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Article

Corporate Governance and Capital Structure Decisions: Moderating Role of inside Ownership

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Abstract: This study empirically investigates the association between board attributes and capital structure decisions of non-financial listed firms in Bangladesh. This study also investigates how this association is shaped and moderated by the level of insider ownership. The current study takes 3096 firm-year observations of firms that are listed on the Dhaka Stock Exchange from 2004 to 2023. Multiple regression analysis on panel data was used, and pooled OLS was selected by resolving stationary issues. Moreover, this study used lagged variables and a GMM estimator to address endogeneity. The results show that both board size and board independence are more positively correlated with a firm's leverage under conditions of a high level of inside ownership. On the other hand, without the moderating effect of inside ownership, gender diversity on the board does not have any significant impact on a firm's leverage, and it turns into a positive association due to the moderating effect of inside ownership. This result is consistent with the existing theory and previous findings. After the introduction of corporate governance guidelines, the inside owners' effect on board size and board independence became substantial, indicating that corporate governance guidelines with the moderating role of inside ownership play a significant role in capital structure decisions in Bangladeshi listed firms.

Keywords: corporate governance; capital structure; board size; gender diversity; inside ownership



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1. Introduction

Capital structure is one of the major areas of concern for any firm, whether for-profit or non-profit, and private or public. It recognizes the nature of a firm's arrangements to finance its overall operational activities and growth. Agency theory argues that the association between corporate governance (CG) and the debt of the firms reflects the role of CG in shaping capital structure and cost of debt. Debtholders expect that strong CG can lessen the possibility of default and enhance the availability of reliable accounting information for decision-making (Brown et al. 2011). In this context, (La Porta et al. 2000) described CG as 'corporate governance deals with the ways in which suppliers of finance to corporations assure themselves of obtaining a return on their investment'. As well as good CG practices induce significant growth in firms and appeal to more funds (Ahmed Sheikh and Wang 2012). Therefore, companies with better CG are able to use more funds at a lower cost due to the enhanced confidence among debtholders (Mande et al. 2012). From the agency theory perspective, Meckling and Jensen (1976) argue that managers do not always adopt value-maximizing debt levels in their capital structure decisions. A high

debt level restricts managers from using free cash flow to achieve personal benefits (Jensen 1986). Thus, to ensure an optimal level of debt, the firm must deploy good CG practices.

Leverage can play a self-disciplining role in internal CG practices that mitigate agency costs (Meckling and Jensen 1976). Similarly, Brown et al. (2011) argue that debt can constrain managers' appropriation of resources. Given the above arguments, managers are less likely to achieve their benefits if the firms are operating under good CG. Hence, Morellec (2004) documents that managers who want their interests may favor less debt than optimal because debt may be used as a corrective to confine managers from devious behavior. Moreover, Ortiz-Molina (2007) finds that leverage reduces the conflict between managers and shareholders. In this vein, an effective corporate board may resolve this conflict of interest (Kumar et al. 2022), perform better, and increase the market value of the firm (Shaukat and Trojanowski 2018).

Like other emerging nations, listed Bangladeshi firms are characterized by a high degree of concentrated ownership, and they own significant stakes in a single firm (Rashid 2015). Usually, they are the founding family members who dominate the boards, often try to minimize other monitoring mechanisms (Rashid 2016) and control firm decisions. In most cases, these dominant shareholders also occupy firms' top management positions. Sobhan and Werner (2003) notice that about 73% of boards of non-financial listed firms are conquered by the sponsor shareholders, who also belong to a single family. Hence, outside board members, financial analysts, and the financial media play insignificant roles in monitoring firm management (Rashid 2016). As a result, majority shareholders pursue their own agenda, even at the cost of minority shareholders' interests (Chen and Young 2010). Moreover, several corporate scandals and the volatile nature of capital markets manifest as weak legal and institutional enforcement regimes (Bhowmik and Wang 2019).

The practice of weak CG leads to poor firm performance and risky financing decisions (Abor 2007; Claessens et al. 2002). The above-mentioned constraint scenarios have given momentums to regulatory authorities for developing guidelines and establishing good governance practices in Bangladesh. The Bangladesh Securities and Exchange Commission (BSEC) is the supreme authority that regulates listed firms. In 2006, the BSEC first introduced the CG guidelines on a 'comply or explain the basis for protecting minority shareholders and enhancing investors' confidence in capital markets. The guidelines were amended and reissued on a 'comply' basis in 2012 after significant changes in board composition, different committee formulations, and reporting and compliance levels. The practice of good CG provokes investor confidence, increases firm value, and boosts the bottom line (Gompers et al. 2003), implying that CG is highly associated with firms' financing and capital structure decisions (Abor 2007; Graham and Harvey 2001). Similarly, Claessens et al. (2002) also assert that firms with good governance frameworks enjoy reasonably easy access to funds with lower cost of capital, better performance, and auspicious behavior from stakeholders. Even though debt financing itself is a measure of an important governance mechanism for mitigating agency conflict (Harris and Raviv 1991), it is also important to find the association between debt financing and agency costs that took place between controlling and minority shareholders (Haque et al. 2011; Bhowmik and Wang 2018).

Considering the above arguments, agency conflicts may be resolved through the effectiveness of the board. This also prevents the management of the firm from engaging in opportunistic behavior for personal benefits. To the best of our knowledge, most of the contemporary studies are being conducted to see the direct impact of the board of directors on a firm's capital structure decision and are very limited in observing the moderating effect on this relationship (Alves et al. 2015; Heng et al. 2012). Deng and Wang (2006) argue that ownership structure has significant effects on a firm's reported earnings, and their effect on the firm's decision-making process is also dissimilar. One study by Wu et al. (2022) found that firms with higher levels of insider ownership tend to have better performance in terms of profitability. Some firms may have the largest inside owners, while others may have institutional ownership. The behaviors of various owners are also different. The authors argue that insider ownership can align the interests of managers and shareholders,

leading to better decision-making and improved financial performance. Another study by Li et al. (2018) found similar results, showing that insider ownership has a positive effect on a firm's return on assets (ROA) and return on equity (ROE). From this perspective, it is worthwhile to study what has so far been ignored by prior studies and extract new perceptions of capital structure decisions beyond the thin outlook. Therefore, this study selects inside ownership as a moderator variable, which may open a new door between CG and capital structure. Prior studies have documented that inside ownership has a strong impact on the efficiency of the board (Im and Chung 2017; Bokpin 2009), and it may be assumed that the presence of significant inside ownership impacts CG practices, which may affect the dimension of a board decision, including capital structure.

The outcome of this study may be helpful for policymakers, researchers, and different stakeholders in the financial markets of emerging economies. This empirical study extends its contribution to the literature in various ways by closely investigating how board composition affects a firm's capital structure decisions through the moderating effect of inside ownership.

First, as far as we understand, most prior studies ignored the indirect relationship, such as moderating variables, and exclusively focused on the direct relationship between board composition and capital structure, failing to provide a clear idea about the role of board composition in this issue. This is the only empirical study to investigate the moderating effect of inside ownership on the relationship between board composition and a firm's capital structure decision.

Second, as an internal characteristic of CG, board composition and ownership structure may play an important role in a firm's financing decision. Thus, this empirical study makes a theoretical contribution to the literature on the effects of board composition. Due to lower agency costs, firms with higher inside ownership are more likely to perform better (Balatbat et al. 2004) and are less likely to be involved in earnings management practices (Debnath et al. 2021). This study shows the impact of the interaction between the two internal characteristics of CG on a firm's capital structure. On capital structure decisions, if they interact with another internal characteristic of CG, such as inside ownership. Third, as an emerging economy, prior studies document that Bangladeshi listed firms have more inside ownership (Debnath et al. 2021) and an absence of financial transparency (Knox and Yasmin 2007; Bhowmik et al. 2022); this study contributes to the literature on this special situation.

Finally, prior studies have shown both positive and negative relationships between board composition and capital structure decisions. Moreover, Ji et al. (2020) argue that the relationship between board composition and capital structure is an irreconcilable topic. Therefore, this study swells the present argument about the relationship with an indirect method, the "moderating role of inside ownership," to confirm the relationship between them.

The remainder of the article is organized as follows: Section 2 reviews the existing literature on CG attributes and a firm's capital structure. Section 3 describes the research design and methodology, and Section 4 presents the empirical analyses, findings, discussion, and interpretations of the results. Finally, Section 5 concludes the study with the possible implications of the outcomes.

2. Literature Review

The capital (or financial) structure decision of a firm is a crucial corporate policy choice that leads to agency problems and affects the performance and riskiness of a firm (Meckling and Jensen 1976). According to CG characteristics, to mitigate this problem, top managers and the board of directors have the responsibility to monitor the financial decisions of a firm (Boateng et al. 2017). Board directors are generally believed to be intensely aligned with the interests of shareholders, along with those of managers, in mitigating agency problems (Adams and Ferreira 2009; Meckling and Jensen 1976; Rose 2007). Pillai and Al-Malkawi (2018) state that small board size, non-duality, and dividend payments are known as CG

proxies and pointedly affect firm performance. Being a supreme decision-making body and an active mechanism for monitoring all management activities, the board of a firm is accountable for approving strategic and financing decisions (Ferreira 2010; Liu 2006). Firms with expert members on boards usually enjoy a lower cost of financial leverage (Nugraha and Soewarno 2022). Hence, debt financing is an effective choice for firms with boards of diverse experts.

The quality of governance of listed firms in an emerging economy is also affected by their ownership structure (Boateng et al. 2017; La Porta et al. 1999; Wang and Zhou 2017). The focus of such ownership is generally concentrated on a group of people or family or institutional investors who retain control and influence investment and financing decisions (Firth et al. 2008; La Porta et al. 1999; Liu and Tian 2012). Bajaj et al. (1998) advocate that ownership structure is highly correlated with firms' various measures of leverage ratios.

The practice of a good governance system leads to efficient resource utilization, which lowers the cost of financing (Bhojraj and Sengupta 2003), whereas a weak governance system allows controlling bodies with additional control for involvement in tunneling activities. Several prior studies, such as Berger et al. (1997), Wen et al. (2002), Abor and Biekpe (2007), and Bokpin and Arko (2009), identify that both the board of directors of a firm and its ownership structure have significant influences on making better financial decisions that lead to determining its value. However, the empirical outcomes appear to be varied and debatable (Abor and Biekpe 2007). This study attempts to investigate how the board characteristics and ownership structure of listed Bangladeshi firms influence their capital structure decisions.

Similar to most other emerging economies, the CG system is relatively weak in Bangladesh, where high ownership concentration and dominance on boards are prevalent (Rahman and Khatun 2017; Rashid 2016; Rashid 2015). Consistent with Boateng et al. (2017), Wen et al. (2002), Berger et al. (1997), and Friend and Lang (1988), this study believes that the agency theory perspective will provide valuable insight into how Bangladeshi firms make financing decisions. This study identifies the main board characteristics by board size, board independence, gender diversity, and ownership concentration of insiders and formulates the following hypotheses.

2.1. Board Size

Board size plays a significant role in the effectiveness of CG (Jackling and Johl 2009). Similarly, Said et al. (2009) document that board size is one of the vital dimensions of CG for measuring the activities of their agent. According to resource dependency theory, increased size is more likely to give better benefits to the firm through a network by securing a broader resource base (Pearce and Zahra 1992). Consistently, Florackis (2008), Fauzi and Locke (2012) argue that a large board is more likely to be powerful than a small board and obtains better outcomes, and agency costs are comparatively lower. Moreover, a company with a larger board size has a better capacity to monitor financial accounting and restrain management from involving earnings management (Anderson et al. 2004).

The size of a board can affect a firm's capital structure and its level of financing (Abor 2007). Several prior studies have investigated this relationship, and they document that firms with larger boards also have high debt levels, indicating that firms with larger board sizes are likely to use more debt to finance (Gill et al. 2012; Yusuf and Sulung 2019). Their study shows that large boards usually adopt such policies to improve performance, which may lead to high gearing levels with the aim of raising firm value. The pecking order theory expects that the higher the information asymmetry between management and investors, the costlier it is to raise funds. Therefore, they argue that companies with larger boards are more likely to reduce information asymmetry, which helps motivate lenders to invest funds in companies at a lower cost (Alves et al. 2015; Cheng and Courtenay 2006). In contrast, Chitiavi et al. (2013) and Uwuigbe (2013) find a negative association between firms' debt-to-equity ratios and board size. They state that in the case of a larger board,

debt cost will be inferior due to severe checks and balances, which indicates the preference for internal financing with low leverage ratios.

Consistent with agency theory, this study argues that companies with larger boards are more able to restrain management from opportunistic behavior, and accordingly, [Peasnell et al. \(2005\)](#) recommend that larger boards will enhance the quality of financial statements. Moreover, a small board cannot reflect the dispersed ownership of the company (as opposed to a concentrated ownership firm), which in turn can negatively affect the quality and quantity of financial information disseminated to the public domain ([Chau and Gray 2002](#)). It is more pervasive in Bangladesh, where concentrated ownership is widely prevalent ([Debnath et al. 2021](#)). Furthermore, [Cheng and Courtenay \(2006\)](#) document that large board size is positively associated with the level of firm voluntary disclosure and motivates investors to invest in companies. Based on this theoretical argument and the literature review, this study develops its first hypothesis as follows:

H1. *Board size is positively associated with a firm's leverage level.*

2.2. Board Independence

Independent directors have no economic or psychological dependency on a firm's management and are not employed by firms ([Baysinger and Butler 1985](#)). Different attributes create differences between their independent and non-independent counterparts, such as the absence of material relationships and financial interests in management. Independent directors can deliver strategic advice and valuable insights to the board by applying their expertise, diverse backgrounds, and industry knowledge ([Fama and Jensen 1983](#)). Accordingly, companies with more independent directors are more capable of facilitating board independence and diversity, as well as ensuring the integrity of financial reporting ([Adams and Ferreira 2009](#)). Moreover, according to agency theory, the presence of independent directors on the corporate board is considered an effective CG mechanism ([Fan et al. 2022](#)), and their knowledge, broad vision, and independence from management enable them to rigorously monitor top management actions to take effective governance decisions ([Conheady et al. 2015](#)).

The importance of independent directors is more pervasive for an emerging economy characterized by governments with low-levels of administrative efficiency and weak investor protection ([La Porta et al. 2000](#)), weak rule of law, and poorly defined property rights ([La Porta et al. 1999](#)) and absence of financial transparency ([Fan et al. 2022](#)). As an emerging economy, Bangladesh has observed almost all of these characteristics. [Khan \(2003\)](#) articulates that Bangladesh has many features of an emerging economy, including a lack of accountability and transparency, widespread corruption, low-capacity in terms of public governance, and insufficient rule of law. In order to protect the interests of different stakeholders, including minority shareholders, Bangladesh's capital market has observed significant regulatory reforms in the last decade. Bangladesh Securities and Exchange Commission (BSEC) introduced CG guidelines in 2006. The fundamental purpose of CG is to enhance the dependability of financial reporting by reducing accounting deception and earnings management ([Cohen et al. 2008](#)). This guideline was put into action on a "comply or explain basis". In 2012, the BSEC issued a new CG guideline ([Biswas 2012](#)), and compliance was mandatory. The 2012 guidelines recommend that one-fifth of the directors should be independent directors of listed companies, and the BSEC expects that independent directors do their best in different decision-making processes (including operating and financing) for the wealth maximization of shareholders by applying their knowledge and integrity.

[Weisbach \(1988\)](#), [Byrd and Hickman \(1992\)](#), and [Brickley et al. \(1994\)](#) suggest that the more outsider dominant boards are, the higher is the associated independence and the more likely they are to look after shareholders' interests. The inclusion of non-executive independent members on a board enhances its monitoring ability, which subsequently helps reduce uncertainty about firms and increases firms' fundraising ability ([Abor 2007](#)). The

empirical literature provides mixed results on the relationship between board independence and firm leverage. Some studies argue that there is a positive association between board independence and debt level in firms (Abor 2007; Berger et al. 1997; Bokpin and Arko 2009). The presence of more independence in the board enhances financial accountability, which results in more fund or capital availability for the respective firms due to better credit rating (Chen and Hsu 2009) and also assists as a guarantee that debtholders will obtain their interest on time (Zaid et al. 2020).

Moreover, independent directors play an important role in monitoring top management activities and increasing confidence in the safety of their principal and interest amount (Bokpin and Arko 2009). Furthermore, the positive association between board independence and firm value aligns with the representation theory's particular views (Khan et al. 2020). Khan et al. (2020) added that a conflict of interest is always visible among directors and shareholders, as directors' actions are not correlated with maximizing shareholder value. Hence, it is important to strengthen monitoring mechanisms by appointing sufficient independent directors who can oversee activities and enhance operational effectiveness. On the other hand, Wen et al. (2002), conducted a study on Chinese listed firms and reported that there is a negative relationship between the two variables. Additionally, Abdoli et al. (2021), Kuo et al. (2012), and Wen et al. (2002) have evidence that a low leverage level occurs due to the high market value of equity and the representation of non-executive independent members on boards.

Both the Sarbanes Oxley Act (Sarbanes-Oxley Act 2002) and the Cadbury report (1992) emphasized the importance of boards' independence and their positive role in reducing conflicts of interest between principal and agent. Similarly, considering resource dependency theory, firms that have more independent directors are more likely to use higher leverage because of their high networks, which give easy access to debt providers. Moreover, with reference to agency theory, Jensen (1986) and Berger et al. (1997) report that firms have lower agency costs and higher financial leverage levels if they have more independent directors on the board. Considering theoretical aspect and empirical results, this study, therefore, hypothesizes that

H2. *The presence of more independent directors on the board is positively associated with a firm's leverage level.*

2.3. Gender Diversity

Gender diversity has been receiving priority among academicians and policy makers recently. In a similar vein, the Bangladesh Government is keen to empower females in all sectors, and the state minister for Finance of Bangladesh urges to increase the proportion of female directors on the board and states that "with a supportive working environment, women can efficiently handle challenging tasks" (The Business Standard 2024). Relevant stakeholders expect that feminization policy is not supposed to be based on demographic, ethical, and moral considerations; rather, it should be based on economic and financial considerations for the sustainability of companies. The participation of female members on boards has noticeably increased worldwide, but the presence of under-representation of females on corporate boards still persists across the globe, fluctuating from as low as 3.7% in Asia-Pacific to a maximum of 23% in Sweden (Davies and Hopt 2013) and 14% in Bangladesh (Debnath et al. 2019). Women and men show different abilities and boldness because of diverse socialization procedures (Srinidhi et al. 2011). Meier-Pesti and Penz (2008) find differences between women and men across numerous scopes of financial and monetary principles. They argue that women highlight mutual behaviors, while men highlight affluence and promotion in administrative positions. Moreover, women are more likely to communicate incidents of irregularities in financial statements and are inclined to be more compliant with morals in their workplace (Kaplan et al. 2009).

In a similar vein, prior studies also document that females are less inclined to be involved in unprincipled conduct though making administrative choices, they also assign

less priority to upstreaming individual benefits (Krishnan and Parsons 2008), and they are more likely to be risk-averse compared to males (Barber and Odean 2001). Accordingly, they are more cautioned and more self-protective compared to men in diverse methods of decision-making procedure (Byrnes et al. 1999), which enhance the reporting quality and are able to avoid the reputational loss and the risk of lawsuits" (Srinidhi et al. 2011). However, the role of female directors in emerging nations, where most shares of a company are held by a group of controlling members, remains dubious. In most cases, the controlling male members appoint their female family members or friends to board positions to accomplish their personal agenda. Fundamentally, female board members do not have any active role in ensuring boards' quality as they are employed based on their personal identity rather than expertise, knowledge, and ability to perform their role. Following this view, Debnath et al. (2019) conducted a study on Bangladeshi listed firms and documented that female directors fail to restrain management from an earnings management attitude. They follow the instructions made by affiliate members (Rahman and Saima 2018), meaning that they may not have any significant influence on firm decisions.

The outcomes of empirical evidence on the role of female directors in firms' financing decisions are mixed. Maxfield et al. (2010) argue that women are more likely to avoid risk than men and that their presence on the board negatively affects the leverage of firms. Similarly, Abobakr and Elgiziry (2016) show that female board members reduce firms' leverage by creating more dependency on equity financing. On the other hand, trade-off theory recommends that listed firms have a goal to reach an optimal capital structure, which helps them to maximize the difference between the cost and benefits of issuing debt (Adusei and Obeng 2019). With some exceptions, due to tax benefits, debt financing is less costly compared to equity (Modigliani and Miller 1963) and ultimately maximizes the value of the firms.

Similar to the trade-off theory, according to the agency theory, due to the separation between ownership and management and their different goals, information asymmetries may be high, leading to an increase in the opportunistic behavior of managers (Meckling and Jensen 1976), which can be mitigated through proper monitoring by the board of directors (Chung et al. 2015). Virtanen (2012) conducted a study to examine women's role in the corporate decision-making process and found that women play a more active role in decision-making and impact the decision-making process on the board compared to males. Since women are more aware of reputation risk (Bernardi and Threadgill 2011; Zhang et al. 2013), a gender-diverse board gives positive signs to debtholders (Kaur and Singh 2017). In addition, Emoni et al. (2017) found an association between a firm's capital structure and board gender diversity in the Nairobi market. They also document that firms with more female directors on the board are more likely to give a positive signal to the market regarding financial reporting transparency. From the above possibilities, the current study hypothesizes the relationship between gender diversity and the capital structure of a firm as follows:

H3. *The presence of more female directors on the board is positively associated with a firm's leverage level.*

2.4. The Moderating Role of Insider Ownership

Ownership is understood from two perspectives: inside and outside (Warfield et al. 1995). Insider ownership refers to the proportion of a company's shares that are owned by insiders, including directors, executives, and key personnel of the company (Demsetz and Villalonga 2001; and Brailsford et al. 2002). For the listed companies on the Dhaka Stock Exchange (DSE), there are five different types of ownership. These are (i) inside, (ii) institutional, (iii) government, (iv) foreign, and (v) general. Significant shares (41.31%) are held by inside owners in Bangladesh (Debnath et al. 2021). In most cases, these inside ownerships try to control the board and make key decisions in Bangladesh. Due to the diverse ownership structures of listed companies, controlling and monitoring systems are not the same. Some companies may have the largest inside owners, while others may have

institutional ownership. The behaviors of various owners are not the same. The authors argue that insider ownership can bring into line the interests of shareholders and managers, leading to better decision-making and improved financial performance. Another study by [Li et al. \(2018\)](#) found similar results, showing that insider ownership has a positive effect on a firm's return on assets (ROA) and return on equity (ROE).

Corporate governance plays a significant role in the development and functioning of capital markets and has a strong impact on resource allocation ([Bokpin 2009](#)). [Kim and Sorensen \(1986\)](#) find that the agency cost of debt is lower when insider ownership is higher. Consequently, debt financing is increased due to low agency costs, which report a significant positive association between debt financing and insider ownership ([Yang and Shyu 2019](#)). Prior studies argue that inside ownership is positively associated with the leverage of a firm ([Bokpin 2009](#); [Bin-Sariman et al. 2016](#)). In a similar vein, firms with better CG frameworks are more likely to obtain easier access to financing, lower cost of capital ([Claessens et al. 2002](#)), better financial performance, and more satisfactory treatment of all stakeholders ([Abor 2007](#)); [Graham and Harvey 2001](#). [Cheng and Firth \(2005\)](#), and [Agyei and Owusu \(2014\)](#) reveal a positive connection between inside ownership and leverage.

Moreover, managerial share ownership is positively associated with firms' debt level only when it belongs to the range of 17.8 to 46.4 percent. In an Australian study of top ASX 500 companies, [Brailsford et al. \(2002\)](#) found an inverted U-shaped relationship between the level of managerial ownership and leverage ratios. Furthermore, from an agency point of view, [Meckling and Jensen \(1976\)](#), [Fama and Jensen \(1983\)](#), and [Jensen \(1986\)](#) state that insiders of a firm often try to develop firm size for their benefits, which lead to a colossal rise in leverage ratio. [Jensen \(1986\)](#) also points out that managers of a firm may make efforts to expand the firm beyond its optimal size for their gains, which may result in an increase in gearing levels. From the arguments above, we expect that the presence of more inside ownership will have a positive influence on the board's efficiency through better board decisions and monitoring management activities. Therefore, the leverage decisions of the company will be taken accordingly. From the above discussion, this study develops the following hypotheses

H4. *Firms with more inside ownership will strengthen the positive association between board size and leverage of the firm.*

H5. *Firms with more inside ownership will strengthen the positive association between independent directors and leverage of the firm.*

H6. *Firms with more inside ownership will strengthen the positive association between female directors and the leverage of the firm.*

3. Materials and Methods

3.1. Sample and Data Collection

Firms listed on the DSE over 20 years, from 2000 to 2022, are included in this study. The CG guidelines are being launched and reformatted during this study period, and listed Bangladeshi enterprises have begun to focus more on adhering to CG regulations at this time. Following the existing literature, financial firms are not included because of their unique capital structure and financial character ([Ozkan and Ozkan 2004](#); [Uyar and Kuzey 2014](#); [Zaid et al. 2020](#)), as well as their higher level of regulation ([Khan 2003](#)) compared to other firms. The DSE listed all non-financial firms, and those for which the necessary data are accessible have been selected. A total of 3096 firm-year observations from the sampled firms comprise the final sample. Market data have been collected from DSE monthly reviews, while firm-level data have been collected from published annual reports and websites.

3.2. Research Variables and Measurements

3.2.1. Dependent Variables

Capital structure is the dependent variable in this study. Following the extant literature (e.g., [Zaid et al. 2020](#); [Wen et al. 2002](#); [Boateng et al. 2017](#); [Butt and Hasan 2009](#); [Ganiyu and Abiodun 2012](#)), this study uses total leverage (Liab2Assets) as a proxy for capital structure, defining the variable as the proportion of total liabilities and total assets.

3.2.2. Explanatory Variables

Following recent empirical studies, this study examines the effect of attributes of the board on capital structure. We accommodate three attributes of the board in our study to see their effect on capital structure concerning prior studies, such as board size (BdSize) ([Mande et al. 2012](#); [Saleh and Mujahiddin 2020](#); [Zaid et al. 2020](#)); board independence (BdIndir) ([Zaid et al. 2020](#)) and gender diversity (BdFeml) ([Chow et al. 2023](#)).

3.2.3. Moderating Variable

This empirical study has considered both the direct and indirect impacts while examining the relationship between individual CG mechanisms and financing decisions. In this regard, the influence of inside ownership (OwnInsid) as a moderator variable on the relationship mentioned above has been examined.

3.2.4. Control Variables

In order to lessen the effect of confounding variables on the empirical investigation, this study employs firms' economic variables: firm size (Assets), firm performance (ROA), growth opportunities (Book2Mkt), listing age (Age), and incurrence of financial loss (Loss) as control factors. Large firms can take on more debt because they are more dispersed and have more steady income levels, which lowers their liquidation risk ([Alves et al. 2015](#); [Feng and Fay 2020](#)). Larger firms provide more information to their stakeholders than smaller firms. Hence, there is less information asymmetry. Because of this, larger firms can easily obtain debt at relatively low costs, even when they have a high share of debt ([Palacín-Sánchez et al. 2013](#)). On the other hand, [Sogorb-Mira \(2005\)](#) argues that large firms typically have strong operational competency and a proven record, which allows them to develop more internal resources and have access to a wider range of financial sources, reducing their reliance on debt. According to [Haque et al. \(2011\)](#), the book value of total assets is a useful indicator of firm size. Better financial performance allows firms to be more stable and generate more cash flows that can lower the cost of debt financing ([Anderson et al. 2004](#)), in turn enticing firms to take on additional debt.

According to [Singh and Faircloth \(2005\)](#), borrowing has a negative impact on a company's potential for future investment, which may eventually have a negative impact on operating performance. [Garcia-del-Barrio and Szymanski \(2009\)](#) claim that European firms are more interested in maximizing wins over profits and are willing to employ debt financing and bear substantial losses in order to enhance their on-field performance. The link between firm performance and leverage is, therefore, expected to be negative. This study measures performance by return on assets (ROA), as it is the most commonly used measure of the profitability of firms ([Feng and Fay 2020](#)). [Mande et al. \(2012\)](#) claim that debt holders closely monitor firms with more growth potential, allowing executives fewer opportunities to closely regulate the implementation of strategic initiatives. As a result, firms borrow less to fund their future initiatives. According to [Al-Najjar and Taylor \(2008\)](#), firms with high growth rates employ less debt to lower agency costs brought about by high information asymmetry. It is important to take the age of the listing firm into account ([Bajagai et al. 2019](#)). The reason for this is that the established and more experienced firms tend to have more knowledge and financing capacity. This study also includes the variable incurrence of loss to see the firms' reactions to financing decisions while experiencing a financial loss in a particular year. Table 1 provides the definitions of all the variables used in this study.

Table 1. Definitions of variables.

| Acronym | Measures | Definition | References |
|--------------------|----------------------|---|--|
| <i>Liab2Assets</i> | Book Leverage | proportion of total liabilities and total assets | Zaid et al. (2020); Feng and Fay (2020); Wen et al. (2002); Boateng et al. (2017); Butt and Hasan (2009) |
| <i>BdSize</i> | Board Size | number of board members | Zaid et al. (2020); Feng and Fay (2020) |
| <i>BdIndir</i> | Board Independence | presence of independent director(s) on the board | Zaid et al. (2020); Feng and Fay (2020) |
| <i>BdFeml</i> | Gender Diversity | number of female members on the board | Khan et al. (2020); Chow et al. (2023); Mande et al. (2012) |
| <i>OwnInside</i> | Inside Ownership | proportion of outstanding shares held by insiders (sponsors, directors, etc.) | Feng and Fay (2020) |
| <i>LnAssets</i> | Firm Size | natural log of total assets | Haque et al. (2011); Feng and Fay (2020); Khan et al. (2020) |
| ROA | Firm Performance | proportion of earnings before interest and taxes to total assets | Zaid et al. (2020); Feng and Fay (2020) |
| <i>Book2Mkt</i> | Growth Opportunity | proportion of book value of equity to market value of equity | Al-Najjar and Taylor (2008) |
| <i>Age</i> | Listing Age | natural log of the firm's listing age | Bajagai et al. (2019); Zaid et al. (2020) |
| <i>Loss</i> | Incurrence of a loss | dummy variable indicating an accounting loss for the year | |

This study uses unbalanced panel data analysis because of the combination of a large number of cross-sectional observations with time series. Additional diagnostic tests are conducted in this study to assess the hypotheses. The Jarque–Bera test was used to determine whether the observations were normally distributed. A Chi-square value of 0.6452 indicates that the dataset used for the analysis is normally distributed. This study also performs Fisher-type panel unit root tests for the model variables to address the stationary issue. The test result indicates that all variables, except *BdFeml* and *Owninside*, are stationary. Hence, this study uses the first difference transformation of the non-stationary variables (to make the data stationary) and develops the following model in order to assess the potential associations between board attributes and capital structure, along with the moderating role of inside ownership of listed Bangladeshi companies:

$$\begin{aligned}
 Liab2Assets = & \beta_0 + \beta_1 BdSize_{it} + \beta_2 BdIndir_{it} + \beta_3 D.BdFeml_{it} + \beta_4 D.OwnInside_{it} \\
 & + \beta_5 BdSize * D.OwnInside_{it} + \beta_6 BdIndir * D.OwnInside_{it} \\
 & + \beta_7 D.BdFeml * D.OwnInside_{it} + \beta_8 Assets_{it} + \beta_9 Roa_{it} + \beta_{10} Book2mkt_{it} + \beta_{11} Age_{it} \\
 & + \beta_{12} Loss_{it} + Industry Dummy + Year Dummy
 \end{aligned}$$

According to Bradley et al. (1984), different sectors have different leverage ratios; the results may, therefore, be affected if the control for industry categories is excluded. To account for industry variations, this study uses an industry dummy. For any potential volatility in output over time, this analysis additionally controls for year fixed effects (e.g., Zaid et al. 2020). The explanatory variables in the model fitted using OLS are standardized to a mean of zero to facilitate the interpretation of the estimated coefficients.

In addition, this study divides the sample into pre- and post-reform periods to evaluate the impact of introducing the 2006 CG guidelines (on a comply and explain basis). There are also two time periods for the post-reform period: up until 2011 and from 2012 onward, when CG standards are enforced for all listed corporations. The research objectives are then examined for these periods following the model mentioned above.

According to earlier research (Brown et al. 2011; Roberts and Whited 2013), endogeneity can be a significant issue that may bias the outcomes of CG studies. Earlier governance studies have used a variety of methods to alleviate the adverse impacts of endogeneity. They include fixed effect estimates, the instrumental variable approach (2SLS, 3SLS, and system generalized method of moments (GMM)), and the use of lagged explanatory variables. Fixed effect estimation identifies results based on within-firm variation, but it would be impractical to use this approach for CG studies in the presence of ‘stickiness’ in CG measures. Stickiness in CG practices is common in Bangladesh and other nations, as reported by Biswas (2012). Thus, this study uses lagged variables and a GMM estimator to address endogeneity in the robustness tests.

4. Empirical Outcomes and Discussion

4.1. Descriptive Analysis

A summary of the descriptive analysis of the variables used in this study is shown in Table 2. According to the data, the non-financial Bangladeshi firm’s average leverage ratio (Liab2Assets) is over 62%, which is much higher than the 30% and 47% leverage ratios in several European nations (Morri and Cristanziani 2009). The ratio ranges from 7% to over 200%. This implies that some people favor using debt to fund their assets. However, a few firms rely heavily on outside financing to thrive. As for CG, the average board size (BdSize) shows that listed non-financial Bangladeshi firms typically have about seven members on the board, which is an adequate board size for a company (Lin et al. 2006). According to Lin et al. (2006), an ideal board should consist of seven to nine people. The table, however, demonstrates that the standard deviation of board size is very high, indicating how widely board size varies in this industry. The mean value of board independence (BdIndir) is 0.5444, indicating that boards of non-financial firms include fewer than one independent director. With a minimum representation of 0 and a maximum representation of 5, the average number of female board members (BdFeml) is 0.5101. According to statistics on inside ownership (OwnInsid), the average shareholdings of the sponsors and directors of non-financial Bangladeshi firms are 42 percent, ranging from 0 percent to 99 percent.

Table 2. Descriptive Statistics.

| Variable | Obs | Mean | SD | P50 | Min | P25 | P75 | Max |
|-------------|------|---------|---------|---------|---------|---------|---------|---------|
| Liab2Assets | 3044 | 0.6249 | 0.4050 | 0.5619 | 0.0742 | 0.3688 | 0.7684 | 2.0604 |
| BdSize | 3088 | 6.8397 | 2.3306 | 7 | 3 | 5 | 8 | 18 |
| BdIndir | 3088 | 0.5444 | 0.4981 | 1 | 0 | 0 | 1 | 1 |
| BdFeml | 3096 | 0.5107 | 0.9108 | 0 | 0 | 0 | 1 | 5 |
| OwnInsid | 3016 | 42.4120 | 21.2501 | 46.8700 | 0 | 30 | 51.3850 | 99.1600 |
| LnAssets | 3088 | 20.5538 | 1.8284 | 20.4320 | 17.0889 | 19.2687 | 21.8085 | 26.0892 |
| Roa | 3038 | 0.0593 | 0.0780 | 0.0541 | −0.1098 | 0.0143 | 0.0974 | 0.2541 |
| Book2Mkt | 2929 | 0.8859 | 1.8638 | 0.6798 | −5.1952 | 0.2475 | 1.5134 | 6.1455 |
| Age | 3096 | 15.3865 | 9.3295 | 14 | 1 | 7 | 22 | 35 |

4.2. Bivariate Relationship

Table 3 shows a matrix of correlation coefficients for all variables. In terms of the relationship between the dependent and independent variables, book leverage and board size are both significantly and positively correlated, indicating that the larger the board, the more debt financing the firm may acquire. There is also a significant positive relationship between book leverage and board independence and gender and book leverage. Leverage of the firms is also linked to a number of characteristics of the listed firm, including firm

size, profitability, growth opportunities, firm age," and incurrence of loss. By evaluating the data, it is evident that there is no multicollinearity problem because no correlation coefficient value between any two variables is greater than 0.80 (Gujarati 2009). The variance inflation factor (VIF) is also used to verify the assumption that there is no multicollinearity among the input variables. A VIF of more than 10 often indicates significant collinearity (Gujarati 2009). Table 3 shows that the VIF values range from 1.11 to 3.41, indicating that the regression analysis no longer has a significant problem with multicollinearity.

Table 3. Correlation coefficients matrix.

| | VIF | Liab2Assets | BdSize | BdIndir | BdFeml | OwnInside | LnAssets | Roa | Book2Mkt | Age |
|-----------|------|-------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|---------|
| BdSize | 1.27 | 0.0486 * | | | | | | | | |
| BdIndir | 3.41 | 0.2035 * | 0.1455 * | | | | | | | |
| BdFeml | 1.49 | 0.1417 * | 0.1908 * | 0.3619 * | | | | | | |
| OwnInside | 1.29 | 0.015 | −0.012 | 0.0031 | 0.0649 * | | | | | |
| LnAssets | 1.72 | 0.2107 * | 0.2173 * | 0.4245 * | 0.2078 * | −0.0563 * | | | | |
| Roa | 1.59 | −0.3184 * | 0.0675 * | 0.1547 * | 0.0751 * | 0.1961 * | 0.2157 * | | | |
| Book2Mkt | 1.11 | −0.5518 * | −0.0378 * | −0.0692 * | −0.0091 | −0.0068 | 0.0945 * | −0.0258 | | |
| Age | 1.25 | 0.1492 * | 0.0565 * | 0.2066 * | 0.1108 * | −0.0874 * | 0.0001 | 0.0218 | −0.1320 * | |
| Loss | 1.49 | 0.3583 * | −0.0965 * | −0.2343 * | −0.1343 * | −0.0373 * | −0.2879 * | −0.6107 * | −0.0540 * | −0.0096 |

* significant at 10%.

4.3. Multivariate Regression Results

The empirical findings regarding the relationship between a firm's capital structure choices and its degree of governance quality are presented in this section. The findings on the relationship between firms' leverage decisions and various governance structures are shown in Table 4. The association between leverage and firm-level characteristics is shown in Model 1 in Table 4. Model 2 in Table 4 incorporates the interplay of inside ownership with individual governance mechanisms to discover the moderating influence of inside ownership in financing decisions. The R^2 values of Models 01 and 02 are 0.593 and 0.560, respectively, which indicates that 59% and 56% of financial leverage, respectively, are explained by the independent variables. In terms of CG characteristics and ownership patterns, board size and board independence are significantly and positively correlated with firms' capital structure decisions. There is no statistical relationship found between leverage and gender diversity and inside ownership patterns. It is revealed that all other control variables and funding decisions made by Bangladeshi non-financial listed companies have a strong correlation.

In terms of CG variables, according to Table 4, board size is significantly positively related to the leverage ratio. This outcome is similar to the findings of Zaid et al. (2020), Ahmed Sheikh and Wang (2012), Bokpin and Arko (2009), Kyereboah-Coleman and Biekpe (2006), and agency theory. The results suggest that, in Bangladesh, firms with larger boards have more capability and are likely to increase funds through external financing to maximize firm value. A larger board is believed to be better able to monitor management behavior by delegating tasks among its members, enhancing the firm's image, ultimately lowering the cost of debt, and influencing corporate financing trends (Zaid et al. 2020).

According to the empirical data in Table 4, independent directors on the board are also positively associated with a firm's choice of funding. Our results are consistent with those of previous studies. Such as, the presence of more independence on the board enhances financial accountability, which results in more fund or capital availability for the respective firms due to better credit rating (Chen and Hsu 2009) and also assists as a guarantee that debtholders will obtain their interest on time (Zaid et al. 2020). This finding is also consistent with agency theory, where Jensen (1986) and Berger et al. (1997) report that firms have lower agency costs and higher financial leverage levels if they have more independent directors on the board.

Table 4. Regression Results.

| <i>Variable</i> | <i>Model 01</i> | <i>Model 02</i> |
|------------------------------|-------------------------|-------------------------|
| <i>BdSize</i> | 0.0394 * (0.0196) | 0.0061 * (0.0282) |
| <i>BdIndir</i> | 0.1272 * (0.0621) | 0.1966 ** (0.0987) |
| <i>D.BdFeml</i> | 0.0078 (0.0083) | 0.0223 (0.0207) |
| <i>D.OwnInside</i> | 0.0014 (0.0301) | 0.0056 (0.0004) |
| <i>BdSize *D.OwnInside</i> | | 0.0039 *** (0.0012) |
| <i>BdIndir *D.OwnInside</i> | | 0.0029 *** (0.0004) |
| <i>D.BdFeml *D.OwnInside</i> | | 0.0032 * (0.0019) |
| <i>LnAssets</i> | 0.0126 ** (0.0041) | 0.0283 *** (0.0056) |
| <i>Roa</i> | −1.1499 *** (0.0950) | −1.1489 *** (0.0942) |
| <i>Age</i> | 0.0058 *** (0.0006) | 0.0056 *** (0.0007) |
| <i>Book2Mkt</i> | −0.1384 *** (0.0030) | −0.1374 *** (0.0030) |
| <i>Loss</i> | 0.1439 *** (0.0182) | 0.1405 *** (0.0180) |
| <i>Const</i> | 0.686 *** −0.0439 | 0.2982 *** (0.0945) |
| <i>Sector Dummy</i> | Yes | Yes |
| <i>Year Dummy</i> | Yes | Yes |
| <i>Observations</i> | 2817 | 2817 |
| <i>R-squared</i> | 0.5947 | 0.5649 |

See Table 1 for definitions of the variables. All explanatory variables are ‘mean-centered’. *** Significant at 1%; ** significant at 5%; and * significant at 10%.

The effectiveness of the board of directors is expected to be high with the presence of females on the board (Wasiuzzaman and Wan Mohammad 2020; Zaid et al. 2020). Gender diversity has an indirect impact on the capital structure decisions made by enterprises, claim Ben Saad and Belkacem (2022). They contend that having women on the board affects how much and what kind of information the company discloses, which ultimately affects decisions about capital structure. However, this study does not identify any impact that female directors may have had on the capital structure decisions made by the listed Bangladeshi firms.

Regarding the moderating effect, it is revealed that insider ownership moderates the relationship between board characteristics (board size, board independence, and gender diversity) and a firm’s debt level rather than having a substantial direct influence on the leverage level. This study contends that, in terms of the monitoring function, there may be a complementary or substitution effect between inside ownership and corporate board characteristics. According to Rediker and Seth (1995), the ideal arrangement of governance mechanisms should be viewed as a package, with the efficacy of one mechanism contingent on the efficacy of the others. Debnath et al. (2021) document that inside ownership is inversely related to real earnings management in Bangladeshi listed firms. They argue that firms with more inside ownership are less likely to be involved in manipulation and do their best for themselves. In a similar vein, we expect that inside ownership will play a significant role in moderating the relationship between board composition and capital structure decisions. The outcomes of Model 2 in Table 4 reveal a significant positive relation (at a level of 5%) impact of the interaction between board size and inside ownership on financing decisions. This indicates that the impact of board size on the firm’s debt level will

be more favorable as the percentage of inside ownership rises. This finding may explain why companies with more inside ownership and larger boards are more capable of raising funds at a lower cost and maximizing the value of the firm.

Model 2 also demonstrates that the degree of firm leverage is significantly and positively impacted by the interaction between board independence and inside ownership. This finding supports the idea that when there is a significant percentage of inside ownership, the impact of board independence on “accumulating debt” is more favorable. To put it more simply, having independent members on the board increases the likelihood that the company’s management will act in the lenders’ best interests (Zaid et al. 2020).

The findings show that the estimated coefficient of the interface between female board members and inside ownership is positive and statistically significant on leverage decisions, even though inside ownership and gender diversity are not found to have any significant direct effects individually. The most likely explanation is that a gender-diverse board in the presence of high inside ownership will support the view that gender diversity will work in the greatest interests of creditors. As a result, the cost of debt will be lower, allowing businesses to borrow more money, especially if they want to increase the value of the firm (Zaid et al. 2020).

With respect to control variables, this study finds that listed non-financial Bangladeshi firms with more assets are linked to higher levels of leverage. These results are consistent with those of prior studies (Alves et al. 2015; Chang and Lee 2006) and suggest that larger companies are less risky and more likely to use more debt than equity. The outcomes in Table 4 also show that in Bangladesh, the capacity to take on more debt is higher for more experienced and established companies. The coefficient of profitability (ROA) is found to be negative and significant, implying that more profitable Bangladeshi firms rely more on equity and less on debt. This result is consistent with Zaid et al. (2020), who argue that profitable firms usually borrow less since they may have sufficient funds for their regular operations. Growth is found to be negatively related to debt financing. This result is consistent with the argument of Al-Najjar and Taylor (2008) that firms with high growth rates employ less debt to minimize agency costs driven by significant information asymmetry. This study predicts that firms that experience financial losses each year require more funds for operations and will tend to borrow funds from outside sources. The outcome in Table 4 supports this assumption.

In Table 5, we report the relationship in three different time zones: the first one is before CG guidelines (Earlier than 2006), the second time zone is 2006–2011, when firms had to comply with or explain the CG guidelines, and the last one is after 2012, when all listed firms must comply with the CG guidelines. This table shows the effects of pre- and post-CG reforms on the relationship between board composition and firm capital structure decisions, including the moderating effect of inside ownership. The findings in Table 5 show that following the introduction of the CG guidelines in 2006, board size and independent directors became influential factors in firms’ financing decisions. In the pre-reform stage, female directors are found to have a detrimental impact on financing decisions, but they are not found to have a significant impact once the BSEC introduces governance mechanisms. Regarding the moderating role of inside ownership, after reform, the inside owners’ effect on board size and the number of independent directors became substantial, indicating that CG guidelines with the moderating role of inside ownership play a significant role in capital structure decisions in Bangladeshi listed firms.

Table 5. Regression results: CG pre- and post-reform phases.

| Variable | Pre-Reform | | Post-Reform | Overall |
|------------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| | 2005 | 2011 | 2012> | |
| <i>BdSize</i> | 0.0051 (0.0044) | 0.0110 ** (0.0051) | 0.0819 *** (0.0059) | 0.0061 * (0.0282) |
| <i>BdIndir</i> | 0.0596 (0.1300) | 0.278 ** (0.1150) | 1.216 *** (0.4080) | 0.1966 ** (0.0987) |
| <i>D.BdFeml</i> | −0.0429 * (0.0258) | 0.0279 (0.0258) | 0.0191 (0.0161) | 0.0223 (0.0207) |
| <i>D.OwnInside</i> | 0.00821 (0.0073) | 0.00116 (0.0017) | 0.00701 (0.0078) | 0.0056 (0.0004) |
| <i>BdSize *D.OwnInside</i> | 0.0004 (0.0003) | 0.0045 * (0.0025) | 0.00114 *** (0.0002) | 0.0039 *** (0.0012) |
| <i>BdIndir *D.OwnInside</i> | −0.0092 (0.0087) | 0.0027 *** (0.0009) | 0.0024 *** (0.0006) | 0.0029 *** (0.0004) |
| <i>D.BdFeml *D.OwnInside</i> | 0.0053 *** (0.0015) | 0.0035 * (0.0020) | 0.0099 * (0.0054) | 0.0032 * (0.0019) |
| <i>LnAssets</i> | 0.0044 * (0.0025) | 0.0014 * (0.0008) | 0.011 * (0.0056) | 0.0283 *** (0.0056) |
| <i>Roa</i> | −1.451 *** (0.1710) | −1.295 *** (0.1540) | −0.755 *** (0.1680) | −1.1489 *** (0.0942) |
| <i>Age</i> | 0.00669 *** (0.0014) | 0.00401 *** (0.0012) | 0.00591 *** (0.0011) | 0.0056 *** (0.0007) |
| <i>Book2Mkt</i> | −0.1430 *** (0.0037) | −0.1510 *** (0.0048) | −0.0695 *** (0.0097) | −0.1374 *** (0.0030) |
| <i>Loss</i> | 0.110 *** (0.0270) | 0.0983 *** (0.0291) | 0.162 *** (0.0392) | 0.1405 *** (0.0180) |
| <i>Const</i> | 0.780 *** (0.0799) | 0.707 *** (0.0457) | 0.621 *** (0.0535) | 0.2981 *** (0.0945) |
| <i>Sector Dummy</i> | Yes | Yes | Yes | Yes |
| <i>Year Dummy</i> | Yes | Yes | Yes | Yes |
| <i>Observations</i> | 967 | 860 | 990 | 2817 |
| <i>R-squared</i> | 0.739 | 0.677 | 0.267 | 0.5749 |

See Table 1 for definitions of the variables. All continuous explanatory variables are ‘mean-centered’. *** Significant at 1%; ** significant at 5%; and * significant at 10%.

4.4. Endogeneity

As stated earlier, endogeneity can be a serious issue in governance studies. Thereby, following prior studies (e.g., [Zaid et al. 2020](#)), to lessen the negative effects of any potential endogeneity risk, this study reproduces the primary regression model with one-year lagged values for all explanatory variables and uses dynamic panel data to run the generalized method of moments (GMM) estimator as a model developed by [Arellano and Bond \(1991\)](#) and [Blundell and Bond \(1998\)](#) to assuage the detrimental consequence of endogeneity. The dynamic effects are investigated using the lagged value of the dependent variable *Liab2Assets(t-1)* as an explanatory variable in the study’s econometric model. Comparing the results of the lagged IV and GMM regression models with the results of the primary model (see Table 6), it is found that endogeneity may not be a serious concern for this study.

Table 6. Robust Results.

| Variable | Pooled OLS | Lagged IV | GMM |
|------------------------------|-------------------------|-------------------------|-------------------------|
| <i>Liab2Assets(t-1)</i> | | | 0.810 *** (0.0111) |
| <i>BdSize</i> | 0.0061 * (0.0282) | 0.0127 * (0.0075) | 0.0021 * (0.0012) |
| <i>BdIndir</i> | 0.1966 ** (0.0987) | −0.1060 * (0.0630) | 0.0884 * (0.0470) |
| <i>D.BdFeml</i> | 0.0223 (0.0207) | −0.0119 (0.0090) | 0.008 (0.0051) |
| <i>D.OwnInside</i> | 0.0056 (0.0004) | 0.0337 (0.0320) | 0.0125 (0.0106) |
| <i>BdSize *D.OwnInside</i> | 0.0039 *** (0.0012) | −0.0356 *** (0.0135) | 0.0257 * (0.0155) |
| <i>BdIndir *D.OwnInside</i> | 0.0029 *** (0.0004) | 0.0022 *** (0.0003) | 0.0317 ** (−0.0153) |
| <i>D.BdFeml *D.OwnInside</i> | 0.0032 * (0.0019) | 0.0012 *** (0.0004) | 0.0719 *** (0.0241) |
| <i>LnAssets</i> | 0.0283 *** (0.0056) | 0.0108 ** (0.0043) | 0.0049 ** (0.0025) |
| <i>Roa</i> | −1.1489 *** (0.0942) | −1.196 *** (0.0987) | −0.317 *** (0.0570) |
| <i>Age</i> | 0.0056 *** (0.0007) | 0.0054 *** (0.0007) | 0.00138 *** (0.0004) |
| <i>Book2Mkt</i> | −0.1374 *** (0.0030) | −0.1360 *** (0.0031) | −0.0322 *** (0.0023) |
| <i>Loss</i> | 0.1405 *** (0.0180) | 0.1480 *** (0.0189) | 0.0681 *** (0.0107) |
| <i>Const</i> | 0.2982 *** (0.0945) | 0.4950 *** (0.0386) | 0.989 *** (0.166) |
| <i>Sector Dummy</i> | Yes | Yes | Yes |
| <i>Year Dummy</i> | Yes | Yes | Yes |
| <i>Observations</i> | 2817 | 2497 | 2428 |
| <i>R-squared</i> | 0.5749 | 0.585 | 0.87 |

See Table 1 for definitions of the variables. All explanatory variables are ‘mean-centered’. *** Significant at 1%; ** significant at 5%; and * significant at 10%.

5. Conclusions

The association between board attributes and capital structure decisions has been established both theoretically and empirically. However, prior studies have not yet shown the interaction consequence of board characteristics on capital structure decisions of the firms. Therefore, this study considers the interaction effect of board attributes to obtain a better understanding, and accordingly, we divide between direct and indirect to analyze the association between board attributes and a firm’s capital structure decision. More particularly, the moderating effect of inside ownership on the association between board attributes and a firm’s capital structure decisions has been investigated and provides new insights compared to previous findings.

The stunning finding of the study is that insider ownership moderates the association between board attributes (board size, board independence, and gender diversity) and a firm’s debt level rather than having a substantial direct impact on the debt level. This study also found that, in terms of the monitoring function, there may be a complementary or substitution effect between inside ownership and corporate board characteristics. Moreover, the outcomes reveal a positive and statistically significant impact of the interaction between board size and inside ownership on financing decisions. This shows that the effect of board size on the firm’s debt level will be more favorable as the percentage of inside ownership rises. This finding may explain that companies with more inside ownership and larger boards are more capable of raising funds at a lower cost and maximizing the value of the firm. The findings also show that due to the introduction of the CG guidelines in

2006, board size and independent directors became persuasive factors in firms' financing choices. In the pre-reform stage, female directors are found to have a detrimental impact on financing decisions, but they are not found to have a noteworthy impact once the BSEC introduces governance mechanisms.

This empirical study encompasses four possible contributions to the existing literature by closely investigating how board composition affects a firm's capital structure decisions with the moderating effect of inside ownership. First, prior studies did not examine the indirect relationship, such as moderating variables, and solely focused on the direct relationship between board composition and capital structure, where they failed to give a clear idea about the role of board composition on this issue. This is the only empirical study that investigates the moderating effect of inside ownership on the relationship between board composition and a firm's capital structure decision. Second, ownership structure and board composition may have a significant role in a firm's financing decision. Thus, this empirical study has a theoretical role to the outcome of board composition. Third, this study swells the present argument about the relationship with an indirect method, "moderating role of inside ownership," to confirm the relationship between them. Moreover, practically, the result of the study may be accommodating for policymakers and different stakeholders in the financial market of emerging economies to see the moderating role of inside ownership on the relationship between capital structure and CG. In this study, we have not checked the managerial behavior of a firm when inside ownership is high, and future research may see this area how the behavior of management is changed due to the moderating effect of inside ownership on the relationship between capital structure and characteristics of CG.

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