

discussed in Chapter 3. Chapter 4 presents data analysis and discussion. Recommendations and concluding remarks are presented in Chapter 5.

2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Many stakeholders, including investors looking for high returns, creditors worried about timely loan repayments, and policymakers hoping to promote a healthy economy, place a high value on a company's success and financial health (Rahman et al., 2016). In Bangladesh, comprehending the principal factors of business profitability is essential, given the nation's ongoing rapid economic growth and expanding corporate sector.

According to Chhillar and Lellapalli (2015), different countries' unique institutional frameworks and business characteristics provide a unique link dimension across companies. This problem is known as a "principal-principal" issue among researchers (Dharwadkar et al., 2000). The existence of concentrated ownership and the inadequacy of formal institutional settings as external tools for governance in safeguarding minority shareholders are the two conditions that scholars (e.g., Sauerwald and Peng, 2013; Young et al., 2008) argue must be met for principal-principal disagreement to occur. As a result of the prevailing institutional arrangements in these industrialized nations, the classic Anglo-American model of CG— mostly used by the United Kingdom and the United States—is at odds with that of emerging nations. Separation of ownership and management is a hallmark of the Anglo-American nations' dispersed ownership structure (Aguilera and Jackson, 2003). In addition, investors have faith in the capital market because of its strong efficiency and large liquidity (Porta et al., 1998). Furthermore, minority owners are exceptionally well-protected by the market (Porta et al., 1998).

A significant amount of research has investigated the correlation between many elements of corporate governance, such as board attributes, and business financial performance (Rahman et al., 2016; Hossain et al., 2021). While some research has reported positive associations between board independence and size with bank performance, others have found negative impacts of gender diversity (AbeySirigunawardana, 2018; AlQanea & Hamdan, 2017). This study is to examine the relationship between board characteristics and profitability in Bangladeshi listed businesses (Noja et al., 2021). The study utilizes a dataset that includes a sample of Bangladeshi listed companies. It reveals the relationships between board characteristics such as board size, independence, diversity, and their influence on firm profitability.

2.1 Board Size and Profitability

According to Zahra and Pearce (1990), a successful CG structure is possible provided that the board members fully carry out their obligations. On the other hand, there are research that suggest that larger boards in firms might lead to issues in several ways. For instance, according to Lipton and Lorsch (1992), group interaction may suffer if members have trouble communicating with one another (Evans and Dion, 2012). In the long run, it aids businesses in developing strategies that boosts their performance (Arosa et al., 2010). Board size is mostly dictated by a country's cultural domain, according to Zabri et al. (2016), who present the competing logics of smaller and bigger boards.

There is a lack of consistency in the empirical results about the relationship between board size and company success. Evidence of no correlation between board size and performance has been found by several researchers (e.g., Coles et al., 2008; Dalton and Dalton, 2011). Yermack (1996), Paniagua et al. (2018), Bhagat and Black (2001), and Hermalin and Weisbach (1998) all found that bigger boards were associated with worse company performance. On the other hand, researchers

have found that bigger boards have a beneficial effect on company performance (Singh and Harianto, 1989; Coles et al., 2008; Dalton et al., 1999). Previous research on Bangladesh by Rashid et al. (2010) found a favorable correlation between board size and business performance according to Tobin's Q, but a negative correlation with return on assets (ROA). With the use of the instrumental variable (IV) technique, fixed effect estimation, and ordinary least squares (OLS), Muttakin et al. (2012) found a favorable and statistically significant association in their study regarding operational and financial performance. Taking into account the literatures, the first theory is:

H1: There is a positive relationship between board size and firm performance.

2.2 Board Independence and Profitability

Two CG research schools, agency and stewardship theory, disagree on whether board independence as a percentage affects business performance. According to stewardship theory (Davis et al., 1997; Donaldson and Davis, 1991), managers (agents) are self-motivated and should behave in the best interests of principals (shareholders). Davis et al. (1997) also suggest that top management and inside directors will help one other since they share a goal. Outside directors don't know as much about a company's operations as internal directors, who spend many hours on company business (Donaldson and Davis, 1991). According to this approach, IDs use insider knowledge to monitor management operations (Armstrong et al., 2012) because they know less about the organization.

In contrast to stewardship, agency theory holds that outside independent directors can monitor management-shareholder conflict (Bathala and Rao, 1995) to reduce agency cost (Fama and Jensen, 1983). Independent directors on a board can be trusted and impartial for parties that depend on directorial and management actions. Independent directors may supervise board decisions and activities to prioritize shareowner interests because they have no financial stake in a corporation.

The literature on board independence and company performance is divided. Research suggests that board size negatively affects business performance in the US (Hermalin and Weisbach, 1998) and Australia (Grace et al., 1995). Bhagat and Black (2002) in the US and Nguyen et al. (2019) in Vietnam find little indication that enterprises with more independence perform better. Underperforming corporations also nominate more independent directors to satisfy shareholders (Hermalin and Weisbach, 1988). Other studies, such as those in the US (Pearce and Zahra, 1992) and the UK (Ullah et al., 2018), show a favorable relationship between outsiders' board membership and performance. In emerging markets, Jackling and Johl (2009) in India, and Liu et al. (2015) in China found a positive correlation. Accordingly, several studies show that boards with a majority of independent directors are more efficient.

H2: There is a positive relationship between board independence and firm profitability.

2.3 Gender Diversity and Profitability

The advocates of the agency model (Fama and Jensen, 1983; Jensen and Meckling, 1976) argue that the board should effectively oversee managerial activities to reduce agency conflict, thereby impacting firm value. Research indicates that diverse boards enhance monitoring effectiveness by incorporating directors with unconventional characteristics, thereby improving board independence (Adams and Ferreira 2009; Carter et al. 2003; Erhardt et al., 2003). Females exhibit the capacity for independent thought (Adams and Ferreira, 2009; Adams et al., 2011), thereby

serving as supplementary identifiers (Adams and Ferreira, 2009). This enhancement improves the overall monitoring capabilities of companies and, consequently, increases firm performance.

Huang and Kisgen (2013) argue that firms with a higher proportion of women in top positions experience lower growth compared to those dominated by men. Dobbin and Jung (2010) indicate that shareholders question the competence of female directors, which adversely impacts stock prices. Farrell and Hersch (2005) suggest that when women are appointed as directors, it's often because of regulatory requirements rather than genuine interest, which might lead to them struggling to effectively manage due to a lack of experience.

Adams and Ferreira (2009), in US firms, found that having more women on boards seemed to be linked with poorer operating and market performance. Looking at developing countries, Ujunwa et al. (2012) studied Nigerian companies and discovered that gender diversity seemed to harm their accounting performance. Meanwhile, a recent study by Kweh et al. (2019) on companies listed in Bursa Malaysia found that having women directors negatively affected profitability. On the flip side, Khan and Vieito (2013) noted that companies led by women tend to be less risky, with more stable share prices, and they also perform better overall. Additionally, research by Arfken et al. (2004) and Adams and Flynn (2005) shows that investors believe more gender diversity leads to better accountability and fairness, which boosts their confidence in the company. Terjesen et al. (2016) conducted a cross-country study that identifies a significant correlation between the presence of more women on corporate boards and firm performance, as assessed by Tobin's Q and ROA. Lükerath-Rovers (2013) conducted a study on Dutch firms, indicating that boards with women directors exhibit superior performance compared to those comprised solely of men.

H3: there is a positive relationship between gender diversity and firm profitability.

Given the prior hypothesis, it can be conjectured that the moderation effect on both the board size and board independence will have a positive impact.

H4: there is a positive relationship between the moderation effect of board size and gender diversity and firm profitability.

H5: there is a positive relationship between the moderation effect of board independence and gender diversity and firm profitability.

3. DATA, METHOD AND METHODOLOGY

3.1 Data Sources

The annual reports of non-financial companies listed on the Dhaka Stock Exchange (DSE) in Bangladesh were used as the sample for this research. Cement, Ceramics, Engineering, Food and Allied, Fuel and Power, IT, Jute, Paper and Printing, Pharmaceuticals and Chemical, Services and Real Estate, Tannery, Telecommunication, Textile, Travel and Leisure, and Miscellaneous are among the diverse non-financial sectors for 5 years, 2018-2022, represented in the dataset. Companies that were delisted at the time the data was collected would be excluded from the analysis due to the lack of annual reports. Following Arcot et al. (2010), the analysis excluded financial companies due to their distinct regulatory and governance frameworks.

3.2 Variable

The variable of interest, i.e., outcome variable is firm profitability. In this study, return on assets (ROA) is used as a proxy of profitability (Savitri & Abdullah, 2023). This study identifies four

essential characteristics pertaining to board composition, as established in the existing literature. The board size, *bSIZE*, is the natural logarithm of the total number of board members in a corporation; board independence, *bINDEP*, is the proportion of outside independent members to the total number of board members; Gender diversity, *genDIV*, signifies the percentage of female directors to the total number of directors on the board.

In accordance with previous research, this analysis employs additional control factors that have been shown to influence company performance. As a result, the research covers control variables, such as institutional ownership, family ownership, risk, firm age, and market capitalization. The variable descriptions for the investigation are included in Table 1.

Table 1. Variables Description

Acronym	Scale of Measurement
<i>rOA</i>	Earnings before interest and taxes (EBIT) scaled by yearend book value of total assets
<i>genDIV</i>	Number of female directors scaled by total number of board members
<i>bSIZE</i>	Natural logarithm of number of board members
<i>bINDEP</i>	Proportion of independent directors as measured by total number of independent directors scaled by total board members
<i>iOWN</i>	Proportion of institutional shareholdings scaled by total number of shares
<i>famFIRM</i>	Indicator variable set equal to 1 if it is a family firm, 0 if non-family firm
<i>fiAGE</i>	Natural logarithm of the number of years since the firm is incorporated
<i>lnMC</i>	Natural logarithm of market capitalization
<i>rISK</i>	Standard deviation of market price movements

3.3 Method and Methodology

In CG research, ordinary least squares (OLS) and fixed effects methodologies are widely utilized for performance measurement. The OLS method does not take into account unobserved differences, which can lead to estimates that are biased upwards (Hillier et al., 2011). To tackle the problem of endogeneity caused by these unobserved differences, one approach is to use fixed effect estimates. However, a major drawback of this method is that it relies on the assumption of strict exogeneity within the model. This means that past dependent variables are not included as explanatory variables in the equation to handle dynamic issues (Đặng et al., 2025).

Instrumental Variable Two-Stage Least Squares (IV 2SLS) is a widely used estimation technique that mitigates the problem of endogeneity. However, in the field of CG study, there is a restricted selection of instruments available for use (Nguyen, 2015). This study examines the influence of moderation between board diversity and board attributes on business profitability. Therefore, it is essential to utilize an econometric approach that adequately addresses potential endogeneity issues among key variables. Like previous research (e.g., Arora, 2022; Suss et al., 2021; Terjesen et al., 2016), this study is subject to endogeneity effects. The literature commonly argues that dynamic models, such as GMM, are optimal for estimating models when addressing endogeneity concerns (Ullah et al., 2018).

Researchers, including Arora (2024) and Wintoki et al. (2012), identify three distinct forms of endogeneity that are common in the relationship between corporate governance and firm performance. Endogeneity concerns substantially influence the relationship between board diversity, encompassing both gender (Brahma et al., 2021) and nationality heterogeneity (Miletkov et al., 2017), and firm profitability. Additionally, omitted variable bias may occur when analyzing the relationship between diversity and corporate performance. Ryan and Haslam (2005) suggest the potential for reverse causality, indicating that organizations with lower performance may be more likely to appoint a greater number of female directors. Oxelheim et al. (2013) assert that organizations focused on improving profitability and considering the expansion of international operations are more likely to appoint individuals from other countries to their boards. The performance of the previous year may significantly influence the evaluation of internal governance practices within organizations, as indicated by Wintoki et al. (2012). This study will utilize GMM to analyze the empirical relationships between predictor and explanatory variables. The study has followed the following model:

$$rOA_{it} = \alpha + \delta rOA_{it-1} + \beta_1 genDIV + \beta_2 bSIZE + \beta_3 bINDEP + \beta_4 iOWN + \beta_5 famFIRM + \beta_6 fAGE + \beta_7 lnMC + \beta_8 rISK + year\ dummies + industry\ dummies + \eta_i + vit$$

4. RESULTS AND DISCUSSION

4.1 Descriptive Statistics

The descriptive statistics for the study's relevant variables are shown in Table 2. According to the statistics, the sample period's average return on assets was 8.10 percent, with a standard deviation of 6.90 percent. The average number of directors was 1.93, or around seven directors, according to the natural logarithm. On average, 16.60 percent of the board was made up of independent directors. In almost 73.50% of businesses, family domination was evident. The average percentage of women on boards during the course of the data period is around 14.30 percent.

Table 2. Descriptive Statistics

Variable	Mean	Median	Standard Deviation
rOA (%)	0.081	0.063	0.069
genDIV (%)	0.143	0	0.136
bSIZE (ln)	1.93	1.94	0.238
bINDEP (%)	0.166	0.194	0.121
famFIRM (dummy)	0.735	1	0.501
iOWN (%)	0.1	0.13	0.120
fAGE (ln)	3.122	2.988	0.483
lnMC	7.413	7.355	1.806
rISK	0.454	0.44	0.161

4.2 Multiple Regression Results

Table 3 presents the results of regression analysis using GMM estimation for two models – one without the moderation effect and the other with the moderation effect.

Table 3. Regression Results

Variables	Main Model	Moderation Model
<i>ROAt-1</i>	0.576 (0.000)***	0.562 (0.000)***
<i>genDIV</i>	0.045 (0.049)**	0.899 (0.031)**
<i>bSIZE</i>	0.022 (0.035)**	0.112 (0.027)**
<i>bINDEP</i>	0.028 (0.291)	0.027 (0.592)
<i>iOWN</i>	0.018 (0.336)	-0.006 (0.836)
<i>famFIRM</i>	0.037 (0.001)***	0.038 (0.001)***
<i>fiAGE</i>	0.006 (0.0008)***	0.008 (0.012)**
<i>lnMC</i>	0.021 (0.000)***	0.025 (0.000)***
<i>rISK</i>	-0.003 (0.765)	0.002 (0.879)
<i>genDIV*bSIZE</i>		0.235 (0.024)**
<i>genDIV*bINDEP</i>		0.138 (0.463)
Year Dummy	Yes	Yes
Industry Dummy	Yes	Yes
Number of Observations	1400	1400
F Statistic (p-value)	19.02 (0.000)	13.33 (0.000)
AR (1)	0.000	0.000
AR (2)	0.116	0.100
Hansen J Statistic	0.102	0.242

Note: *p*-values are in the parenthesis *, **, *** denote significance at the 10%, 5% and 1% level of significance, respectively

From the table, it is evident that proportionate presence of women directors in the board for both the models find a significance. Hence, hypothesis 3 in this case is supported. For both models, it is found that board size is positively and significantly associated with profitability at $p < 0.05$). It indicates that the number of board members positively affects ROA. It supports the notion of resource dependency view that larger boards with more knowledge and expertise will help to generate more return for companies. Hence, hypothesis 1 is supported. In terms of moderation effect of gender diversity and board size, the outcome indicates a positive significance and with higher coefficient value than the board size alone. It indicates that female board member influences more when they are in the boardroom. Thus, hypothesis 4 is supported. However, there is no sign of association between the moderation effect of gender and independent board members on profitability.

5. RECOMMENDATION AND CONCLUSION

According to Islam et al. (2023), the composition of Bangladeshi boards is heavily skewed towards males; consequently, corporations in Bangladesh exhibit a limited inclination towards the appointment of directors from varied backgrounds. The corporate sector of Bangladesh has seen the enactment of three CG codes, regrettably, none of the CG regulations in Bangladesh has imposed conditions regarding board diversity in the boardroom. Therefore, this study aims to propose policy suggestions to design governance and operational norms that can effectively widen the path to include directors from assorted backgrounds, thereby safeguarding the interests of minority shareholders.

From the analysis, it is evident that the gender diversity effectively and positively impacts corporate-level profit, suggesting the importance of appointing more female directors in the boardroom of the listed companies of Bangladesh. Moreover, it is found that the board members can be more influential when the women are included in the decision making of board and thus enhances profitability. However, in the context of Bangladesh, board independence yet to demonstrate any impact on the profitability of firms. Even the strong positive effect of gender diversity fails to bring any changes in the independence of the board members' capability towards generating profit. Future research could explore the timing and mechanisms through which gender-diverse boards impact the operational performance of companies in Bangladesh.

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