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Article

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Boardroom dynamics: The power of board composition and gender diversity in shaping capital structure

Ibrahim Nandom Yakubu¹ and Seydou Oumarou^{2*}

Abstract: This study investigates the impact of board composition and gender diversity on capital structure using a dataset comprising 30 publicly traded Ghanaian firms from 2008 to 2018. By employing the system generalized method of moments (GMM) as the analytical technique and controlling for firm size and profitability, the study unveils several noteworthy findings. Firstly, the presence of inside directors demonstrates a significant negative influence on leverage, aligning with the principles of agency theory, suggesting that inside directors with privileged access to internal information adopt a cautious approach to debt financing to minimize conflicts between managers and shareholders. Secondly, the positive and significant effect of independent or outside directors on leverage syncs with resource dependency theory, implying that these directors bring valuable expertise and perspectives to firms' capital structure decisions. Surprisingly, the study reveals that gender diversity on boards exerts a significant positive impact on leverage, supporting resource dependency theory, as gender-diverse boards enhance a firm's reputation and attractiveness to lenders. Moreover, firm size demonstrates a negative and significant effect on leverage, indicating that larger firms possess greater access to internal financing sources, reducing reliance on external debt. Overall, the study underscores the importance of carefully considering board composition for optimal capital structure decisions, highlighting the benefits of maintaining a balance between inside and outside directors and promoting gender diversity on boards for improved decision-making and enhanced firm value.

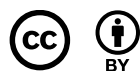
Subjects: Corporate Finance; Corporate Governance; Business

Keywords: board composition; gender diversity; capital structure; Ghana; GMM

JEL classification: G30; G32; M14

1. Introduction

The financial position of firms greatly depends on their capital structure, which makes it a crucial factor that finance managers must consider when making critical decisions (Yakubu et al., 2017). Capital structure refers to the mix of debt and equity used by a firm to finance its operations and investments. It is a fundamental aspect of financial management as it influences the risk profile, cost of capital, and overall financial stability of a company (Graham & Harvey, 2001).



The capital structure irrelevance hypothesis, first proposed by Modigliani and Miller (1958), sparked considerable debate on the capital structure decisions of firms. Modigliani and Miller (1958) demonstrated that, under perfect capital markets, capital structure decisions do not affect the value of a firm. Their groundbreaking proposition suggested that the value of a firm is solely determined by its underlying cash flows and the risk associated with those cash flows. In essence, the capital structure is irrelevant in a world of perfect markets. However, in 1963, Modigliani and Miller extended their analysis to consider the impact of corporate taxes on capital structure decisions. They relaxed the assumption of perfect markets and introduced corporate tax into their models. This adjustment led to a significant finding that altered the landscape of capital structure theory. They revealed that the value of a firm increases with higher debt levels in the presence of corporate taxes. The key insight behind this finding lies in the tax deductibility of interest payments. Modigliani and Miller (1963) highlighted that interest payments made by firms on debt are tax-deductible expenses. As a result, firms that finance their operations with long-term debt can benefit from a debt tax shield. The debt tax shield refers to the reduction in taxable income resulting from the deduction of interest expenses, which in turn reduces the firm's tax obligations. This tax advantage provides an incentive for firms to take on more debt, as it enhances the after-tax cash flows and, consequently, the overall value of the firm.

Following the hypothesis of Modigliani and Miller (1963), research on the factors driving capital structure decisions has been conducted globally. Despite the extensive research on this topic, there is still no consensus on the significant factors that influence the financing decisions of firms, and this lack of agreement has highlighted the need for further investigation. Arguably, extant studies have largely explored the impact of firm-level factors, such as profitability, firm size, and liquidity, among others, on capital structure decisions (see Benyamin & Soekarno, 2023; Gutiérrez Ponce et al., 2019; Hamouda et al., 2023; Neykov et al., 2022; Pham & Hrdý, 2023; Pratheepan & Yatiwella, 2016; Saif-Alyousfi et al., 2020). In contrast, the effect of corporate governance on firms' leverage decisions has received relatively little research attention. Corporate governance is undeniably a crucial determinant of firm behaviour, encompassing various aspects of decision-making, including financing choices. The efficacy of corporate governance mechanisms significantly influences the decision-making process of managers and safeguards the interests of shareholders (Tricker & Mrabure & Abhulimhen-Iyoha, 2020; Post & Byron, 2015). Additionally, firms can establish reliable relationships with creditors through the adoption of an effective corporate governance system (Ahmad et al., 2018). Understanding the relationship between corporate governance and capital structure can help policymakers develop better regulations and guidelines to promote good corporate governance practices and reduce financial risk. Similarly, understanding the nexus between corporate governance and capital structure will aid in enhancing firms' long-term growth prospects.

This study seeks to make a significant contribution to the existing academic literature by delving into the dynamic link between corporate governance structures and firms' capital structure decisions, with a specific focus on Ghana. In recent years, corporate governance has garnered substantial attention in the Ghanaian context, as evidenced by a burgeoning body of research chiefly examining its impact on corporate performance (Andoh et al., 2023; Boachie, 2021; Coleman & Wu, 2021; Ledi & Ameza-Xemalordzo, 2023; Maama et al., 2019; Mensah & Bein, 2023; Musah & Adutwumwaa, 2021; Puni & Anlesinya, 2020; Sarpong-Danquah et al., 2022). By examining the relationship between corporate governance structures and capital structure decisions, the study seeks to unveil new dimensions of the governance-finance nexus, enhancing our understanding of how effective governance practices impact the financing choices of firms operating in emerging market economies like Ghana.

Specifically, this study aims to investigate the impact of board composition and gender diversity on firms' capital structure decisions. Board composition, characterized by the proportion of inside and outside directors, has been recognized as a crucial element of corporate governance and can

influence firms' strategic decisions, including financing choices (Diligent, 2022; Stiles & Taylor, 2001). Moreover, the study recognizes the growing importance of gender diversity in corporate governance. Research has shown that gender-diverse boards can bring about enhanced decision-making processes and contribute to better firm performance (Arvanitis et al., 2022; Nguyen et al., 2020; Safiullah et al., 2022). In this context, the study acknowledges the significance of inclusivity and diversity in shaping corporate governance and its potential impact on financial decision-making.

Theoretically, the motivation for the study can be derived from agency theory and resource dependency theory. The agency theory posits that conflicts of interest arise between principals (shareholders) and agents (managers) due to differing goals and information asymmetry (M. Jensen & Meckling, 1976; Jerzemowska, 2006). The theory postulates that boards of directors serve as a mechanism to mitigate these conflicts by monitoring and controlling managers, ensuring their actions align with shareholder interests (DiCarlo, 2017). Under this theory, the utilization of debt financing, as suggested by Jiraporn et al. (2012), can serve as an incentive for managers to exert greater effort, minimize resource misappropriation, and improve investment decision-making. By relying on debt, firms can potentially mitigate agency conflicts by aligning the interests of managers with those of shareholders, given that the presence of debt introduces additional financial obligations and the risk of default, prompting managers to exert more effort to safeguard the firm's financial health and meet debt repayment obligations. Consequently, leveraging the benefits of debt financing offers a strategic avenue for firms to address agency conflicts and enhance managerial performance and accountability. The resource dependency theory, on the other hand, highlights the impact of external factors and resource availability on organizational behaviour and decision-making processes (Nienhüser, 2008). According to this theory, directors, as part of the board, can leverage their networks and connections to access crucial resources, including financial capital (Pfeffer & Salancik, 1978). Therefore, having a diverse board, including diversity in gender, ethnicity, and experience, can enhance firms' resource dependency capabilities. For example, diverse directors may have connections to different lenders or investors, expanding the firm's options for raising capital. In this study, the aim is to test whether these theories are valid for our sample.

In light of the preceding discussion, this study aims to address the following research question: To what extent do board composition and gender diversity explain the capital structure decisions of firms in Ghana? Additionally, the study seeks to determine whether the prevailing theories adequately predict firms' choices to utilize debt.

Consequently, this study aims to overcome the limitations of previous research by adopting various approaches, thereby making a significant contribution to the existing literature. Firstly, the study adds to the ongoing yet scanty evidence on the impact of corporate governance on capital structure decisions of firms not only in Ghana but in developing countries in general. To the best of the researchers' knowledge, the empirical works of Abor (2007), Bokpin and Arko (2009), and Ahmed (2019) are the notable studies that have examined the effect of corporate governance variables on capital structure in Ghana. While Ahmed's (2019) study considered small and medium enterprises (SMEs), Abor (2007) and Bokpin and Arko (2009) employed data from listed firms. This study extends the works of Abor (2007) and Bokpin and Arko (2009) by using a more recent dataset of listed firms. Besides, the aforementioned authors employed traditional panel techniques, which are labelled with several criticisms, such as endogeneity issues. This study differs further from the earlier works by using the generalized method of moments (GMM) technique, which addresses the endogeneity problem. Secondly, within the context of a developing country, this study contributes to the literature by adopting multiple theoretical frameworks to examine whether established capital structure theories effectively explain firms' financing decisions. Finally, the outcomes of this study will not only enrich the academic discourse but also hold practical implications. Firm managers can utilize the findings to make informed decisions regarding their

ideal capital structure, considering the influence of corporate governance and relevant theories on financing choices.

The remainder of the paper is structured as follows: the next section presents the background of the study. Section 3 and 4 respectively review the theoretical and empirical literature relevant to the study. The research design is outlined in section 5, while section 6 provides an in-depth analysis and discussion of the study's findings. Finally, the paper summarizes and concludes in Section 7 with recommendations for policy and suggestions for future research.

2. Background

The issue of corporate governance has garnered significant attention globally over the past years, following several high-profile corporate scandals such as the Enron and WorldCom cases (Iatridis, 2010; Lu et al., 2022). At the firm level, good corporate governance structures contribute significantly to boosting performance and goodwill, ensuring accountability, and safeguarding shareholders' interests (Mrabure & Abhulimhen-Iyoha, 2020; Ngatno et al., 2021).

Developing economies, such as Ghana, grapple with a prevalent problem of inadequate adherence to corporate governance standards. This issue can be attributed to a multitude of factors, encompassing disparities in enforcement practices, limited board independence, power imbalances, and deficient disclosure mechanisms (Ledi & Ameza-Xemalordzo, 2023; Nakpodia et al., 2018). Aligned with this notion, during the early 2000s, several companies operating in Ghana experienced catastrophic failures as a direct consequence of inadequate governance practices (Sarpong-Danquah et al., 2018 cited in Ledi & Ameza-Xemalordzo, 2023). In response to these challenges, Ghana has witnessed notable developments in its corporate governance landscape in the past two decades. The Companies Act 2019 (Act 992) serves as key legislation governing corporate governance in Ghana. The Companies Act incorporates best practices from more experienced countries like the United Kingdom and includes specific requirements for organizational structure, financial reporting, directors' appointments, and public offerings. The Securities and Exchange Commission (SEC) Regulations 2003 (LI 1728) and the Securities Industry Act 2016 (Act 929) provide additional guidelines for listed firms. Industry-specific legislation, such as the Banks and Specialized Deposit-Taking Institutions Act 2016 (Act 930) and the Insurance Act 2006 (Act 724) also influences corporate governance practices in the banking and insurance sectors. Alongside these statutory laws, there are voluntary corporate governance standards, such as the Ghana Manual on Corporate Governance and the Guidelines on Best Corporate Governance Practices by the SEC.

Despite the introduction of these legislations aimed at strengthening the governance structure of firms in Ghana, the effective implementation of these guidelines has been relatively inadequate. As a result, Ghana continues to grapple with lax corporate governance practices. One of the key factors contributing to this undesirable situation is the pervasive issue of corruption, which hampers the country's economic growth (Adegbite, 2012). The insufficient implementation of corporate governance guidelines and the prevalence of inadequate corporate governance practices in Ghana have significant repercussions for firms operating within the country. Deficient corporate governance contributes to a lack of transparency, accountability, and effective oversight within organizations. This creates an environment that is susceptible to mismanagement, unethical conduct, and fraudulent activities, consequently eroding investor confidence and negatively impacting corporate outcomes (Kumar & Zattoni, 2014). Furthermore, the absence of robust governance practices heightens the risk of agency problems, conflicts of interest, and value erosion, thereby impeding the long-term sustainability and growth prospects of firms (Adams & Mehran, 2003).

Given the prevalence of weak corporate governance practices in Ghana, studying the impact of corporate governance on capital structure becomes highly significant. Various corporate

governance mechanisms, including the composition of the board, the presence of independent directors, and transparency, play a pivotal role in shaping firms' financing choices and capital structure decisions. By exploring the relationship between corporate governance and capital structure, researchers can offer valuable insights into how governance practices influence firms' access to financing. The findings hold paramount importance for policymakers, regulators, and firm managers in Ghana by contributing to the development of effective corporate governance frameworks, fostering responsible decision-making processes, and enhancing firms' competitive positioning in both local and global markets.

3. Theoretical literature review

Following the capital structure irrelevance arguments of Modigliani and Miller (1958), numerous capital structure theories have been proposed by academic researchers. This study is grounded in the frameworks of agency, stewardship, resource dependence, pecking order, and signaling theories.

The agency theory examines the conflicts of interest that arise from the potential misalignment between shareholders (the principal) and managers (the agent) of firms (M. Jensen & Meckling, 1976). Managers may have personal incentives to pursue investment decisions that maximize their own compensation (Baker et al., 1988). These agency conflicts give rise to agency costs, which refer to the expenses associated with monitoring and mitigating the conflicts to protect shareholders' interests. Debt financing can serve as an effective mechanism to alleviate the conflict of interest between managers and shareholders (M. C. Jensen, 1986; Jiraporn et al., 2012). By utilizing debt, companies reduce the amount of free cash flow available to managers for discretionary spending. Despite its dominance in the corporate governance literature, it is essential to recognize the limitations of the agency theory (Alhossini et al., 2021). For instance, its assumption of self-interested behaviour on the part of managers, may not always hold true, as managers in some entities are motivated by factors beyond financial incentives, exhibiting varying degrees of altruistic behaviour (Elmagrhi et al., 2018).

In contrast to the agency theory, the stewardship theory postulates that managers act as responsible custodians of the firm's resources and prioritize the long-term welfare of shareholders (Donaldson & Davis, 1991). According to the theory, managers have a natural inclination to act in the best interests of the organization and its stakeholders, exhibiting a sense of stewardship (Davis et al., 1997). In the context of capital structure decisions, stewardship theory suggests that managers emphasize the financial well-being and stability of the firm, and will consider the long-term implications of leverage and strive to maintain an optimal capital structure that aligns with the shareholders' interests (Chrisman, 2019). A limitation of the stewardship theory lies in its assumption that managers consistently prioritize the organization and its stakeholders, disregarding personal interests or motivations that may impact their decision-making in practice (Menyah, 2013).

Resource dependency theory underscores the impact of resource availability and external factors on how firms operate and make decisions (Pfeffer & Salancik, 1978). It posits that directors can play a pivotal role in financial decision-making by utilizing their networks and connections to acquire essential resources (Hillman & Dalziel, 2003). As a result, a diverse board, including gender diversity, can bring a multitude of perspectives, experiences, and networks to the firm, bolstering its ability to forge and maintain relationships with external stakeholders, including financial institutions (Peterson & Gardner, 2022). Critics argue that the theory has limitations in addressing the interaction of internal factors like organizational culture and power structures with external resource dependencies (D'Aveni & Gunther, 1994).

According to the signalling theory, a firm's choice of capital structure conveys to outside investors regarding the information that is held by shareholders (Michaelas et al., 1999). The decision to utilize debt financing can be perceived as a positive signal by shareholders. For example, the issuance of debt may be interpreted as an indication that the firm has the capacity

to distribute dividends to its current shareholders (Chang & Rhee, 1990). While the theory assumes that all market participants interpret signals uniformly, the reality is that perceptions can vary among individuals, highlighting a potential misalignment with this assumption (Schweidel et al., 2022).

On the other hand, the pecking order theory, introduced by Myers (1984) and further developed by Myers and Majluf (1984), posits that firms generally prefer internal financing over external sources. This theory assumes that firms follow a hierarchical financing order, where retained earnings are the primary funding source (Bunyaminu et al., 2021; Yakubu, 2019). If internal cash flows are insufficient, external financing is pursued. Debt financing is favored initially due to its lower information costs, making it the preferred choice when external funds are required (Myers, 1984). While this theory is valuable for understanding firms' financing preferences, it fails to fully consider the potential agency costs linked to internal financing, resulting in the possibility of firms foregoing valuable investment opportunities due to their conservative inclination towards utilizing internal funds (Guedes & Opler, 1996).

Given the inherent limitations of the individual theories in fully capturing the complexities of capital structure decisions, this study makes a significant contribution to the literature by adopting a comprehensive approach that integrates multiple theoretical frameworks. By considering various perspectives, the study offers a more holistic understanding of the factors influencing capital structure decisions.

4. Empirical literature review and hypotheses development

4.1. Inside directors and leverage

Inside directors, being individuals serving on the board of directors and having privileged access to internal company information, hold the potential to exert influence on a firm's decisions regarding leverage. The implications of their role in determining leverage can be comprehended by examining diverse theoretical perspectives and empirical findings. Based on the principles of the agency theory, inside directors are likely to have motivations to reduce leverage as a means to address the inherent conflicts between managers and shareholders. Inside directors, as members of the corporate board, possess greater insights regarding the operations of the firm, encompassing critical aspects such as the firm's financial position and the potential risks linked to debt financing. In light of this privileged information, they are inclined to adopt a risk-averse stance by favouring lower levels of leverage. This cautious approach is driven by their commitment to safeguarding the interests of shareholders and fostering the long-term sustainability of the company (M. Jensen & Meckling, 1976). Conversely, inside directors can also impact leverage decisions by taking into account the potential advantages associated with higher levels of leverage. Drawing from the signaling theory, these directors may utilize leverage as a positive indicator to external investors, highlighting the firm's sound financial condition and promising growth prospects (Myers & Majluf, 1984). This positive signal serves to attract investors and diminish the cost of obtaining external financing (Harris & Raviv, 1990). By considering the potential benefits of elevated leverage, inside directors strategically employ debt as a signaling mechanism to instill confidence in the market and enhance the firm's financial position. Furthermore, the resource dependency theory underscores the significance of inside directors in utilizing their networks and affiliations to procure external resources, such as debt financing (Hillman & Dalziel, 2003).

In essence, the influence of inside directors on leverage decisions within firms stems from their unique access to internal information, risk preferences, signaling effects, and network connections. The agency theory suggests that inside directors may exhibit a preference for a lower leverage to address agency conflicts while signaling theory highlights the positive signals associated with higher leverage. Furthermore, the resource dependency theory underscores the role of inside directors in accessing external resources.

Currently, there is scanty empirical research on the specific impact of inside directors on capital structure decisions, as existing studies predominantly focus on the influence of outside directors or non-executive directors. This research gap presents a valuable opportunity to make an original contribution to the existing literature by examining the unique role of inside directors in shaping firms' capital structure. Following the theoretical arguments, the study argues that:

H1: Inside directors have a positive or negative influence on leverage.

4.2. Outside directors and leverage

Outside directors, also known as non-executive directors, play a crucial role in corporate decision-making by offering an external perspective, unbiased opinions, diverse expertise, and independent oversight (Yakubu et al., 2022). The presence of outside directors on corporate boards has the potential to influence leverage decisions in firms, as suggested by several theoretical perspectives. The agency theory emphasizes the role of outside directors as independent monitors, mitigating agency problems and safeguarding shareholder interests. By providing unbiased opinions, diverse expertise, and independent oversight, outside directors contribute to the decision-making process and may lead to a more conservative approach to financing decisions, resulting in lower levels of leverage. Similarly, the stewardship theory posits that directors act as responsible custodians of the firm's resources, prioritizing the long-term welfare of shareholders. Their focus on the financial well-being and stability of the firm may lead to a more prudent approach to capital structure decisions and a lower reliance on debt financing. The resource dependency theory highlights the external expertise and diverse perspectives that outside directors bring to the decision-making process. Their knowledge of market conditions and resource availability can potentially result in an optimal level of leverage (Hillman & Dalziel, 2003; Pfeffer & Salancik, 1978).

Empirical studies provide further insights into the impact of outside directors on leverage decisions. Kyriazopoulos (2017) finds that the presence of outside directors increases the likelihood of firms employing debt, indicating a positive effect on leverage. Bulathsinghalage and Pathirawasam (2017) also reveal a positive effect of outside directors on the capital structure of firms. Uddin et al. (2019) find that non-executive directors have a positive and significant impact on leverage, indicating their influence on financing decisions. Ehikioya et al. (2021) establish that both the presence of outside directors and the size of the board have a positive impact on the debt ratio, supporting the hypothesis that outside directors contribute to higher levels of leverage. Amin et al. (2022) find that firms with a larger and more independent board have a higher level of leverage, further supporting the positive impact of outside directors on leverage decisions. Based on the empirical evidence, it can be hypothesized that:

H2: There is a positive relationship between outside directors and leverage.

4.3. Gender diversity and leverage

The impact of gender diversity on corporate outcomes has received increased attention in recent years. It is argued that companies with a higher representation of women on their boards may experience improved financial performance due to enhanced monitoring of managers and more effective decision-making processes (Adams, 2016; Post & Byron, 2015).

From an agency theory perspective, gender diversity on boards can be seen as a mechanism to mitigate agency conflicts and improve governance practices. The presence of women on boards may enhance monitoring and oversight, reduce agency costs, and improve firm performance (Adams, 2016; Post & Byron, 2015; Simpson et al., 2010). This may lead to a more conservative approach to leverage decisions as board members, including women, prioritize risk management and the long-term interests of shareholders. Resource dependency theory suggests that board gender diversity can influence a firm's access to external resources, including debt financing. Diversity on boards, including gender diversity, can enhance the firm's legitimacy and reputation, making it more attractive to lenders and improving access to capital (Carter et al., 2010). In this

context, gender-diverse boards may be more inclined to utilize debt financing as a means to access external resources and fund growth opportunities.

Empirical research specifically examining the relationship between board gender diversity and capital structure is relatively limited, necessitating further research efforts. Among the scanty studies, Bokpin and Arko (2009) and Elmagrhi et al. (2018) find empirical evidence supporting a negative effect of board gender diversity on capital structure. Their study suggests that firms with a higher proportion of women on their boards tend to have lower leverage ratios. Contrasting these perspectives, Doku et al. (2022) argue that firms with higher female representation on their boards may rely more on debt financing.

Based on the existing theoretical arguments and the limited empirical evidence available, it can be hypothesized that gender diversity on corporate boards has an impact on leverage decisions. Specifically, it is expected that a higher representation of women on boards will be associated with lower leverage, reflecting a more risk-averse and conservative approach.

H3: Gender diversity has a negative impact on leverage.

4.4. Firm size and leverage

According to Baker et al. (1988), larger firms may prioritize higher levels of leverage in their capital structure decisions, as they do not perceive bankruptcy costs to be significant relative to the firm's total value. Additionally, larger firms tend to have greater access to external finance due to their stronger bargaining power with lenders (Menyah, 2013; Yakubu et al., 2020). Marsh (1982), Bajagai et al. (2019), Ahmad et al. (2018), Ahmed (2019), and Danso et al. (2021) reveal a positive relationship between firm size and leverage levels, further supporting the notion that larger firms may opt for higher leverage. Thus, we can hypothesize that board size will have a positive impact on leverage decisions.

H4: There is a positive relationship between firm size and leverage.

4.5. Profitability and leverage

The pecking order theory posits that firms, especially those with higher profitability, have a preference for internal financing, such as retained earnings, and are less reliant on external financing, including leverage (Myers & Majluf, 1984). Booth et al. (2001) argue that highly profitable firms have sufficient funds to meet their financial obligations, reducing the need for external financing. Empirical studies have produced mixed findings regarding the relationship between profitability and leverage, with some documenting a negative link (Ahmed, 2019; Dewi & Fachrurrozie, 2021; Hamidah et al., 2016; Li & Wang, 2021; Shehadeh et al., 2022) and others revealing a positive relationship (Bajagai et al., 2019; Putra & Mustafa, 2021; Rasiah, 2010). Despite these mixed findings, we propose the following hypothesis based on the pecking order theory:

H5: Profitability negatively affects leverage.

5. Research design

5.1. Sampling and data collection

The study utilized a panel dataset obtained from firms listed on the Ghana Stock Exchange for the period spanning from 2008 to 2018. The researchers adopted an all-inclusive approach, encompassing all the firms listed on the exchange, which initially amounted to 42 companies at the time of the study. However, due to limited data availability, firms with incomplete or missing data for the study period were excluded from the sample. The final sample size consisted of 30 firms, including both financial and non-financial firms. The sampling procedure is summarized in Table 1. Data for the study was gathered from the published annual reports and financial statements of the firms, ensuring the reliability and accuracy of the information used in the study. The study utilized

Table 1. Sampling procedure

Step	Description	Total Population	Sample Size
1	Total firms listed on the stock exchange	42	-
2	Data availability consideration	-	30
3	Selection of actively listed firms with data	-	30
4	Period covered	-	2008–2018

listed firms due to access to reliable and comprehensive data on firms. Similarly, the study period was based on consistent data availability. Given that the study relied solely on secondary data sources, it did not involve primary data collection from human subjects. As a result, ethical clearance was not required.

5.2. Measurement of variables

Capital structure (leverage) served as the dependent variable which is quantified using the total debt to total assets ratio. The main independent variables included board composition and gender diversity. Board composition is further disentangled into inside and outside directors. To mitigate the potential impact of omitted variable bias (Gujarati, 2003, cited in; Elmagrhi et al., 2018), the study incorporated firm size and profitability as control variables in the analysis. By considering these factors, we account for additional variables that might confound the relationship between the independent variables and capital structure. Table 2 provides the definitions of the variables used in the study.

Given our variables, the conceptual framework for the study is presented in Figure 1.

5.3. Model specification

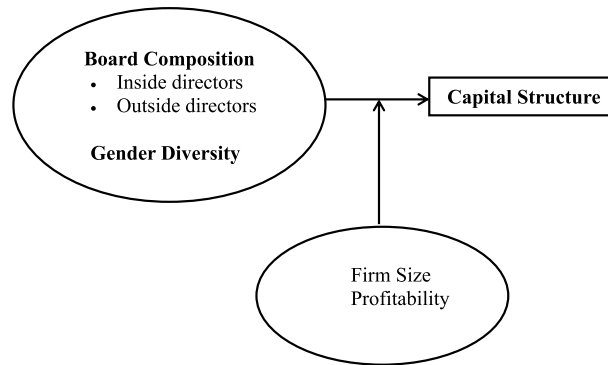
Given that the study takes a panel approach, the model specification for panel data can be presented as follows:

$$Y_{it} = \alpha + \beta_1 X_{1it} + \beta_2 X_{2it} + \dots + \beta_k X_{kit} + \varepsilon_i \quad (1)$$

Table 2. Measurement of variables

Variable	Measurement	Literature
<i>Dependent variable</i>		
Leverage (LEV)	Total debt to total assets ratio	Kumar and Zattoni (2014); Ahmad et al. (2018); Bunyaminu et al. (2021); Yakubu et al. (2021)
<i>Independent variables</i>		
Inside directors (IND)	Number of executive or inside directors on the corporate board	Puni and Anlesinya (2020)
Outside directors (OUD)	Number of non-executive members on the corporate board	Hasan and Butt (2009); Ahmad et al. (2018); Yakubu et al. (2022)
Gender diversity (GED)	The proportion of female members serving on the corporate board	Sarpong-Danquah et al. (2022)
<i>Control variables</i>		
Firm size (SIZ)	Natural logarithm of total assets	Ahmad et al. (2018); Ünvan and Yakubu (2020); Yakubu and Bunyaminu (2022); Firdaus and Trisnaningih (2023)
Profitability (PRO)	Firms' economic margins	Obrycki and Resendes (2000)

Figure 1. Conceptual Framework.



where: Y_{it} is the dependent variable for the i th entity at time t . $X_{1it}, X_{2it}, \dots, X_{kit}$ are k independent variables for the i th entity at time t . $\beta_1, \beta_2, \dots, \beta_k$ are the coefficients of the independent variables. α is the constant or intercept term. ε_{it} is the error term for the i th entity at time t .

Based on the variables selected, equation (2) can be modified as:

$$LEV_{it} = \alpha + \beta_1 IND_{it} + \beta_2 OUD_{it} + \beta_3 GED_{it} + \beta_4 SIZ_{it} + \beta_5 PRO_{it} + \varepsilon_{it} \quad (2)$$

To account for the dynamic nature of the relationships among the variables over time, the lagged dependent variable is included in the model. Thus, equation (3) is reformulated as follows:

$$Y_{it} = \alpha + \beta_1 Y_{i,t-1} + \beta_2 X_{2it} + \beta_3 X_{3it} + \dots + \beta_k X_{kit} + \varepsilon_{it} \quad (3)$$

where $Y_{i,t-1}$ is the lagged dependent variable for observation i in the previous time period $t-1$.

5.4. Model estimation technique

The inclusion of a lagged dependent variable in panel data analysis suggests the use of dynamic panel data approaches, which are specially developed to address endogeneity and omitted variable bias in the model estimation (Piper, 2023). In this case, the study employed the generalized method of moments (GMM) estimator by Donaldson and Davis (1991), which is widely used in empirical studies due to its efficiency and robustness to various forms of heteroscedasticity and autocorrelation (Roodman, 2009 cited in Bunyaminu et al., 2022).

6. Empirical results and discussion

6.1. Descriptive statistics

The descriptive statistics which show the summary of the main characteristics of the variables in the sample are presented in Table 3. The mean leverage ratio is 0.7680, which indicates that the firms have higher levels of debt in their capital structure. The mean number of inside directors is 2.0401, while the mean number of outside directors is 6.3144. The minimum and maximum values for both variables indicate that there is a considerable variation in board composition among the firms in the sample. The mean proportion of female members on corporate boards is 0.1522, which is relatively low. This suggests that gender diversity on corporate boards in the sample is an area of

Table 3. Descriptive statistics

	LEV	IND	OUD	GED	SIZ	PRO
Mean	0.7680	2.0401	6.3144	0.1522	5.4534	3.1310
Maximum	21.1300	7.0000	12.0000	0.6000	8.0370	50.7000
Minimum	0.0360	0.0000	2.0000	0.0000	2.5090	0.0150
Std. Dev.	1.2260	1.2685	2.0986	0.123627	1.1527	6.6513

concern. Firm size has an average value of 5.4534, which indicates that the firms in the sample are relatively large. The mean economic margin (a measure of profitability) is 3.1310, with a very high standard deviation of 6.6513. This suggests a wide variation in profitability among the firms in the sample.

6.2. Correlation and multicollinearity analysis

Table 4 depicts the correlation coefficients among the variables and their corresponding variance inflation factor (VIF) and tolerance. Multicollinearity is present when VIF is greater than 1 and tolerance values are closer to 0 (Gujarati, 2003 cited in Yakubu, 2019). Based on the table, the correlation coefficients among the variables are relatively low. Firm size and outside directors exhibit the highest correlation coefficient ($r = 0.5589$). In terms of multicollinearity, all variables have VIF values below the threshold of 10, indicating that multicollinearity is not a major concern (Bashiru et al., 2023). The mean VIF is 1.66, which is also below the threshold. The tolerance values are all above 0.2, indicating that the variables are not too highly correlated. Overall, the correlation table suggests a moderate correlation among the variables in the expected directions, with no significant presence of multicollinearity.

6.3. Regression results

Table 5 presents the GMM regression results. The diagnostics section shows the results of the Hansen J test and the tests for first- and second-order autocorrelation (AR(1) and AR(2)). The Hansen J test is a test of overidentification, which tests whether the instruments used in the regression are valid. From the table, the p-value for the estimated model is greater than 0.05, indicating that there is no evidence of overidentification. The tests for autocorrelation suggest that there is no evidence of first- or second-order autocorrelation in the model residuals. The estimation of the model reveals that the lagged leverage variable exhibits a negative coefficient, indicating that firms with higher leverage in the previous period tend to demonstrate lower leverage in the current period.

The empirical findings reveal a significant negative coefficient for inside directors, supporting the hypothesis ($H1$) developed in this study. This finding aligns with the principles of agency theory, which posit that inside directors, as individuals with privileged access to internal company information, are motivated to reduce leverage to address conflicts between managers and shareholders. The conservative nature of insiders, driven by their concern for maintaining control and preserving their reputation, likely leads to a preference for lower levels of leverage. The finding suggests that firms with a higher proportion of inside directors may adopt a more cautious approach to debt financing, which can help mitigate risks associated with high leverage but could also limit the firm's growth opportunities and access to capital, highlighting the need for a careful balance between risk management and the pursuit of value creation.

The finding suggests that outside directors exert a positive and significant effect on leverage. This result is consistent with previous empirical studies conducted by Kyriazopoulos (2017), Uddin et al. (2019), and Ehikioya et al. (2021). The implication of this finding is that outside directors are

Table 4. Correlation Analysis

	IND	ODD	GED	SIZ	PRO	VIF	Tolerance
INSD	1.0000					1.63	0.6151
OUSD	-0.0917	1.0000				1.99	0.5035
GEND	0.1674	-0.0027	1.0000			1.04	0.9593
FSIZE	0.4502	0.5589	0.0889	1.0000		2.48	0.4035
PRO	-0.2537	0.1251	-0.1467	-0.2203	1.0000	1.18	0.8494
Mean VIF						1.66	

Table 5. GMM regression results

Variables	GMM Estimates
Lag _{t-1}	−0.0845*** (0.0014)
IND	−0.4688*** (0.0790)
OD	0.2875*** (0.0492)
GED	0.3737** (0.1732)
SIZ	−2.1868*** (0.2081)
PRO	0.0047 (0.0074)
<i>Diagnostics</i>	
Hansen J test	24.0160
Prob. Hansen J test	0.46068
AR(1)	−0.9244
Prob. AR(1)	0.3553
AR(2)	−0.8089
Prob. AR(2)	0.4186
Number of Firms	30

Notes: *** $p < 0.01$, ** $p < 0.05$, Standard errors in parentheses.

likely to be independent and objective in their decision-making processes. They may advocate for higher leverage levels to maximize shareholder value. This contradicts our formulated hypothesis (H2), which assumed a more conservative approach to financing decisions due to the monitoring and stewardship roles of outside directors. The finding is congruent with the resource dependency theory, which highlights the external expertise and diverse perspectives that outside directors bring to the decision-making process. Their knowledge of market conditions and resource availability may lead to the strategic use of leverage to optimize the firm's capital structure. The finding also has important implications for financial risk management, as increased leverage entails higher financial obligations and potential vulnerabilities in times of economic downturns.

The results establish that gender diversity has a significant positive impact on leverage, implying that firms with a higher representation of women on their boards tend to have higher leverage ratios. This finding contradicts our hypothesis (H3). One possible explanation for this unexpected result is that firms with more gender-diverse boards may be more inclined to pursue growth and expansion opportunities. As a result, they may require greater external financing, leading to a higher reliance on debt. This interpretation aligns with the resource dependency theory, which suggests that gender-diverse boards enhance a firm's legitimacy and reputation, making it more attractive to lenders and improving access to capital. Furthermore, the presence of female directors in the boardroom may contribute unique perspectives, skills, and decision-making processes, ultimately leading to increased firm value. This enhanced value may, in turn, make the firm more appealing to lenders, facilitating easier access to debt financing. This argument supports the notion that gender diversity on boards can improve governance practices and positively impact firm performance. The finding presented here is consistent with the study conducted by Doku et al. (2022). However, it stands in contrast to the results reported by Hasan and Butt (2009) and Elmagrhi et al. (2018), who found empirical evidence supporting a negative effect of board gender diversity on capital structure.

Turning to the control variables, the analyses indicate that firm size has a negative and significant impact on leverage. This result aligns with the recent study by Bhat et al. (2023), who argue that firm size dampens corporate leverage. However, it contradicts most prior studies (see Marsh, 1982; Ahmad et al., 2018; Ahmed, 2019; Bajagai et al., 2019; Danso et al., 2021) and the formulated hypothesis (*H4*). The negative relationship between firm size and leverage suggests that larger firms may have greater access to internal financing sources, such as retained earnings or cash reserves. This availability of internal funds reduces the need for external debt and subsequently leads to lower leverage ratios. This finding challenges the notion that larger firms automatically prioritize higher leverage due to their perceived bankruptcy costs insignificance and stronger bargaining power with lenders (Baker et al., 1988; Yakubu et al., 2020).

Furthermore, the relationship between profitability and leverage is positive, refuting our hypothesis (*H5*) and the pecking order theory and suggesting that highly profitable firms are more inclined to utilize external financing to leverage their financial position. The result, however, is insignificant, implying that firms' profitability may not have a substantial influence on their capital structure decisions.

6.4. Additional analysis

To assess the robustness of our findings, we have employed alternative econometric techniques, namely robust least squares (RLS) and fixed effects, to conduct additional analysis. The results of this analysis are presented in Table 6. Contrary to the findings obtained from the GMM estimation, we observe that the impact of board composition (inside and outside directors) is found to be insignificant under both the RLS and fixed effects methods. This contrast in results suggests that the influence of board composition on leverage may not be as pronounced as initially indicated by the GMM estimation. On the other hand, when employing the RLS technique, we find that gender diversity has a positive and statistically significant impact on leverage, which aligns with the findings obtained from the GMM method. This suggests that gender diversity within the board may indeed play a role in shaping a company's capital structure decisions. Furthermore, firm size is found to have a significant impact on leverage under both techniques, although the relationship becomes negative when estimated using fixed effects. This variation in results highlights the sensitivity of the relationship between firm size and leverage to the choice of econometric method. Similarly, in line with the GMM estimator, our results indicate that profitability has a positive effect on leverage. However, the statistical significance is observed only for the RLS estimator.

In summary, the impact of the independent variables on leverage appears to be contingent on the specific econometric technique employed. It is, however, important to note that the GMM estimation method offers several advantages over the RLS and fixed effects techniques in this particular analysis. Its ability to handle endogeneity and unobserved heterogeneity issues makes it a more suitable approach for capturing the complex relationships between variables and providing robust and reliable estimates (Roodman, 2009).

7. Summary and conclusion

The issue of corporate governance has gained global attention due to high-profile scandals, leading to a focus on improving governance structures to boost performance and accountability. Developing economies like Ghana face challenges in adhering to governance standards, including limited board independence and inadequate disclosure mechanisms. Despite introducing legislation and guidelines to strengthen governance practices, Ghana struggles with lax implementation and corruption, leading to transparency and accountability issues. Weak governance practices erode investor confidence, hinder long-term sustainability, and impede firms' growth prospects. Understanding the impact of governance on corporate outcomes can provide insights for policy-makers, regulators, and managers to develop effective governance frameworks, responsible decision-making processes, and enhance firms' competitive position in local and global markets. This study explores the impact of corporate governance on capital structure in Ghana. Specifically, we assess how board composition and gender diversity influence firm leverage decisions. Drawing on

Table 6. RLS and fixed effects estimates

Variables	RLS Estimates	Fixed Effects
IND	−0.0056 (0.0122)	−0.0805 (0.0930)
ODD	−0.0021 (0.0081)	−0.0607 (0.0709)
GED	0.4092*** (0.0998)	−0.6324 (0.8185)
SIZ	0.0923*** (0.0165)	−1.0870*** (0.2542)
PRO	0.0110*** (0.0020)	0.0030 (0.0176)
Constant	0.0970 (0.0629)	7.3308*** (1.3880)
<i>Diagnostics</i>		
R-squared	0.1596	0.2464
Adjusted R-squared	0.1452	0.1494
F-statistic		2.5392
Prob(F-statistic)		0.0000
Hausman χ^2		20.1129
Prob. (Hausman χ^2)		0.0012
Number of Firms	30	30

Notes: *** $p < 0.01$ and Standard errors in parentheses.

different theoretical perspectives, the study adds to the scanty empirical evidence on the corporate governance-capital structure nexus.

To achieve the objective of the study, the researchers employ the GMM estimation technique with firms' annual data covering the period 2008–2018 obtained from 30 firms listed on the Ghana Stock Exchange. The empirical findings show that inside directors exert a negative significant effect on leverage, lending credence to the principles of agency theory which suggests that inside directors, who have privileged access to internal information, aim to reduce conflicts between managers and shareholders by adopting a cautious approach to debt financing. On the other hand, the positive and significant effect of outside directors on leverage contradicts our hypothesis and aligns with resource dependency theory. Contrary to our expectations, the study finds that gender diversity has a significant positive impact on leverage, indicating that firms with more women on their boards tend to have higher leverage ratios. This result aligns with resource dependency theory, suggesting that gender-diverse boards enhance a firm's legitimacy and reputation, making it more attractive to lenders. Firm size has a negative and significant impact on leverage, refuting our hypothesis and suggesting that larger firms have greater access to internal financing sources, reducing the need for external debt. The positive relationship between profitability and leverage also counters the hypothesis established in this study, indicating that highly profitable firms are more inclined to utilize external financing and the pecking order theory does not hold for firms listed in Ghana. However, the insignificance of this relationship implies that profitability may not substantially influence capital structure decisions.

The empirical findings of this study have important policy implications for firms and policymakers. Firstly, Policymakers should encourage firms to have a balanced mix of inside and outside directors to ensure effective governance and minimize conflicts of interest. Also, the positive and significant effect of outside directors on leverage suggests that companies can benefit from having independent

perspectives and expertise on their boards. Policymakers could emphasize the importance of appointing qualified outside directors to enhance governance practices. Secondly, firms should promote gender diversity in boardrooms, as it not only enhances a firm's legitimacy and reputation but also makes it more attractive to lenders. Initiatives such as encouraging gender diversity quotas or providing incentives for companies to diversify their boards can be considered. Also, the negative impact of firm size on leverage implies that larger firms have greater access to internal financing sources and therefore should focus on optimizing these sources to reduce reliance on external debt. Policies can be focused on supporting smaller firms and startups by facilitating access to external financing options, such as venture capital or loan programs specifically designed for smaller enterprises. Finally, policymakers should ensure that financing options are readily available to both profitable and less profitable firms, taking into account their specific needs and circumstances.

The study has some limitations. First, the findings may not be generalizable beyond the specific context of publicly traded Ghanaian firms, as different countries and regions may have distinct cultural, institutional, and regulatory factors influencing these relationships. Secondly, the study does not account for other potentially influential factors such as industry-specific characteristics and macroeconomic conditions, which could lead to omitted variable bias. Also, the reliance on secondary data sources introduces potential limitations in terms of data accuracy and completeness.

Moving forward, there are several avenues for future research that could further expand our understanding of the relationship between board composition, gender diversity, and the capital structure of firms. Firstly, conducting cross-country and cross-industry analyses would help determine the generalizability of the findings. By examining board composition, gender diversity, and capital structure in different countries and regions, researchers can account for the influence of cultural, institutional, and regulatory factors specific to each context. Secondly, incorporating industry-specific characteristics and macroeconomic conditions as variables in the analysis would provide a more comprehensive understanding of the factors influencing capital structure decisions. Future studies could overcome the limitations of relying on secondary data sources by collecting primary data through surveys, interviews, or case studies. This would ensure data accuracy and completeness and allow for more nuanced insights into the relationships under investigation. Furthermore, future studies could examine the relationship between board composition and leverage in the context of different types of firms, such as small and medium-sized enterprises (SMEs) or firms in different industries. This could help identify if the relationship between board composition and leverage varies depending on the characteristics of the firm. Finally, researchers could also explore the mechanisms that underlie the relationship between gender diversity and leverage. While the study suggests that female representation on boards may lead to higher leverage, it is not clear why this might be the case.

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Correction

This article has been corrected with minor changes. These changes do not impact the academic content of the article.

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