CORPORATE GOVERNANCE DETERMINANTS OF CAPITAL STRUCTURE: EVIDENCE FROM MANUFACTURING FIRMS ON THE GHANA STOCK EXCHANGE

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Abstract

This study examines the impact of corporate governance determinants on the capital structure of manufacturing firms listed on the Ghana Stock Exchange (GSE). Using a purposive sampling of 15 manufacturing firms, we collect secondary data for 14 years. We employ a system generalized method of moments (GMM) approach to address endogeneity issues. Apart from firms using more short-term debt financing than long-term debt, we report a significant positive relationship between managerial and institutional ownership and capital structure. There is a statistically significant and positive relationship between ownership concentration on both the short- and long-term debt ratios. Regarding company financial management, the study offers several recommendations and practical implications. Our findings have implications for improved management performance and corporate governance policies that lead to value-relevant capital structure decisions. The study also provides empirical support for the idea that firms might benefit from reduced agency costs and lower cost of capital if they implement appropriate corporate governance mechanisms. We provide support for the agency and pecking order theories. Future research could consider broader corporate governance variables and optimal capital structure.

Keywords: Capital Structure, Corporate Governance, Ghana Stock Exchange, Manufacturing Firms, Ownership Structure

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1. INTRODUCTION

Capital structure (CS) in corporate decision-making has long been an important topic for firms and remains a constant subject of debate. Despite considerable attention devoted to understanding the eclectic elements that shape CS decisions, unified recognition and agreement on the determinants of CS remains elusive. A firm's CS is described by the sources and uses of the funds a firm possesses in order to get it off the ground and expand. Depending on the choice of financing, the corporation seeks to have an optimal combination of long-term debt and equity. The capital structure choice is thus widely accepted to be integral to many business management decisions of the firms and consequently the success of organizations (Feng et al., 2020). Manufacturing is characteristically an economic game changer for developing nations, and its growth-promoting attributes enable high firm proliferation, good-paying jobs, and ultimately economic development (Moraitis, 2022). Judicious CS decisions matter to manufacturing firms since their operations are caught within an undulating and complex marketplace. This means that the corporate-level capital structure decision-making process is germane to manufacturing firms, with trickling down benefits to the effective design and delivery of key capabilities within their respective markets.

In the last decade, firm failures have been caught up in the web of the corporate governance (CG) landscape (Yameen et al., 2019). Sarpong-Danquah et al. (2022) note that in the Ghanaian setting, the failures of prominent entities including Divine Seafoods Ltd, Bank for Housing and Construction Ltd, Bonte Gold Mines Ltd, Juapong Textiles Ltd, Ghana Cooperative Bank Ltd, and Ghana Airways Ltd in the early 2000s, were linked with deficient governance procedures. The 2017/2018 banking crisis that resulted in the collapse and subsequent merger of some notable banks as well as the collapse of numerous microfinance institutions were attributed to the presence of weak CG standards, as concluded by the Bank of Ghana (BoG). The impact of these was undeniably rippling to manufacturing firms who themselves are sometimes complicit in ineptness in implementing appropriate CG measures. This further extends to the bankers of these manufacturers which are key providers of debt finance and for which CG malpractice on their part could severely attenuate the capital structure decisions of manufacturing firms. These indicate that ignoring CG determinants may have some implications for firm CS decision-making and may be potentially catastrophic to company growth and success.

Studies on the relationship between CG and CS determinants are copiously discovered in developed nations (Peizhi & Ramzan, 2020; Oyedokun et al., 2018), but limited studies with roots in developing nations are identified, the majority of which are also relegated to activities in the banking sector. Also, financial theories of CG and CS which are initially created to shed light on the financing practices of businesses in developed nations, may not be applicable in developing nations due to institutional and cultural differences (Sarpong-Danquah et al., 2022). Perhaps some of this research suffers omitted variables bias. It is thus essential to empirically investigate some of these previously reclusive CG parameters and their connection to the manufacturing sector in more detail. This will give relevant knowledge particular to the industry, expressly, due to operational variations between other sectors of the economy and the manufacturing sector in Ghana. Given that the primary objective of a firm is to increase shareholder wealth and reduce the cost of the capital required to fund its extensive operations, the cost of the capital of a manufacturing firm must be as low as possible to achieve the ideal capital structure it desires. Ullah et al. (2020) opine that robust CG measures, driven by increased managerial ownership and heightened pressure on managers, empower institutional investors to minify existing CS decision risks. As a result, the overall firm capital costs are reduced, paving the way for improved financial performance and enhanced economic stability of the manufacturing firm.

The incorporation of effective CG mechanisms is pertinent to firm success (Zaid et al., 2020). Truly, CG determinants CS have implications for manufacturing firms listed on the Ghana Stock Exchange (GSE). It is therefore interesting to ask the following research questions:

RQ1: What is the effect of board size and board independence on the CS of manufacturing firms in Ghana?

RQ2: What is the effect of managerial and institutional ownership on the CS of manufacturing firms in Ghana?

RQ3: What is the effect of ownership concentration and CEO duality on the CS of manufacturing firms in Ghana?

Indeed, a comprehensive analysis holds immense potential for deepening our understanding of CG determinants and their import on the CS of listed on the GSE. Every social research project has some constraints, including those related to data collection, financing, timeliness, and coverage. The usage of companies clustered within the categories of agriculture, pharmaceuticals, engineering, and others creates a sample size restriction — a further constraint since data is only readily available for those listed companies on the Indeed, a comprehensive analysis holds immense potential for deepening our understanding of CG determinants and their import on the CS of listed on the GSE. Every social research project has some constraints, including those related to data collection, financing, timeliness, and coverage. The usage of companies clustered within the categories of agriculture, pharmaceuticals, engineering, and others creates a sample size restriction — a further constraint since data is only readily available for those listed companies on the GSE. Regardless of the limitations, the study makes numerous advantageous contributions to both the literature and practice. The study adds to the body of knowledge on manufacturing firms — a phenomenon that is lacking in research in Ghana. We motivate researchers and firms to pay attention to corporate governance factors that affect capital structure decisions. In fact, good corporate governance practices enhance capital structure decisions that minimize the cost of capital (the overarching aim of CS policies). We show that manufacturing firms mostly use short-term debt as compared to long-term debt. The reasons behind this could be investigated in the future. Also, empirical evidence from this study will aid managers

and policymakers in understanding how the CG determinants are a key consideration for manufacturing firms and further how the identified CG practices influence effective CS decisions of manufacturing firms.

The rest of the study is structured as follows. Section 2 presents the theoretical framework propelling the research. It examines the link between CG factors and their connection to CS processes. It also elucidates the related empirical findings of the study. The methodological framework for the investigation is presented in Section 3. The data analysis and subsequent discussion are included in Section 4 and Section 5, respectively. Finally, the research findings, policy and practice implications, and recommendations for further studies are presented in Section 6.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

2.1. Theoretical background

The study is propelled by the pecking order theory (POT) and agency theory (AT). The pecking-order theory was proposed by Stewart C. Myers and Nicolas Majluf in 1984. According to this theory, if a company wants to finance new investment projects, it must first use retained earnings, then move to debt, and finally to equity as a last resort. Li and Islam (2019) support that the hierarchy is based on financing costs — issuing more equity — is the most expensive due to information gaps between managers, existing shareholders, and potential new shareholders. The theory acknowledges that information asymmetry exists between managers and investors. Myers and Majluf (1984) argue that firms may therefore prefer to rely on internal financing because it avoids disclosing confidential information to external investors, which can be costly. Also, it is extremely difficult to determine the ideal capital structure if equity appeared at both the beginning and the end. If the business uses internal capital for investments, there is no requirement to disclose future financial information or pay flotation fees. In general, pecking order theory suggests that capital structure determinants are influenced by the firm's preference for internal financing, higher equity issuance costs, and the desire to minimize information asymmetries and financing costs.

Agency theory is often used to illustrate how CG and CS are related (Fama, 1980; Jensen & Meckling, 1976). According to agency theory, when ownership and control are separated, a conflict of interest arises between the principal and the agent, which affects how capital structure decisions are made (Agyei & Owusu, 2014). A typical agency conflict arises when management, directors, and shareholders all have competing interests (principals). Akwaa-Sekyi and Gené Moreno (2017) support agency theory as a risk mitigator among banks in Europe. When making decisions, agents must take into account the interests of the principals, but in practice, opportunistic management may ignore the interests of shareholders, which leads to agency costs for shareholders (Jiraporn et al., 2012). Since debt financing can solve agency problems by reducing working capital and increasing bankruptcy risk, a corporate debt strategy is critical to avoid agency conflict between shareholders and management (Danso et al., 2019; Muttakin et al., 2020). We choose agency theory in light of the above-mentioned "debate" because the agency problem (separation of ownership and control, or CG), will influence the choice of CS. This is due to the fact that strong corporate governance mechanisms are aimed at aligning the interests of managers with the interests of shareholders. This alignment reduces agency conflicts and the need for excessive monitoring and control, which can impact the firm's CS decisions.

2.2. Empirical review and research hypotheses

Bin Noraidi and Ramakrishnan (2018) evaluate the influence of different company sizes on the link between capital structure variables and leverage across Malaysian listed consumer goods businesses from 2006 to 2015. Data are obtained from 108 businesses. The pooled OLS and fixed effect analysis techniques are employed. The data demonstrate that all factors are significant across all business sizes. More research should be undertaken in other industries in Malaysia, according to the report, to ensure more accurate results. Panda and Nanda (2020) investigate the factors affecting capital for Indian manufacturing enterprises. To determine the main factors influencing capital structure, the study employs panel semi-parametric and nonparametric regression models. Tangible assets, effective tax rate, growth potential, non-debt tax shield, profitability, cash flow, firm size, government borrowing, overseas investment, economic growth, and interest rate are all shown to have a significant bearing on the debt levels of the analyzed entities. The study suggests that more research should focus on how ownership structure and capital structure affect business operations.

Saif-Alyousfi et al. (2020) use a dataset of Malaysian enterprises to study the drivers of capital structure. A panel data analysis of 8,270 observations from 827 listed non-financial enterprises on the Malaysian stock exchange from 2008 to 2017 is employed. Profitability, growth potential, tax benefits, liquidity, and cash flow volatility all have a negative and substantial influence on debt metrics, according to the findings. The study advises that future research should look into other country-specific characteristics that influence a firm's capital structure. It is for this reason that we study manufacturing firms in Ghana and also include ownership structure variables (such as managerial, institutional and ownership concentration) in our model to address this lacuna.

Khan et al. (2021) evaluates the most important elements influencing commercial banks' capital structures in Saudi Arabia. The research analyzes yearly data from 11 commercial and national banks listed on the Tadawul Saudi Stock Exchange from 2010 to 2017. The data are analyzed using pooled OLS regression with fixed and random effects. The study's findings indicate that Saudi banks are heavily leveraged, supporting the notion that the nature of banks' operations differs from that of non-banking enterprises. We deviate from the context of banks by providing evidence from the perspective of manufacturing firms to consolidate a comprehensive understanding of the CG-CS nexus. Bolarinwa et al. (2022) focus on the factors that determine the capital structure

and the rate at which capital structure choices are altered by Nigerian businesses. The study uses the difference and system generalized method of moments (GMM), and stochastic frontier analysis (SFA) as its three methodologies. The findings demonstrate that the capital structure choices made by Nigerian businesses are influenced by the effectiveness of the organization. However, in the context of Nigerian businesses, short-term debt adjusts more quickly. The deliberations above look at capital structure determinants from the perspectives of operational and organizational effectiveness variables. We welcome the suggestions from prior authors to include other variables in studying capital structure decisions by considering ownership structure variables such as ownership concentration, institutional ownership and managerial ownership.

Feng et al. (2020) explore the relationship between CG, ownership structure, and CS. From 2014 to 2018, the study uses a panel data set consisting of 595 annual observations from a unique and comprehensive data collection of 119 Chinese real estate listed businesses. The study analyses data using fixed effect and random effect regression analysis approaches. According to the findings, the board size, ownership concentration, and company size have a favourable effect on capital structure. The study suggests that future research will analyse capital structure using various mechanisms, including face-to-face meetings with the directors and shareholders of the firm. Rashid (2020) investigates the function of corporate board characteristics in mediating the link between ownership structure and company performance in Bangladesh's listed public limited businesses. The author examines 527 annual reports of listed companies in Bangladesh for the period 2015 to 2017. The impact of ownership structure on firm performance was examined using SPSS AMOS 23. Rashid (2020) reports that foreign ownership and director ownership have a considerable beneficial effect on both accounting and market-based business performance, but institutional ownership has a favourable influence mainly on accounting-based performance (return on assets). In investigating the hypothesized association among the variables, the study is limited to only three years of data. Besides, Rashid (2020) studies the linkage of ownership variables on firm performance whilst our study pays attention to ownership variables and capital structure. We therefore make three hypotheses:

H1: Institutional ownership positively affects firm capital structure.

H2: Ownership concentration positively affects firm capital structure

H3: Managerial ownership positively affects firm capital structure.

Apart from ownership structure variables, prior authors include some board characteristics variables as determinants of firm capital structure. For example, Goh et al. (2018) investigate the factors of CS for Malaysian manufacturing enterprises. From 2011 to 2014, 174 Malaysian industrial businesses listed on the Bursa Malaysia were investigated. In the data analysis, a firm fixed effect with a robust standard was applied. The authors report that corporate governance mechanisms, ownership structure, and CEO-board chair separation have no relation with firm leverage. Chow et al. (2018) investigate how corporate governance influences the link between macroeconomic uncertainty and business capital structure from 2004–2014 using a two-step system GMM on a sample of 907 listed non-financial enterprises from seven Asia Pacific nations.

The findings indicate that the overall effect of macroeconomic uncertainty on capital structure is notably unfavourable for enterprises with higher governance quality. According to the study, policymakers may develop suitable measures to alleviate the negative consequences of macroeconomic uncertainty. Sewpersadh et al. (2019) investigate the association between corporate governance and the utilization of debt financing in JSE-listed firms. From 2011 to 2016, the study examines 713 annual reports in an imbalanced panel of 130 JSE-listed businesses over six years. The generalized two-step difference approach of moment's estimation mode is employed. The findings reveal that corporate governance procedures and business-specific characteristics such as profitability, firm size, and firm age had a considerable effect on JSE-listed firms' capital structure decisions. The deliberations above reveal that corporate governance influences firm capital structure. Our focus on corporate governance are board characteristics such as board size, board independence, and CEO duality.

Amidjaya and Widagdo (2019) carries out a study to investigate the impact of corporate governance and ownership structure on sustainability reporting in Indonesian listed banks. Panel data regression is used to evaluate the data using balanced panel data, which has 155 observations from 2012 to 2016. The results demonstrate that Indonesian listed banks still have a poor level of sustainability reporting. Family ownership, foreign ownership, and CG all have a beneficial impact on sustainability reporting. Our current study focuses on non-bank institutions (manufacturing) and one important sustainability attribute which is capital structure. Vu et al. (2020) use 1583 firm-year observations of enterprises listed on the Ho Chi Minh City Stock Exchange (HOSE) in Vietnam. Based on a pooled OLS regression, fixed effects model, and random effects model, they report that board size, state ownership, and concentrated ownership have a favourable impact on the firm's CS. Zaid et al. (2020) study the relationship between board characteristics and company financing decisions of non-financial listed businesses in Palestine, and how the level of gender diversity influences and modifies previous relationships. The panel data uses multiple regression analysis. The results indicate that all explanatory factors in the research model had a substantial effect on the firm's financing decisions. Hafez (2023) suggested that since corporate governance affects firm performance, it can affect liquidity risk as well. We align with this assumption and extend it to the firm's capital structure. Although Hafez (2023) studied banks in Egypt, we suggest that this applies to manufacturing firms as well. The above discussion suggests some relationship between corporate governance variables such as board characteristics and CEO duality. Therefore, we assume that:

H4: There is a positive relation between board size, board independence, and CEO duality on firm capital structure.

Bajaj et al. (2020) investigate the literature on CS theories over the last 21 years to identify current gaps and topics for potential scholars on this subject. A total of 183 papers published in the Scopus database between 1999 and 2019 with CS theory and leverage as keywords are evaluated on various levels. Citation analysis is also carried out in order to identify influential authors and articles. The findings indicated that, while capital structure research studies were initially concentrated on developed economies, research studies in emerging markets have increased over time. In the future, capital structure studies should be more industry-specific. Ramezanalivaloujerdi et al. (2015) investigate the corporate capital structure of Malaysian-listed construction businesses between 2005 and 2009. The data are analyzed using multiple regression analysis. The research finds that the business's profitability, growth possibility, and firm size all have a strong association with the dependent variable, leverage. The same is reported by Bolarinwa et al. (2022) about Nigerian firms. According to the study, the capital structure is so significant that it can be considered as the basis of most institutions and organizations. For these reasons, we include some firm-specific factors as control variables, such as firm size, profitability, and tangibility of assets.

Certainly, there is a wealth of evidence in the literature on diverse financial, operational, macro-specific, sector-specific, and firm-specific determinants of CS across the world (Demirgüç-Kunt et al., 2020; Li & Islam, 2019; Saif-Alyousfi et al., 2020), as well as among African countries (Bolarinwa & Adegboye, 2021; Bolarinwa et al, 2022; Dakua, 2019; Khémiri & Noubbigh, 2018). Nonetheless, to the best of our knowledge, the literature on CG-CS determinants especially among listed manufacturing firms is scant in Ghana. This study therefore seeks to fill this gap by empirically investigating the CG determinants of CS from this perspective.

3. RESEARCH METHODOLOGY

Secondary data from the annual reports and financial statements of the manufacturing firms are employed for the study. The panel consists of 15 manufacturing firms in Ghana with 210 observations. The study was conducted over a period of 14 years (2005 to 2018). We adopt fifteen firms because of the small nature of listed manufacturing firms and data availability. The firms cut across diverse industries spread out across the country. Our cut-off point is 2018 because we did not want data contamination by the effect of COVID-19. We employ panel data because it has the advantages of time series or cross-sectional data and has the tendency to produce models that have more accurate parameters, less collinear with more degrees of freedom because it enables researchers to use more data points (Hsiao, 2014).

3.1. Estimation technique

To find the relationship between corporate governance and other firm-level variables and the capital structure of manufacturing firms, dynamic panel regression methods are considered appropriate. Given that the interaction of firm-level variables is not always spontaneous, the adoption of an OLS model produces results that suffer from the problem of endogeneity (Abdallah et al., 2015), hence the use of GMM model. This model includes one-period lags of the independent variables as instrument variables to eliminate endogeneity, as suggested by Arellano and Bond (1991). However, Blundell and Blond (1998) argue that taking the one-period lag of differenced variables can result in a poor instrument, especially with a highly persistent model. Thus, they suggested the combination of the two, using the one-period lag of the variables at their level's forms, and taking one-period lag at their first differenced forms. Therefore, the two-stage GMM model is used to address endogeneity concerns and to efficiently answer the research questions.

3.2. Model specification

The empirical model for this study was specified in Eq. (1).

$$Capital\_Structure_{i,t} = f\left(Corporate\ Governance_{i,t}, Control\ variables, \varepsilon_{i,t}\right) \quad (1)$$

We decompose capital structure into long and short terms. Based on the GMM estimation, Eq. (2) and Eq. (3) are estimated to represent both the long-run and short-run capital structure of the firms.

$$LDAR_{i,t} = \beta_0 + \beta_1 LDAR_{i,t-1} + \beta_2 BSize_{i,t} + \beta_3 BINDEP_{i,t} + \beta_4 CEODual_{i,t} + \beta_5 ROA_{i,t} + \beta_6 OWCO_{i,t} + \beta_7 MAOWN_{i,t} + \beta_8 INST_{i,t} + \beta_9 TANG_{i,t} + \beta_{10} CC_{i,t} + \beta_{11} FS_{i,t} + \delta T + \varepsilon_{i,t} \quad (2)$$

$$SDAR_{i,t} = \beta_0 + \beta_1 SDAR_{i,t-1} + \beta_2 BSize_{i,t} + \beta_3 BINDEP_{i,t} + \beta_4 CEODual_{i,t} + \beta_5 ROA_{i,t} + \beta_6 OWCO_{i,t} + \beta_7 MAOWN_{i,t} + \beta_8 INST_{i,t} + \beta_9 TANG_{i,t} + \beta_{10} CC_{i,t} + \beta_{11} FS_{i,t} + \delta T + \varepsilon_{i,t} \quad (3)$$

where $LDAR_{i,t}$, $SDAR_{i,t}$ are dependent variables, representing long-term and short-term debt-to-assets ratios of firms i at time t, respectively; $BSize_{i,t}$, $BINDEP_{i,t}$, $CEODual_{i,t}$, $OWCO_{i,t}$, $MAOWN_{i,t}$, $INST_{i,t}$ denote board size, board independence, CEO duality, ownership concentration, management share ownership and institutional share ownership of i firm at time t, respectively. The three control variables are represented as $TANG_{i,t}$, $CC_{i,t}$, $FS_{i,t}$, $ROA_{i,t}$, denoting tangibility, cost of capital, firm size and return on assets respectively. We include tangible assets because for manufacturing firms, the nature of the business requires the use of more tangible although intangible assets are equally important. The time dummy is represented as δT with error term as $\varepsilon_{i,t}$. $SDAR_{i,t-1}$ and $LDAR_{i,t-1}$ are the first differences between the short-term and long-term debt-to-assets ratios of firm i at time t-1. Variable descriptions are presented in Table 1 below.

Table 1. Variables description

Variables	*Description*	*Measurement and sources*	*A priori sign*
Dependent variables			
Capital structure	Short-term debt-to-assets ratio (*SDAR*)	Short-term debt of firm divided by firm assets	+
	Long-term debt-to-equity ratio (*LDAR*)	Long-term debt divided by firm assets	+
Independent variables			
Corporate Governance	Board size (*BSize*)	Total number of directors on the firm's board	+
	Board Independence (*BINDEP*)	The number of independent non-executive directors on the firm's board	+
	CEO Duality (*CEODual*)	Dummy variable 1 if the CEO is the same as the board chairperson	+
	Ownership concentration (*OWCO*)	Concentration of shareholders	+
	Management ownership (*MAOWN*)	Value of shares owned by management	+
	Institutional ownership (*INST*)	Value of shares owned by institutions	+
Control variables			
Firm-specific	Return on assets (*ROA*)	(Net profit) / (Total assets) × 100	+/-
	Tangibility (*TANG*)	(Tangible assets) / (Total assets)	+/-
	Cost of capital (*CC*)	Expenses on firm capital	+/-
	Firm size (*FS*)	Natural logarithm of total assets	+/-

4. RESEARCH RESULTS

4.1. Summary statistics

The summary statistics in Table 2 show that, capital structure measured by the average level of the short-term debt-to-assets ratio and the long-term debt-to-assets ratio are 0.9351 and 0.6275, respectively. A shocking difference between the companies' long-term and short-term debt is uncovered by the research. This gap between the two types of debt shows that short-term debt is preferred by Ghanaian manufacturing businesses. This finding corroborates the findings of Saif-Alyousfi et al. (2020). Their studies assert that businesses choose short-term loans because of the high cost of long-term bank lending and the limited size of the bond market in the country.

Table 2. Summary statistics

Variables	*Mean*	*Standard deviation*	*Coefficient of variation*	*Observation*
Board size (*BSize*)	14.381	5.261	0.366	210
Board Independence (*BINDEP*)	9.871	9.435	0.955	210
CEO Duality (*CEODual*)	0.155	0.003	0.019	210
Ownership concentration (*OWCO*)	5.413	1.387	0.256	210
Management ownership (*MAOWN*)	1.193	0.053	0.044	210
Institutional ownership (*INST*)	1.759	0.579	0.322	210
Return on Assets (*ROA*)	1.517	2.76	1.819	210
Cost of capital (*CC*)	0.2587	0.3776	1.459	210
Firm size (*FS*)	2.9172	0.1390	0.047	210
Tangibility (*TANG*)	0.3819	0.5139	1.345	210
Short-term debt-to-assets ratio (*SDAR*)	0.9351	0.2732	0.292	210
Long-term debt-to-equity ratio (*LDAR*)	0.6275	0.3814	0.608	210

Note: The panel consists of 15 manufacturing firms: Ayrton Drug Manufacturing Ltd, Guinness Ghana Ltd, Sam Woode, Camelot Ghana Ltd, Cocoa Processing Company Ltd, PZ Cussons Ghana (PZ), Stawin Products Ghana (SPG), Ghana Oil Company, Clydestone Ghana, Produce Buying Company (PBC), Unilever Ghana, Fanmilk, Mechanical Lloyd, Benso Oil Palm Plantation and Total Petroleum Ghana.

Ghana is a bank-based economy with most of the supply of funds provided by banks than the capital market. With a relatively risky unstable macroeconomic environment, suppliers of funds would rationally minimize their risk exposure by offering more short-term than long-term capital. It is therefore not surprising to find a significantly higher value for short-term capital as compared to long-term one. Board size has a mean of 14.381 and a standard deviation of 5.261, this suggests that big corporate boards may contribute significantly to the financial performance of listed Ghanaian manufacturing firms, despite the agency theory's predictions that such boards would have communication and coordination issues. According to the agency theory, a large number of board members may facilitate information sharing and decision-making inside the board. Large boards, according to this theory, are more prone to have communication problems and a breakdown in coordination, both of which may drive up agency costs (Abdallah & Ismail, 2017; Aguilera et al., 2018). Board independence has a mean value of 9.871 and a standard deviation of 9.435, these results are comparable with Bhatt and Bhatt (2017). It is possible that due to close working connection with the management, inside directors likely have quick access to a variety of information about the firm and its competitors and may provide advice that genuinely represents the state of affairs.

CEO duality has a mean value of 0.155 and a standard deviation of 0.003. Because of this, duality allows for both the streamlined direction of a single leader and the rapid adaptation to changing conditions. Furthermore, the CEO's discretion is enhanced by duality since it provides a larger power base and control point (Bolarinwa et al., 2022). Disputes between shareholders and management may be reduced, according to the agency theory. As a result, the chief executive officer (CEO) is largely responsible for formulating and enforcing strategic decisions (decision management).

4.2. Correlation analysis

The correlation matrix identifies potential multicollinearity between any of the study's independent variables which is found in Table 3.

In a situation where the independent variables are strongly correlated ($r = 0.8$ or higher), it is impossible to separate the effects of the independent variable from the dependent variable. In other words, one of the predictor variables may be predicted almost perfectly by another predictor variable. Some of the highlights of the Table 3 are as follows: *LDAR* is positively correlated with both *MAOWN* and *INST*. One possible explanation for the correlation is the aversion to risk on the part of the management team. Saif-Alyousfi et al. (2020) and Khan et al. (2021) show that board size and ownership concentration significantly affect the capital structure choices of enterprises, and their findings are corroborated by the positive correlation between both *LDAR* and *SDAR* and these factors. Additionally, both *LDAR* and *SDAR* are positively related to *CEODual* which runs counter to the management entrenchment idea. Also, *SDAR* is negatively related to profitability, which agrees with the pecking order theory that businesses should first look to their resources before turning to external sources of funding like loans. However, it has a positive correlation with the firm's asset structure (*TANG*), indicating that the presence of tangible assets in the asset structure may improve profitability of the business. The results of the correlation analysis also show that the *CC* is favourably related *BINDEP*, *TANG* and *INST* among others.

Table 3. Correlation matrix

	Variable	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*
1	*SDAR*	1										
2	*LDAR*	0.4781*	1									
3	*CEODual*	0.0298*	0.0944*	1								
4	*OWCO*	0.1442*	0.0994	0.9443*	1							
5	*MAOWN*	0.1360*	-0.0939	0.9988*	0.2949*	1						
6	*INST*	0.1809*	0.5214*	0.0428*	0.1939*	0.9839*	1					
7	*ROA*	-0.0398	0.9942*	0.0034	0.0280	0.2640*	-0.049*	1				
8	*CC*	0.0099	0.2839	0.2820*	0.1803*	0.0994*	0.035***	-0.040**	1			
9	*FS*	0.3398*	0.0342	0.0594*	0.0438*	0.0928	0.052***	0.015*	0.024***	1		
10	*TANG*	0.0230	0.0334	.0489*	0.0440*	0.0442*	0.159***	0.045***	0.117*	0.009	1	
11	*BSize*	0.0209*	0.0484*	0.5639	0.0030	0.0473*	0.054***	0.009	0.070*	0.010	-0.002	1
12	*BINDEP*	0.0849*	0.0294	0.3709*	0449*	0.091*	0.007*	0.021***	-0.095*	0.027**	0.014*	-0.002

Note: SDAR is the short-term debt-to-assets ratio, LDAR is the long-term debt-to-assets ratio, CEODual is the CEO duality, OWCO is the ownership concentration, MAOWN is the managerial ownership, INST is the institutional ownership, ROA is the return on assets, CC is the cost of capital, FS is the firm size, TANG is the tangibility, BSize is the board size, BINDEP is the board independence.
Source: Author's computation.

4.3. Regression results

The GMM estimation for the long-term debt-to-assets ratio can be found in Table 4. The results cover the two-step difference GMM and system GMM.

The GMM estimation for short-term debt-to-assets ratio can be found in Table 5. The results cover the two-step difference GMM and system GMM.

Table 4. GMM estimation for long-term debt-to-assets ratio

Variable	*Two-step difference GMM*	*Two-step system GMM*
$LDAR_{t-1}$	−0.0254*** (0.0067)	−0.0184** (0.0085)
CEODual	0.0206*** (0.0064)	0.0384*** (0.0227)
OWCO	0.0446 (0.2110)	0.0446** (0.0227)
MAOWN	0.267*** (0.0623)	0.239*** (0.0719)
INST	0.0131*** (0.0034)	0.0212*** (0.0073
BSize	0.0518** (0.0248)	0.0141*** (0.0032)
BINDEP	0.0145** (0.0055)	0.0105* (0.0055)
ROA	-0.0186*** (0.0063)	-0.0214** (0.0091)
CC	-0.0208** (0.0089)	-0.0954*** (0.0295)
FS	0.0383** (0.0146)	0.0418** (0.0178)
TANG	-0.0457** (0.0182)	-0.0360** (0.0182)
AR(1) *p*-value	0.006	0.047
AR(2) *p*-value	0.209	0.529
Hansen's J-test χ2	0.607	0.610
p-Hansens	0.481	0.291

*Note: *** indicates significance level < 1%; ** indicates significance level < 5%; * indicates significance level < 10%.*

Table 5. GMM estimation for short-term debt-to-assets ratio

Variable	*Two-step difference GMM*	*Two-step system GMM*
$SDAR_{t-1}$	0.0541*** (0.0039)	0.0758* (0.0426)
CEODual	0.0201*** (0.0071)	0.0299*** (0.0084)
OWCO	0.0171 (0.0120)	0.0443 (0.0328)
MAOWN	0.0249*** (0.0073)	0.0301*** (0.0082)
INST	0.0257*** (0.0069)	0.0295*** (0.0079)
BSize	0.0477** (0.0187)	0.0235* (0.0138)
BINDEP	0.0609** (0.0289)	0.0358** (0.0180)
ROA	0.236*** (0.0611)	-0.249*** (0.0627)
CC	-0.0121*** (0.0035)	-0.0541*** (0.0039)
FS	0.0177*** (0.0064)	0.0201*** (0.0071)
TANG	-0.0383** (0.0152)	-0.0532*** (0.0117)
AR(1) *p*-value	0.073	0.063
AR(2) *p*-value	0.470	0.509
Hansen's J-test χ2	0.781	0.773
p-Hansens	0.291	0.067

*Note: *** indicates significance level < 1%; ** indicates significance level < 5%; * indicates significance level < 10%.*

5. DISCUSSION OF RESULTS

5.1. The effect of board size and board independence on capital structure

The study finds a positive relationship between board size and both short-term and long-term debt-to-asset ratios, which supports the agency theory. This theory suggests that a board with a higher proportion of independent members is more likely to exercise vigilant oversight of management, pushing management to make decisions that maximize shareholder value This study adds to a growing body of literature, including Ngatno et al. (2021) and Feng et al. (2020) who find a positive correlation between board size and capital structure but contradicts Alabdullah et al. (2019) who find a negative effect with increasing board size.

The study also finds that independent directors' coefficients have a significant positive association with both total debt ratio and long-term debt ratio, as seen in Tables 4 and 5. This may be due to the fact that independent board members can increase a company's creditworthiness, enabling it to borrow more money at more favourable rates. The results of this study align with Zaid et al. (2020) and Nguyen et al. (2021) who found a positive correlation between outside directors and capital structure. Furthermore, the pecking order theory predicts that firms prefer internal financing over external financing due to the high costs associated with external financing. However, our findings suggest that firms with more independent directors are more likely to utilize debt financing, indicating that the influence of independent directors on the capital structure decisions of firms may override the preferences of the management team.

5.2. The effect of managerial and institutional ownership on capital structure

The study finds that managerial and institutional ownership have a significant impact on a firm's capital structure choices. The agency theory posits that when management owns a greater proportion of a company's stock, they are less likely to act in their self-interest, which reduces the chance of bankruptcy arising from debt financing. The findings are consistent with the results obtained by Hayat et al. (2018) and Naseem et al. (2017) which show a positive relationship between managerial and institutional ownership and capital structure, but this contradicts Khafid et al. (2020). Additionally, Salehi et al. (2016) study demonstrates that the presence of management shares in a company's ownership structure has a greater beneficial influence on long-term debt than equity. This is attributed to the fact that the tax benefits offered by debt financing makes it more appealing to managers. However, the risk of bankruptcy associated with debt financing serves as a major drawback.

Moreover, the study finds that institutional ownership enhances a company's access to long-term debt financing under favourable terms and conditions. This finding is consistent with Sehrawat et al. (2020) and Liao et al. (2015), which show that corporations with independent boards, protection from CEO/Chair duality, and more institutional shareholders increase their financial leverage and can change their leverage ratio more swiftly. However, this does not corroborate the results obtained by Hussainey and Aljifri (2012), who establish a negative association between the presence of institutional investors and enterprises' debt financing. The difference can be explained by the fact that the largest institutional investors in Pakistan are not banks. Our study also highlights the agency conflict caused by the separation of ownership and control, which can lead to opportunistic behaviour by management such as excessive borrowing and the growth of perks and pay schemes. This can increase the cost of capital and expose the firm to market risk. However, with the assistance of institutional investors and independent board members, disclosure requirements, monitoring and control methods, information asymmetry, and agency conflict may be improved. Purbawangsa et al. (2019) and Hadiwijaya et al. (2016) have also shown that transparency can lower the cost of debt and equity financing by bridging the knowledge gap between employees and outsiders.

5.3. The effect of ownership concentration and CEO duality on capital structure

There is a statistically significant and positive correlation between ownership concentration and both the short-term debt ratio and the long-term debt ratio. Several studies have found a significant positive correlation between ownership concentration and capital structure, particularly concerning the short-term debt ratio and long-term debt ratio. Block holders have been found to push management towards incurring additional debt to reduce managerial opportunism, as they possess greater power to influence decision-making and enhance shareholder value. This trend has been consistent with Bhaumik et al. (2019).

Furthermore, a higher level of shareholder ownership may help reduce agency disputes between management and shareholders, as shareholders may exert greater influence over management decisions. This pressure to increase debt levels may be motivated by a desire to reduce management's discretionary control over cash flow and promote efficient resource allocation. We corroborate Ullah et al. (2019) who report a positive relationship between shareholder ownership and leverage.

On the other hand, CEO duality, where the CEO is also the chairman of the board of directors, was found to have a significant impact on the short- and long-term debt ratio of manufacturing companies in Ghana. This structure can offer benefits such as streamlined decision-making and faster adaptation to changing conditions, as well as potentially reducing disputes between shareholders and management. However, it can also lead to the concentration of power in a single individual and potentially undermine the role of the board of directors in decision-making. Theories such as agency theory suggest that CEO duality may reduce agency disputes, while stewardship and resource dependence theories suggest that it may lead to effective action and better performance. However, there is no one-size-fits-all approach to leadership

structure, and companies may need to carefully consider their specific needs and circumstances when choosing between dual or separate leadership structures.

5.4. Control variables

The control variables in the estimation model have values that are compatible with well-recognized capital structure theories. The pecking order theory which holds that more profitability and less cost of capital companies prefer to borrow less than less profitable, and less cost of capital companies is consistent with the negative and statistically significant correlations between profitability, cost of capital, and tangibility reported in Tables 4 and 5. In addition, the firm size shows a positive relationship with debt to asset ratios. This corroborates with Naseem et al. (2017) since the greater the size of a company, the reduced likelihood of it facing bankruptcy, and consequently, a decrease in associated bankruptcy expenses.

5.5. Theoretical contribution

The theoretical contribution of this study lies in its examination of corporate governance mechanisms on firms' capital structure decisions in Ghana. The study's findings support both the agency theory and pecking order theory, suggesting that larger boards and a higher proportion of independent directors positively influence a firm's debt financing decisions. The study also provides evidence that the influence of independent directors may override the preferences of the management team, highlighting the importance of strong corporate governance mechanisms in shaping a firm's capital structure decisions. These findings provide valuable insights into the importance of corporate governance in shaping a firm's capital structure decisions and highlight the potential benefits of adopting stronger corporate governance mechanisms for firms seeking to access external financing. Overall, this study contributes to the growing body of literature on the relationship between corporate governance and capital structure decisions, particularly in the context of emerging economies such as Ghana.

The study's findings also contribute to the literature on corporate governance by highlighting the importance of board size and independent directors in shaping a firm's capital structure decisions. Specifically, the results suggest that firms with larger boards and a higher proportion of independent directors are more likely to use debt financing, which can have important implications for firm performance and financial health. Moreover, the study adds to the existing literature on capital structure theories by providing empirical evidence that supports the agency theory and pecking order theory. The results suggest that these theories can coexist and complement each other in explaining a firm's capital structure decisions. We contribute to the unabated debate on the optimal board size and the role of independent directors in corporate governance. Finally, the study's focus on Ghanaian firms provides insights into the unique context of emerging economies and the role that corporate governance mechanisms can play in influencing a firm's capital structure decisions. These findings have important implications for policymakers, investors, and other stakeholders who are interested in promoting sustainable economic growth and development in emerging markets.

5.6. Practical contribution

The practical implications of this study are significant for firms, policymakers, investors, and other stakeholders. Firstly, the study suggests that firms with larger boards and a higher proportion of independent directors may have better access to debt financing. Therefore, firms could benefit from expanding their boards and recruiting more independent directors to improve their access to debt financing, particularly if they are looking to expand their operations. Secondly, policymakers and regulators could use the findings of this study to encourage firms to improve their corporate governance mechanisms. By promoting the appointment of more independent directors, policymakers could help firms enhance their creditworthiness, and enhance investor trust to catapult access to favourable debt financing conditions. This could also help to increase investor confidence in the market and improve the overall financial health of firms.

Thirdly, investors could use the findings of this study to evaluate the effectiveness of a firm's corporate governance mechanisms. By examining a firm's board composition, investors could gain insight into the firm's ability to manage risk and make effective capital structure decisions. This could inform their investment decisions and potentially lead to better investment outcomes. Finally, other stakeholders, such as creditors and suppliers, could also use the findings of this study to evaluate a firm's creditworthiness. By examining a firm's corporate governance mechanisms (board characteristics and ownership structure mix), stakeholders could gain insight into the firm's financial health and make informed decisions about whether to extend credit or enter into business relationships with the firm.

6. CONCLUSION

Based on the analysis of the effect of board size and board independence on capital structure, it is evident that larger boards are more likely to receive external financing to expand their operations. Additionally, companies with a higher proportion of independent directors tend to exercise vigilant oversight of management, which can increase a company's creditworthiness and enable it to access debt financing on more favourable terms. Increasing the number of independent directors on the boards of manufacturing firms will improve corporate governance and access to financing. The analysis of the effect of managerial and institutional ownership on capital structure suggests that debt financing is appealing to managers probably due to the tax advantages it offers. However, the presence of management shares in a company's ownership structure has a greater positive impact on long-term debt than equity. Companies can minimize the agency problem by aligning the principal-agent interest through managerial ownership. This could

guarantee a situation where even if management would consider more debt financing, it would be done cautiously not to jeopardize firm value.

The analysis of the effect of ownership concentration and CEO duality on capital structure suggests that block holders can exert pressure on management to incur additional debt to minimize managerial opportunism. Shareholders may compel management to make decisions that increase shareholder value, including increasing the level of debt use. The practical implication of these findings is that companies should consider increasing the ownership concentration of their shareholders to minimize agency disputes and improve their access to financing.

In conclusion, the findings of this study suggest that there is a complex relationship between corporate governance and a company's capital structure. The practical implications of these findings are that companies should consider improving their corporate governance mechanisms, such as increasing the number of independent directors, encouraging management to own shares in the company, and increasing ownership concentration to improve their access to financing. These can assist companies in making informed decisions about their capital structure and improving their financial health. Future research may consider expanding the corporate governance variables to include board activities and optimal capital structure by analyzing the speed of adjustment and potential threshold level of the various CG determinants across a larger panel dataset. Every social research project has some constraints, including those related to data collection, financing, timeliness, and coverage. The main limitation of the study is the limited number of firms involved in the study. The usage of companies clustered within the categories of agriculture, pharmaceuticals, engineering, and others also creates a sample size restriction — a further constraint since data is only readily available for those listed companies on the Ghana Stock Exchange. The reason is that Ghana operates a very low stock market base with less than forty listed firms (including financial institutions). However, this limitation does not mean research should relegate emerging economies to the background. Having met the necessary assumptions, the findings are valid and reliable.

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