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THE EFFECT OF OWNERSHIP TYPE AND CORPORATE GOVERNANCE ON CAPITAL STRUCTURE: A SOUTH AFRICAN PERSPECTIVE

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ABSTRACT

This study investigates the effect of ownership type and corporate governance on capital structure decisions of non-financial firms listed on the Johannesburg Stock Exchange (JSE). It examines 109 firms listed over a 23-year period from the year 2000 to 2022. The main research question is whether ownership type and corporate governance factors have an effect on capital structure among firms listed on the JSE or not? The rationale for the study is the lack of empirical evidence in the South African context on the countries diverse ownership types and its effect on key financing decisions. Further, the lack of empirical evidence to support among others, principle 7 of the King IV Code of corporate governance which calls for diversity and board independence, drives this research (BDO, 2016). Ownership type variables employed are institutional, managerial and black shareholding. Corporate governance is examined through the lens of board independence, board size, board gender diversity and CEO duality. Using the fixed effects regression model, the results reveal that institutional and managerial ownership both have a statistically significant inverse relationship with firm leverage. Black ownership is generally found to have no effect on capital structure with the exception of short-term debt, where an inverse relationship exists. Board size and CEO duality are negatively related to capital structure, whereas board independence and board gender diversity are positively related to firm leverage.

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CHAPTER ONE

INTRODUCTION

1.1 Background

The seminal work of Modigliani and Miller (1958) on the capital structure irrelevance proposition has formed the basis of numerous theoretical and empirical studies on capital structure relevance in both developed and emerging economies (see for example: Fosu, 2013) The perennial debate on the optimal capital structure continues, with the relationship between financial leverage and firm performance producing mixed empirical findings across geographies (Fosu, 2013). However, there is some consensus on the importance of financing decisions direct impact on both firm and shareholder wealth (Boroujeni, Noroozi, Ndem & Chadegani, 2013).

The foundation of capital structure is formally located in Modigliani and Miller (1958) who find that in perfect capital market conditions, where there are no taxes, transaction, or bankruptcy costs, the choice of capital structure is irrelevant to firm performance. The conditions upon which their theorem is based has become the contention of subsequent academic research on capital structure. Miller and Modigliani (1963) then relaxed their assumption of no taxes and conclude that the tax deductibility of interest on corporate debt increases the value of levered firms, when compared to unlevered ones. In conclusion, they state that firms ought to use as much debt as possible in their capital structure, so as to maximise value.

The introduction of the bankruptcy costs and the costs of financial distress associated with excess leverage formed the basis of the trade-off theory of capital structure by Myers (1977). The theory contends that the optimal capital structure of a firm lies in the trade-off between the benefits of debt (tax shield), and its drawbacks (costs of financial distress and bankruptcy).

The friction of capital markets like agency costs, as defined by Jensen and Meckling (1976), as the costs associated with the divergence of interest between owners and managers, was added to the body of literature on capital structure. Agency theory is premised on the work of

Berle and Means (1932) which focused on the separation of ownership and management in corporates. Agency theory expands into moral hazard, which occurs when there is asymmetrical information between the principal and the agent, being the owners and the managers of a firm, respectively.

Myers and Majluf (1984) premised their study not on finding the optimal capital structure, but rather, on the assertion that firms have a preference for using internal resources (like retained earnings) before considering external funds (Luigui & Sorin, 2009). In the instance of a financing deficit of internal funds, firms will prefer to use external debt over external equity, in order to minimise the additional costs of asymmetric information (Luigui & Sorin, 2009). Myers and Majluf (1984) posit that outside investors discount the firm's share price when managers issue equity over riskless debt, as a result, managers will avoid issuing equity in order to preserve value. This led to the establishment of the pecking order theory of capital structure, where internal funds are used first then followed by low-risk debt and lastly, equity financing.

The alignment of incentives between shareholders and managers has long been studied as an effective tool for reducing the agency costs associated with the separation of ownership and management. Corporate governance measures identified by extant literature as board composition, board size, CEO duality, entrenchment, and compensation are seen as key measures of monitoring and ensuring that managers act in the best interest of shareholders. Theory therefore suggests that firms with good corporate governance practices act in the shareholders best interest, including acquiring value-maximising debt levels, whilst managing the associated costs of debt (see for example: Masulis et. al, 2005, Ronoowah and Seetanah, 2022). Ownership structure also has an important effect on a firm's performance as major shareholders could influence procedures and activities of a firm in line with their desires (Boroujeni et. al., 2013).

South Africa has a robust and clear corporate governance framework issued under the King Report on corporate governance. Since 1994, four reports have been issued, with the latest being the King IV report issued in 2016. The reports are a voluntary code that seeks to set out the best practices on corporate governance (IODSA, 2018). They provide clear guidelines/principles to corporations on how to achieve good governance (IODSA, 2018). Principle 7 of the King IV Code highlights the importance of having a board of directors that has the appropriate balance of knowledge, skill, diversity and independence (BDO, 2016).

1.2 Problem Statement

With the strong theoretical framework, vast empirical research has been conducted into different aspects of capital structure (see for example: Fosu, 2013, Boroujeni et al., 2013), however, few have attempted to simultaneously understand the effect of both ownership types and corporate governance in capital structure decisions in emerging markets, and none have done so in the South African context. Considering some of the South African corporate scandals that have seen the collapse of several high-profile firms (chief amongst these the Steinhoff, Tongaat Hullet, EOH and VBS Bank scandals) resulting from poor corporate governance measures, understanding the impact of corporate governance on key financing decisions is becoming increasingly acknowledged for its importance. In South Africa, Steinhoff is the latest company to become exposed for deep irregularities, and as Rossouw and Styan (2019) state, Steinhoff presents a classic case of corporate governance failure, which also shows the danger of an all-powerful chief executive officer (CEO) and the limitations of a board structure. Capital structure, which is often measured in empirical studies as the level of financial leverage in a corporation, is one of the key decisions that has an impact on both shareholder wealth and firm value. This research discusses the role of ownership types and corporate governance on capital structure decisions.

Dube (2018) studied the impact of ownership structure on both capital structure and firm performance on South African listed non-financial firms between 2004 and 2014. Inter alia, ownership concentration, black ownership, and ownership by the Public Investment Corporation was found to have negative effects on capital structure. Institutional, managerial and foreign ownership was meanwhile found to positively affect capital structure. This study was done over relatively short period of time of 10 years, including the global financial crisis period, where the reliability of the results may be affected. When it comes to corporate governance in South Africa, Muazeib, Chairiri & Ghozali (2015) investigate the effect of corporate governance factors (specifically institutional ownership, independent audit committee, and external auditor size) on capital structure of South African listed firms for the year 2010. The authors found that corporate governance has a significant deleterious effect on the financial leverage of a firm. This paper, although it provides good context to the impact corporate governance has on capital structure in South Africa, is limited by the choice of corporate governance factors selected, as well as temporally to the one-year period under investigation.

This paper aims to ballast the literature on capital structure in South Africa, especially concerning the impact of ownership types and corporate governance on capital structure. The current study will investigate if ownership structure and corporate governance aspects affect capital structure decisions in locally listed non-financial firms.

1.3 Research Questions

This paper seeks to examine the effect of ownership type and corporate governance on capital structure. Specifically, the research seeks to answer the following questions:

- Does ownership type affect capital structure in South African listed non-financial firms?
- Does corporate governance affect capital structure in South African listed non-financial firms?
- Does ownership type and corporate governance affect capital structure in South African listed non-financial firms?

1.3.1 Research Hypothesis[(1)]

- *H01*: There is no relationship between ownership structure and financial leverage
- *H02*: There is no relationship between corporate governance and financial leverage

1.4 Importance and Benefits of the Proposed Study

Agency theory literature asserts that firms with close monitoring face fewer agency problems (see Jensen & Meckling, 1976; Shleifer & Vishny, 1997) and that as such, firms with robust corporate governance and specific types of ownership including large and institutional shareholders ought to follow the pecking order theory of capital structure. The current paper seeks to empirically test whether the pecking order theory holds in the context of the South African market, by specifically studying the impact of ownership and corporate governance on capital structure. The findings will add to limited direct empirical tests of the pecking order theory in the South African market. South Africa, as part of BRICS (Brazil, Russia, India, China, South Africa), a powerful bloc of emerging economies which represent 23% of the

Note: (1) The development of the research hypothesis is discussed in detail in the Literature Review Chapter (2.2.1.1.1, 2.2.1.1.2, 2.2.1.1.3, 2.2.2.1, 2.2.2.2, 2.2.2.3)

global GDP at US20.34trillion (The South African Presidency, 2021) proves to be a key market. It is often referred to as the 'gateway to Africa' due to its size, infrastructural development, and unique structural factors in the region. Understanding the capital structure choices of firms in this economic landscape may help researchers in extending their understanding of these decisions among other emerging economies.

To the author's knowledge, this is the first study to investigate the simultaneous effect of ownership type and corporate governance on capital structure on the JSE. In light of the mixed results on capital structure theory, this paper will contribute to literature attempting to resolve this capital structure puzzle. This study will also assist shareholders of corporations to better understand, monitor, and evaluate the performance of the companies in which they enjoy ownership. The author hopes that shareholders can use the findings of the study to better to evaluate companies that are likely to face challenges due to their corporate governance practices, in an attempt to avoid another Steinhoff case. In the collapse of Steinhoff, shareholders lost almost R282bn in value in December 2017 (News24, 2017).

1.5 Motivation of the Study

The motivation of the study is the lack of empirical evidence on the simultaneous effect and the effect of ownership type and corporate governance on capital structure decisions of South African firms. South Africa has a well constructed set of King Codes on Corporate Governance, whose empirical effect on key corporate decisions (like financing choices) has not been tested widely. Principle 7 of the King IV Code highlights the importance of having a board of directors that has the appropriate balance of knowledge, skill, diversity and independence (BDO, 2016). This paper seeks amongst others, to provide empirical evidence of the effect of gender diversity and board independence on key capital structure decisions, in an effort to assist shareholders better monitor and evaluate their companies.

1.6 Limitations of the Study

The study benefits from an analysis of a relatively long period of time of 23 years, including the 2008 Global Financial Crisis and the 2020 Covid Crises. It successfully answers the research questions, however there were some limitations. Firstly, the paper focuses only on one country, being South Africa, which has a unique set of economic circumstances given its

relatively young democracy. This may hinder the applicability of the research findings to other emerging economies and countries. Secondly, the limited data and the number of companies with BBBEE ownership on the JSE, calls into question the robustness of the findings on the effect of this type of ownership on capital structure in South Africa. Finally, the study only used the fixed effects model, adding the generalized method of moments (GMM) regression model could have either supported the findings or provided contrasting conclusions which would have added to the robustness of the research findings.

1.7 Structure of the Research Report

This paper is divided into five chapters. Chapter 1 has presented an introduction into the research question and reasons for the author's pursuit of this study. Chapter 2 reviews the existing theoretical and empirical literature on capital structure. Chapter 3 focuses on the data and research methodology used to conduct the study. Chapter 4 presents the study results and analysis. Lastly, Chapter 5 delivers the conclusions and suggestions for future research.

CHAPTER TWO

LITERATURE REVIEW

2. Introduction

This chapter reviews existing literature on capital structure. It starts by studying the theoretical framework of capital structure theories and then examines the empirical framework in this respect. In examining the empirical studies, the author firstly focuses on the relationship between ownership and capital structure, where the type of ownership is studied. Secondly, they investigate the relationship between corporate governance and capital structure, where capital structure is studied through the lens of financial leverage.

2.1 Theoretical Framework

2.1.1 Modigliani and Miller Irrelevance Theory

Capital structure theory has its roots in the pioneering work of Modigliani and Miller (1958) who developed their theory of the irrelevance of capital structure decisions assuming perfect conditions of the capital markets. Their irrelevance theorem assumes that there is a fully efficient market in which there are no taxes, transaction, or bankruptcy costs, and that there is profuse information at the disposal of all parties. The first MM theorem states that financing decisions do not affect firm value, and that therefore, there is no optimal leverage ratio. The second MM theorem states that dividend policy does not affect firm value, and therefore, there is no optimal payout ratio (Pagano, 2005). The key implication of the work of Modigliani and Miller (1958) is that financial leverage can be understood to have no effect on the value of the firm. This spurred a large body of literature aimed at challenging the irrelevance theory that only holds in highly unrealistic perfect markets. In the Miller and Modigliani (1963) paper, the authors amended their tax assumption, and allowed for the tax deductibility of interest on corporate debt. This led them to conclude that levered firms are valued more highly than unlevered firms, where as such, the optimal capital structure is one in which firms maximise debt in order to maximise value.

2.1.2 Trade-Off Theory

Miller and Modigliani (1963) conclude that, in order to maximise value, firms must employ as much debt as possible, and academics began to study this theory in light of bankruptcy costs, as well as the costs of financial distress. This culminated in Myers' (1984) trade-off theory, which states that a firm's optimal debt ratio is determined by a tradeoff of the costs and benefits of debt, when holding the firm's assets and investment plans constant. In other words, the value of the tax shield of interest deductibility is balanced against the costs of financial distress and bankruptcy, a tradeoff which leads to an optimal capital structure.

2.1.3 Pecking-Order Theory

Capital structure literature, after Modigliani and Miller, focused on finding how firms determine the optimal capital structure in friction markets that include costs such as those of agency, and financial distress. Myers and Majluf (1984) studied firm capital structure decisions in the presence of information asymmetry between corporate insiders (managers) and outsiders (managers) assuming that managers act in the best interests of existing shareholders under asymmetric information. It is argued that managers acting on behalf of passive existing shareholders under asymmetric information will prefer internal sources of funding to external funding. In the case of a financing deficit, firms will issue debt first, and equity last. Literature on agency problems suggests that firms with concentrated ownership, large and institutional owners with the capability, willingness, and ability to monitor manager actions result in fewer agency costs (see for example: Jensen and Meckling, 1976; Jensen, 1986; Shleifer and Vishny, 1997). This implies close monitoring of managers' actions to be in line with the best interests of shareholders. In the absence of such close monitoring, managers may not act in the best interests of existing shareholders, in contradiction to the assumption made by Myers and Majluf (1984). Thus, pecking-order theory should hold for firms with concentrated ownership, including both large and institutional shareholders. Such closely monitored firms ensure managers' actions are in line with the best interests of existing shareholders.

2.1.4 Agency Theory

Berle and Means (1932) are credited as the founders of modern corporate governance in their seminal work, which addresses the implications of a separation of ownership and control in large US companies. Jensen and Meckling (1976) extended this study by identifying the agency

theory, which states that a conflict arises between the owner of an asset and the person who controls that asset on their behalf. Jensen and Meckling (1976) further find the costs associated with ensuring that managers act according to the owners' objectives to be non-zero. Thus, agency theory supports the proposition that better governance factors ought to result in better quality financial decisions (i.e. capital structure) (Muazeib et. al, 2015).

Boroujeni et al. (2013) identify one of the key methods for controlling firm's operations and corporate governance to be to determine the optimum combination of ownership structure. A variety of empirical literature has considered the effect of the type of ownership structure and corporate governance on capital structure, which we review in the next section.

2.2 Empirical Framework

2.2.1. Relationship between Ownership and Capital Structure

2.2.1.1 Ownership Types

Large publicly owned and traded companies (like those listed on the Johannesburg Stock Exchange) tend to have a diverse shareholder register, which includes institutional, managerial, family, broad-based black economic empowerment (BBBEE), and state ownership through pension fund asset managers like the public investment corporation (PIC). Understanding whether and how these ownership types impact on capital structure decisions is important in assisting investors making informed investment decisions into South African listed companies.

2.2.1.1.1 Institutional Ownership and Capital Structure

The rise of institutional ownership has long been studied as a tool to minimise agency problems associated with dispersed ownership of publicly traded companies, as identified by Berle and Means (1932). As such, institutional shareholders are upheld as one of the mechanisms to monitor management thus reducing agency costs.

Chaganti and Damanpour (1991) studied the relationship between outside institutional shareholdings and firm capital structure and performance. The authors found the size of institutional shareholdings to be significantly related to capital structure, in the sense that it is inversely related to the debt-to-capital ratio of firms. Likewise, Cinko and Kasaboglu (2017) investigated the relationship between institutional ownership and capital structure on Turkish

firms between 2005 and 2013. The authors concluded that a significantly negative relationship exists between institutional ownership and financial leverage.

In contrast, Hammerstrom and Jersov (2014) examined the effect of institutional ownership on the capital structure of Swedish companies between 1998 and 2012. The authors found that leverage increases as institutional ownership rises, especially among low market capitalisation firms. Similarly, Boroujeni et al. (2013) investigated the effect of ownership structure and corporate governance on companies listed on the Tehran Stock Exchange over a period of eight years. They find that institutional shareholders have a positive effect on capital structure, with companies being motivated to use more debt financing due to the fact that institutional shareholders tended to use more debt financing themselves.

Muazeib et al. (2015) in their one-year study (2010) of the JSE data, find results consistent with Chaganti and Damanpour (1991) and Cinko and Kasaboglu (2017), of an inverse relationship between institutional shareholdings and capital structure. However, Dube (2018), in his study of JSE-listed firms, finds results that are consistent with both Swedish and Iranian companies, where there exists a positive relationship between institutional ownership and leverage. In the South African context the impact of institutional shareholding on capital structure has been found to be impactful but inconclusive in terms of the direction of the effect. This study aims to contribute to South African literature by clarifying the impact of institutional shareholding on capital structure over a long period of time. This study therefore hypothesizes the following:

*H*1: *Institutional ownership does not affect financial leverage*

2.2.1.1.2 Managerial Ownership and Capital Structure

Jensen and Meckling (1976) observe that there is a convergence of interests between shareholders and managers, as the manager's ownership increases and thus a reduction in agency costs. In this instance, managers are incentivised to behave in an optimal manner, as their wealth is tied to the value of the firm. This has sparked much of the empirical interest in the effect of managerial ownership on capital structure decisions, with inconsistent conclusions.

Zhang (2013) found that among Chinese listed firms, managerial ownership did not significantly impact a firm's leverage. Le and Tannous (2017) examined the relationship between ownership structure and capital structure for non-financial listed firms in Vietnam for the period 2007 – 2012 to find a positive relationship between managerial ownership and debt level. Agyei and Owusu (2014) reported a positive relationship between managerial ownership and leverage among Ghanaian listed manufacturing companies. In South Africa, Dube (2018) notes a positive and statistically significant relationship between managerial or director's ownership and firm leverage.

Hayat et al. (2018) focused their study on the impact of managerial ownership and institutional ownership on capital structure comparing developed economies to developing economies, as proxied by United States of America (USA) and China, respectively. The authors find that the relationship of low managerial ownership to debt is positive for China, and negative for the US. They further find that the relationship of high managerial ownership to debt is negative for both developing and developed economies.

In accordance with agency theory, the alignment of interests between managers and shareholders may result in managers exercising tighter control on financing decisions thus suggesting an inverse relationship between managerial ownership and firm leverage, however some empirical research (see for example Dube (2018), Le and Tannous (2017) suggest a positive relationship. To test this relationship this study hypothesizes the following:

*H*2: *Managerial ownership does not affect financial leverage*

2.2.1.1.3 BBBEE Ownership and Capital Structure

One of the types of ownership examined by existing literature is the effect of local ownership in different countries on capital structure. Shubita (2023) studied the impact of local ownership on capital structure across 111 companies listed on the Jordian Amman Stock Exchange over the period 2010-2019. The author finds that local ownership negatively affects capital structure.

In the South African context, ownership held by black people constitutes a subset of local ownership. Given that this group of people were historically and economically oppressed, BBBEE policies with prescribed black ownership was introduced since the advent of democracy in 1994, and targeted at qualifying black shareholders obtaining significant

minority stakes in existing companies (Dube, 2018). This policy increased the black ownership of companies listed on the JSE, in an effort to redistribute wealth to the majority black population. Limited studies have attempted to directly analyse the impact of black ownership, in particular on either capital structure, or firm performance.

Dube (2018) investigates the effect of black ownership over a 10-year period on capital structure of JSE listed companies, reporting conclusions in line with the studies on local ownership, namely that black ownership tends to have a negative impact on capital structure. Cole and Sokolyk (2017), in their study of debt financing of start-up firms in the US, found that black-owned companies use significantly less debt than do other companies.

Dube, Brummer and Hall et al. (2022) directly focus on the impact of black ownership on both capital structure and firm performance on firms listed on the JSE between 2007 and 2014. They report that black ownership is negatively correlated to long-term debt, and positively related to firm performance. They conclude that these results can be explained by firms increasing their black ownership not needing to borrow additional funds, as this means that they will be generating additional revenue from the black ownership participation in the firm. Given the limited empirical research in this area, it may be possible to speculate that a positive relationship may exist between black ownership and financial leverage, as black owners typically need to acquire gearing in order to purchase equity into these listed companies, which often provide financial support (i.e. guarantees or PUT options) as security for the loans these owners acquire. To test the effect of black ownership on capital structure, the following hypothesis is employed:

*H*3: *BBBEE ownership does not affect financial leverage*

2.2.2. Relationship between Corporate Governance and Capital Structure

2.2.2.1 The Effect of Board Independence and Board Size on Capital Structure

Extant literature on corporate governance has identified board composition, board size, CEO duality, entrenchment, and compensation as some of the main characteristics of corporate governance. According to the King Codes of good corporate governance, the board of directors ought to be composed of both independent and executive directors, with independent directors providing an autonomous perspective and acting as custodians of the rights of shareholders and

stakeholders (Deloitte, 2017). The Board of directors is appointed to oversee management (including the CEO) and to minimise agency problems such as moral hazard, which occurs when self-seeking managers maximise their interest at the expense of the shareholder (Purag, Abdullah & Bujang, 2016). By extension, extant theory suggests that an efficiently composed (size and independence ratio) board of directors ought to be able to monitor management effectively, thereby better aligning the interests of management and the shareholders. Board independence refers to the number of independent directors as a percentage of the total number of board members.

Deciding on what the optimal board size is, which refers to the number of members in the board of directors, including both independent and executive directors, is disputed in the broader literature. Pioneering corporate governance studies favour smaller board sizes, with Lipton and Lorsch (1992) suggesting that board size ought to be limited to seven to eight members and Jensen (1993) arguing that the optimal board size is eight. Ning, Davidson and Wang (2010) found that the most common board size between US firms ranges between eight and eleven directors. They conclude that board size selection may be motivated by a tradeoff between the agency costs and resource dependency theory. The authors further add that the resource dependency theory favours larger board sizes, as the board is likely to have more members and greater access to resources. One the other hand, Shakir (2008) notes that Hermalin and Weisbach (2003) argue that there is a possibility that larger boards can be less effective than their small counterparts.

The results of empirical studies on the effect of board composition and size on capital structure is varied, although largely suggests an inverse relationship between board size and board independence on capital structure. Hermassi, Adjaoud and Aloui (2015) examined the impact of board size and independence on capital structure among Canadian firms between 2008-2011 to find that both board size and board independence had no significant effect on Canadian firms' debt. In contrast, Alabdullah, Laadjal, Ahmed, Al-Asadi (2018) studied the same effect on Jordian non-financial firms for the year 2014 and found a negative relationship between both board size and board independence on financial leverage. Yusuf and Sulung (2018) meanwhile report an inverse relationship between board size and long-term debt among Indonesian firms in the mining, agriculture and consumer goods sectors between 2010 and 2016. In Africa, Abhor and Biekpe (2006) studied the impact of board size and composition on

capital structure of Ghanaian Small and Medium Enterprises over the period 1998-2003. They report results in line with Alabdullah *et al.* (2018) of a negative association between board size and capital structure but in contrast a positive relationship between board composition and capital structure. This study hypothesised the following

*H*4: *Board independence does not affect firm leverage*

*H*5: *Board size does not affect firm leverage*

2.2.2.2. The Effect of Board Gender Diversity on Capital Structure

The impact of board gender diversity on capital structure has not been widely studied, but is gaining traction in corporate governance studies. One of the main criticisms of the Steinhoff scandal is the lack of diversity that existed among its board members, which could have impeded on the ability of the board to effectively hold management accountable.

Meijer (2020) examined the effect of board diversity on capital structure and firm performance in European firms over the period 2010-2018. The author measured board diversity as both a measure of gender diversity, as well as and the number of foreigners on the board. The study found significant results indicating that the more females on the board, the safer the forms financing, and the more stable the performance. Rossi, Cebula and Barth (2017) examined the relationship between female representation on the corporate boards and corporate debt for Italian non-financial public firms between 2005 and 2013. The authors found that the presence of women in the boardroom may seem to push significantly on debt and deduce a complementary role in the monitoring of agency costs.

However, Adusei and Obeng (2018) investigated across 69 countries whether board gender diversity influences the financing choices of microfinancing institutions, finding a statistically significant inverse relationship between gender diversity and capital structure. Abobakr and Elgiziry (2016) studied the linkage between board characteristics on corporate financial leverage of Egyptian listed companies trading between 2007 and 2011. This study revealed a significant negative relationship between the proportion of female directors on the board and short-term debt. This study hypothesised the following:

*H*6: *Board gender diversity does not affect firm leverage*

2.2.2.3 The Effect of CEO Duality on Capital Structure

The chief executive officer (CEO) of a firm is appointed by the board of directors, which has representatives of the shareholders. The CEO is the highest-ranking executive director and acts as the manager of the corporation and the main point of contact between the board of directors and the corporation. According to the Corporate Governance Institute the primary role of the chairman of the board is to ensure that the board and individual directors are effective in setting and implementing an organisation's direction and strategy. The CEO reports to the board of directors, and effectively to the chairman of the board. In determining the optimal capital structure, managers and shareholders may differ, with managers opting for less than the value maximising level of debt, given the performance pressures associated with fixed-debt repayments (Lee and Yeo, 2007).

CEO duality refers to instances where the same person holds the position of the CEO and the chairman of the board of directors within a firm. According to De Silva and Weerakoon (2021) and Finkelstein and D'Aveni (1994), CEO duality leads to ineffectiveness within a board. There has been limited empirical studies into the effect of CEO duality on capital structure, as the extant literature is dominated by the impact of CEO duality on firm performance. In accordance with agency theory, CEO duality negatively impacts firm performance. Nazir, Aslam and Nawz (2012) investigated the relationship between CEO duality and capital structure of Pakistani non-financial firms and found a positive and significant relationship between these two factors. Ranti (2013) examined the relationship between CEO duality and capital structure on Nigerian listed firms and found a significant positive relationship. De Silva and Weerakoon (2021) found that CEO duality had no significant impact on the leverage of firms listed on the Colombo Stock Exchange over an eight-year period between 2012 to 2019. To test the effect of CEO duality on the capital structure of South African listed firms, the author hypothesised the following:

*H*7: *CEO duality does not affect firm leverage*

2.3 Conclusion

The aim of this chapter was to provide a review of the existing literature on capital structure. The chapter detailed the theoretical and empirical literature on the effect of ownership types

and corporate governance on capital structure. The next chapter focuses on the methodology of the paper.

CHAPTER THREE

METHODOLOGY

3. Introduction

The aim of this chapter is to lay the empirical framework highlighting the research design and methodology of the study. The first section focuses on sample and data collection and the second and final section describes the research methodology employed in this research.

3.1 Sampling and Data Collection

This research employs unbalanced panel data collected over a 23-year period between 2000 and 2022. The period selected includes the 2008 Global Financial Crisis, and the 2020 Covid - 19 Pandemic period and represents the most recent two decades. Most capital structure empirical research papers focus on the most recent 10-year period, where this paper aims to extend the period to the most recent two decades, in an effort to test whether an expanded time period would result in different findings from those of the likes of Dube (2018).

In line with most capital structure studies, only non-financial firms are included in this research (see for example Dube, 2018; Zhang, 2003). Financial firms and regulated public utilities are excluded, because, as Hassan and Samour (2016) assert, financial firms and institutions are heavily regulated, which in turn affects their capital structure and investment decisions. This makes generally applicable conclusions difficult to tie to these results.

Data are collected from the Bloomberg database, which provides aggregated financial and company-specific data. EViews statistical software is used to run the regression analysis. The study employs unbalanced panel data that meets the following criteria:

1) Following Le and Tannous (2017), the research employs an unbalanced panel dataset, by using data in which the firms ought to listed, but do not need to remain listed on the JSE for the entire period between 1 January 2000 and 31 December 2022. The total companies included in the study is 109 firms.
2) Firms must be listed only on the main board of the JSE. Firms listed on the Alt X are excluded given the starkly different characteristics of these firms to those listed on the main board. As Sebastian and Merino (2018) observe, Alt X firms are small and

medium enterprises that tend to have significantly higher levels of debt than those listed on the main board and this debt tends to be risky short-term debt.

3) The study includes only non-financial data in line with extant capital structure literature.

3.1.1 Dependent Variables

Following on the vast extant literature capital structure is measured as financial leverage or debt within a firm. The dependent variables that will be used to study debt are long-term debt, short-term debt and total debt. Total debt is measured as total debt divided by total assets in line with Boroujeni et. Al (2013) and Le and Tannous (2017). Short-term debt and long-term debt are measured as short-term debt and long-term debt divided by total assets, respectively. This is in line with literature by Dube (2018), Zhang (2013) to name but a few.

3.1.2 Independent Variables

The independent variables for the study of ownership type on capital structure are institutional, black (BBBEE) and managerial ownership measured by the percentage of shares held by each of these shareholder types. The inclusion of black ownership in the study in the South African context and is partly in line with the recommendations of Dube (2018).

To study corporate governance, the independent variables include board size, board independence, board gender diversity and CEO duality. In line with Alabdullah *et al*. (2018), in their study of board features and capital structure in emerging markets, board size is measured as the number of board members and board independence refers to the ratio of independent to executive directors. Board gender diversisty is measured as the percentage of woman on the board. CEO duality focuses is binary variable taking on either zero or one, while zero indicates that the CEO is not the chairman of the board, and one indicates that the CEO occupies the chairman role as well.

3.1.3 Control Variables

Following Omet (2006) the control variables will include company size, profitability, and liquidity. Firm size can be measured as the natural logarithm of assets or of sales. This paper employs size calculated as the natural logarithm of sales in line with Rossi, Cebula and Barth

(2017) and according to trade off theory firm size positively affects firm leverage (Ahmed et. al, 2023). In line with existing literature and generally accepted practice, profitability and liquidity are calculated as ratio of profit before interest to total assets and the ratio total current assets to total current liabilities, respectively.

As Dube (2018) points out in the presence of information asymmetry companies place greater reliance on retained earnings, thereby postulating that a negative relationship exists between profitability and leverage.

3.2 Description of Overall Research Design

Following on the research methodology used by Chipeta and Deressa (2018), panel regression analysis will be conducted. The study will use either the fixed effects or the random effects regression models. Further to this, the Levin, Lin & Chu (LLC) and Augmented Dickey-Fuller (ADF) tests will be used to test for stationarity and the Pearson Correlation test conducted to pick up any serial correlations among the explanatory variables. The models that will be employed in the study are as follows:

$$Lev_{it} = \propto + \beta_1 \, Own_{it} + \beta_2 \, Control_{it} + \varepsilon_{it} \quad \text{(1)}$$

$$Lev_{it} = \propto + \beta_1 \, Corporate \, Gov_{it} + \beta_2 \, Control_{it} + \varepsilon_{it} \quad \text{(2)}$$

$$Lev_{it} = \propto + \beta_1 \, Own_{it} + \beta_2 \, Corprate \, Gov_{it} + \beta_3 \, Control_{it} + \varepsilon_{it} \quad \text{(3)}$$

Where: Own represents ownership measured as: institutional ownership, managerial ownership and BBBEE ownership.

$Corprate \, Gov$ are the corporate governance factors: board size, board independence, board gender diversity and CEO duality

$Control$ is vector of control variables

The error term ε_{it}, is the unsystematic or idiosyncratic error.

Panel data analysis is popular among empirical academic studies that aim to understand relationships in data over a considerable amount of time. As Torres-Reyna (2007) note, the advantage of panel data is that it allows the researcher to control for variables they cannot observe, or variables that change over time, but not across firms accounting for individual heterogeneity. Panel data also allows the observer to include variables at different levels of

analysis required for multilevel modeling (Torres-Reyna, 2007). Two techniques that can be used (based on the outcome of the Hausman Test) to analyse panel data are the fixed and random effects models, respectively.

3.2.1 The Fixed Effects Panel Regression Model

The fixed effects panel regression model allows the researcher to investigate the relationship between predictor and outcome variables within an entity in this case, a firm. Each firm has its own individual characteristics that may or may not have an influence on the explanatory variables. The fixed effects model assumes that there is a correlation between a firms' error term and predictor variables. These time-invariant characteristics are assumed to be unique to the individual firm, where the entity's error term and constant should not be correlated with other individual characteristics (Torres-Reyna, 2007). The model removes the effect of time-invariant characteristics to assess the net effect of the predictors on the dependent variable (Torres-Reyna, 2007) and controls for individual heterogeneity that may be present among firms.

3.2.2 The Random Effects Panel Regression Model

The random effects regression model assumes that the unobservable factors are not correlated with the explanatory variables (Hove, 2017). The key distinction between fixed and random effects is that the variation across entities is assumed to be both random and uncorrelated, with the independent variables included in the model (Torres-Reyna, 2007). The random effects model is most appropriately employed in instances where the observer believes that the differences across entities has some influence on the dependent variable (Torres-Reyna, 2007). Given that, with random effects, the researcher needs to specify which individual characteristics may or may not influence the explanatory variables, a drawback may be that certain variables may not be available, thereby leading to omitted variable bias (Torres-Reyna, 2007). The random effects model assumes a random variation across firms uncorrelated with explanatory variables (Singh & Bagga, 2019).

To formally test whether the fixed or random effects model is appropriate for the study, a Hausman test will be performed. The hypothesis will be:
H_0: The preferred model is the random effects model.
H_1: The preferred model is the fixed effects model.

The Hausman test will test whether the unique errors (μ_i) are correlated with the regressors with the null hypothesis assuming that they are not (Torres-Reyna, 2007). If the null hypothesis is accepted then the random effects model is most appropriate, if rejected the fixed effects model is appropriate for the study.

3.3 Conclusion

The aim of this chapter was to detail the research methodology and design of the study. It provided a description of the data collection process, sample selection and regression models employed. The next chapter presents the research results.

CHAPTER FOUR

RESULTS

4. Introduction

The objective of this research is to understand whether corporate governance and ownership types affect the capital structure decisions of JSE listed companies over a 23-year period. This chapter will present a description of the data, an analyses into the stationarity and robustness of the data and the interpretation of the regression results.

4.1 Descriptive Statistics

Table 1 summarises the descriptive statistics of the variables used in the research. By using EViews to examine 109 JSE listed companies over a 23-year period, we are able to determine the mean, median, minimum, maximum, standard deviation, skewness and kurtosis of the variables.

Table 1: Descriptive Statistics

Variable	Mean	Median	Maximum	Minimum	Std. Dev.	Skewness	Kurtosis
% of BBBEE Ownership	0,3116	0,2500	0,8810	0,0078	0,1983	0,9549	3,1646
% of Institutional Ownership	0,5908	0,6206	1,3061	0,1257	0,2371	-0,1082	2,6745
% Shares Held by Management	0,0036	0,0000	0,1760	0,0000	0,0171	7,0470	57,0764
% of Non-Executive Directors on Board	0,7708	0,7857	1,0000	0,5000	0,0801	-0,3285	3,3923
% Women on Board	0,2893	0,2727	0,7500	0,0000	0,1346	0,6459	3,4077
Board Size	11,4000	11,0000	18,0000	6,0000	2,2612	0,3196	2,7312
Liquidity	1,5141	1,2786	6,6743	0,0887	0,9034	2,1131	9,5706
Profitability	0,1361	0,1235	0,7930	-0,1801	0,1050	1,5465	9,1507
Firm Size	4,2614	4,3259	5,4358	3,1634	0,5496	0,0078	2,0437
Long-Term Debt	0,1753	0,1597	0,6741	0,0000	0,1397	0,6295	2,9619
Short-Term Debt	0,0581	0,0439	0,3005	0,0000	0,0561	1,3416	4,9849
Total Debt	0,2334	0,2236	0,7689	0,0000	0,1563	0,4635	2,9623

The mean and median values of total debt suggests that total interest-bearing debt accounts for less than 25% of the total assets of South African non-financial firms. On average institutional shareholders are the most dominant type of shareholder among JSE listed firms with approximately 60% of total ownership being institutional. The minimum percentage of non-executive directors on company boards is 50% with the maximum fully comprising of non-executive directors at 100% of the board. The board sizes of South African firms is closely related as demonstrated by a standard deviation of two people. The boards comprise on average of 11 people, with the largest board being 18 directors and smallest board comprising of six directors.

The skewness of all variables except for the percentage of shares held by management is considered good, lying between -2 and + 2. Most of the variables have skewness coefficients close to zero which demonstrates that most variables are evenly distributed. The kurtosis of the variables show a peaked distribution with a value greater than +2.

The results of the correlation matrix are presented in Table 2. The correlations are all below 0.8 which shows that there is no potential multicollinearity problem in the data. The various variables are statistically significant at the 1, 5 & 10% levels.

Table 2: Pearson Correlation Matrix for all Variable

	% of BBBEE Ownership	% of Non Executive Directors on Board	% of Institutional Ownership	% Shares Held by Management	% Women on Board	Board Size	Liquidity	Long-Term Debt	Profitability	Short-Term Debt	Firm Size	Total Debt
% of BBBEE Ownership	1											
% of Non Executive Directors on Board	-0,092255***	1										
% of Institutional Ownership	-0,154913*	-0,027848	1									
% Shares Held by Management	-0,064862	-0,217247	0,085902***	1								
% Women on Board	-0,084978***	0,229188*	0,100785**	-0,133792*	1							
Board Size	0,04005	0,196561*	0,054454	-0,100115**	-0,002231	1						
Liquidity	-0,013522	0,10535**	-0,19996*	-0,084946***	0,050737	0,164299*	1					
Long-Term Debt	-0,027191	0,13431*	0,02406***	-0,11381**	0,019912	-0,037798	-0,334074	1				
Profitability	-0,167869*	0,082467**	-0,188074*	-0,06556	0,18166*	-0,108535**	0,235389	-0,082265	1			
Short-Term Debt	0,080638	-0,155208*	0,046338	0,227635*	-0,185671*	-0,162009*	-0,448087*	0,112344**	-0,029689	1		
Firm Size	-0,056624	0,039394	-0,009711	0,047044	0,05682	0,198454*	-0,006979	-0,029199	0,214008*	0,069832	1	
Total Debt	0,004638	0,064352	0,03814	-0,02003	-0,048844	-0,091938***	-0,459466*	0,934233*	-0,084194***	0,45936*	-0,001037	1

Note: Significant at: *1, **5 and ***10 percent levels

4.2 Panel Unit Root Test

The panel unit root test is used to test the stationarity or non-stationarity of the individual data series. In order to identify the stationarity of the variables, this research employs two panel unit root tests: (1) Levin, Lin & Chu (LLC) and (2) Augmented Dickey-Fuller (ADF). The null hypothesis is that of a unit root for each individual series in the panel. Table 3 shows the result of the Levin, Lin & Chu test while Table 4 presents the results of the Augmented Dickey-Fuller test. The results are consistent between the two tests. The null hypothesis is rejected and the author finds that all of the variables analysed, except for the percentage of women on the board is stationary. The percentage of women on the board series is stationary at the first difference.

Table 3: Levin, Lin & Chu (LLC) Test Results

	Levin, Lin & Chu statistic	**Probability**	**Cross-sections**	**Observations**
% of BBBEE Ownership	-28,9017	0,0000	49	349
% of Institutional Ownership	-14,8929	0,0000	101	1068
% Shares Held by Management	-10776	0,0000	61	394
% of Non Executive Directors on Board	-12,0322	0,0000	81	1000
% of Women on Board	-0,6795	0,2484	84	1028
Board Size	-14,2732	0,0000	84	1043
Firm Size	-20,6176	0,0000	108	1818
Liquidity	-557,86	0,0000	103	1755
Profitability	-19,6791	0,0000	103	1776
Long-Term Debt	-6,67471	0,0000	108	1839
Short-Term Debt	-104,022	0,0000	108	1812
Total Debt	-11,4735	0,0000	108	1823

Table 4: Augmented Dickey-Fuller (ADF) Test Results

	ADF - Fisher Chi-Square Statistic	Probability	Cross-sections	Observations
% of BBBEE Ownership	152,999	0,0003	49	349
% of Institutional Ownership	395,723	0,0000	101	1068
% Shares Held by Management	195,908	0,0000	61	394
% of Non Executive Directors on Board	330,669	0,0000	82	1000
% of Women on Board	156,943	0,7119	84	1028
Board Size	339,245	0,0000	84	1043
Firm Size	451,873	0,0000	108	1818
Liquidity	459,538	0,0000	103	1755
Profitability	473,949	0,0000	103	1776
Long-Term Debt	367,315	0,0000	108	1839
Short-Term Debt	645,900	0,0000	108	1812
Total Debt	396,142	0,0000	108	1823

4.3 Analysis of Regression Results

This study employs regression analysis to test the effect ownership types and corporate governance factors have on corporate leverage. The paper investigates corporate leverage by defining it as long-term debt, short-term debt and total debt. This section presents the results of three models: Model 1 focuses on the effect of ownership types on capital structure; Model 2 presents the effect of corporate governance on capital structure; and Model 3 studies the effect of both ownership types and corporate governance factors on capital structure. We test ownership type variables as being the percentage of shares owned by black (BBBEE) shareholders, the percentage of shares owned by institutional shareholders and the percentage of shares owned by management. Corporate governance factors include board size, board

independence, board gender diversity and CEO duality. The control variables are firm size, liquidity and profitability.

4.3.1 Model 1: The Effect of Ownership Type on Capital Structure

Firstly, the author conducted a Hausman test on the impact of ownership types on all three leverage variables with a null hypothesis that the preferred model is the random effects model. For all ownership types, the p-value is significant at the 1% level therefore the null hypothesis is rejected in favor of the fixed effects regression model.

Table 5 presents the results of the fixed effects regression on the impact of ownership types on long-term debt. The ownership types studied explain 74% of the variation of long-term debt among JSE-listed firms as seen by the adjusted R-squared. Ownership by BBBEE shareholders is found to positively although statistically insignificantly effect the level of long-term leverage a company enjoys. This implies that BEE shareholders have no influence on leverage. Institutional and managerial ownership are both statistically significant and inversely related to long term debt.

The finding regarding institutional ownership is consistent with the monitoring-substitution effect described by Advento, Halim, Yasin et al. (2023) as being the work of Suteja (2017). They state that institutional investors will become supervisory agents for management to allow management to use debt levels optimally, while a substitutional relationship involves an increase in the institutional ownership can replace the need for debt in reducing agency conflicts. This effect shows that institutional ownership has an inversely proportional effect on the capital structure (Advento, Halim, Yasin et. al 2023). The findings are also consistent with results from Chaganti and Damanpour (1991) and Cinko and Kasaboglu (2017) in Turkey.

The only statistically significant control variable is profitability in Table 5, which reports a negative relationship with long term leverage. The p-value of the F-statistic is zero indicating that the model fits well and that the independent variables appropriately explain the dependent variable.

Table 5: Fixed Effects Regression of Ownership Types: Long-term debt as the dependent variable

Variable	Coefficient	Std. Error	t-Statistic	Prob.
% of BBBEE Ownership	0.034603	0.040273	0.859222	0.3908
% of Institutional Ownership	**-0.119771**	**0.034148**	**-3.507355**	**0.0005**
% Shares Held by Management	**-1.296856**	**0.312789**	**-4.146100**	**0.0000**
Liquidity	0.000451	0.007131	0.063186	0.9497
Profitability	**-0.235088**	**0.062249**	**-3.776603**	**0.0002**
Firm Size	0.021239	0.042965	0.494341	0.6214
C	0.180720	0.183345	0.985678	0.3250
Cross-section fixed (dummy variables)				
R-squared	0.782998	Mean dependent var		0.175292
Adjusted R-squared	0.739989	S.D. dependent var		0.139715
S.E. of regression	0.071243	Akaike info criterion		-2.293772
Sum squared resid	1.690147	Schwarz criterion		-1.625202
Log likelihood	525.7544	Hannan-Quinn criter.		-2.029009
F-statistic	18.20528	Durbin-Watson stat		1.211789
Prob(F-statistic)	0.000000			

Note: C stands for the common intercept

BBBEE ownership is statistically significantly inversely related to short-term debt as seen in Table 6. This finding is in line with Dube (2018), who found that an increase in black ownership resulted in less firm debt. In line with the finding on long-term debt, institutional ownership is statically significantly at the 1% level negatively related to short-term corporate debt. Shares held by management is found to have a statistically insignificant relationship to short-term debt.

Firm size is the only statistically significant control variable with relation to short-term debt. This is positively related to short term debt which is congruent with existing literature. The explanatory power of the regression is considered fair with an R-squared of 68.18 percent.

Table 6: Fixed Effects Regression of Ownership Types: Short-term debt as the dependent variable

Variable	Coefficient	Std. Error	t-Statistic	Prob.
% of BBBEE Ownership	-0.040675	0.019579	-2.077419	0.0385
% of Institutional Ownership	**-0.066199**	**0.016602**	**-3.987423**	**0.0001**
% Shares Held by Management	0.195384	0.152070	1.284829	0.1997
Liquidity	**-0.022432**	**0.003467**	**-6.470129**	**0.0000**
Profitability	-0.034755	0.030264	-1.148412	0.2516
Firm Size	0.051043	0.020888	2.443614	0.0151
C	-0.069667	0.089138	-0.781566	0.4350
Cross-section fixed (dummy variables)				
R-squared	0.681874	Mean dependent var		0.058077
Adjusted R-squared	0.618822	S.D. dependent var		0.056101
S.E. of regression	0.034636	Akaike info criterion		-3.736154
Sum squared resid	0.399490	Schwarz criterion		-3.067584
Log likelihood	814.2308	Hannan-Quinn criter.		-3.471391
F-statistic	10.81449	Durbin-Watson stat		1.871682
Prob(F-statistic)	0.000000			

Note: C stands for the common intercept

Table 7 demonstrates that ownership types explain 81% of the variation in the total debt of South African listed firms. BBBEE ownership is found to be statistically insignificant in explaining total leverage. Consistent with the power of institutional and managerial ownership in explaining long-term debt, both explanatory variables have a statistically significant at the 1% level negative relationship with total debt.

The control variables of liquidity and profitability are also statistically significantly inversely related to total debt. Firm size is found to have a positive relationship although statistically insignificant.

The Durbin-Watson test for serial correlation is far below two at 1.05, indicating that there may be positive autocorrelation in the residuals. The F statistic has a p-value of zero reflecting a model that fits well.

Table 7: Fixed Effects Regression of Ownership Types: Total debt as the dependent variable

Variable	Coefficient	Std. Error	t-Statistic	Prob.
% of BBBEE Ownership	-0.006072	0.041836	-0.145129	0.8847
% of Institutional Ownership	**-0.185970**	**0.035474**	**-5.242392**	**0.0000**
% Shares Held by Management	**-1.101473**	**0.324934**	**-3.389838**	**0.0008**
Liquidity	**-0.021981**	**0.007408**	**-2.967211**	**0.0032**
Profitability	**-0.269843**	**0.064665**	**-4.172914**	**0.0000**
Firm Size	0.072283	0.044633	1.619483	0.1063
C	0.111053	0.190464	0.583064	0.5602
Cross-section fixed (dummy variables)				
R-squared	0.812873	Mean dependent var		0.233368
Adjusted R-squared	0.775785	S.D. dependent var		0.156297
S.E. of regression	0.074009	Akaike info criterion		-2.217590
Sum squared resid	1.823937	Schwarz criterion		-1.549020
Log likelihood	510.5180	Hannan-Quinn criter.		-1.952827
F-statistic	21.91733	Durbin-Watson stat		1.057288
Prob(F-statistic)	0.000000			

Note: C stands for the common intercept

4.3.2 Model 2: The Effect of Corporate Governance on Capital Structure

The author conducted the Hausman test on the effect of corporate governance on long-term debt, short-term debt and total debt. For long-term debt and total debt, the p-value is significant at the 1% level, where, therefore, the null hypothesis is rejected in favour of the fixed effects model. For short-term debt, however, the null hypothesis fails to be rejected therefore the random effects model is applied. All variables were tested for stationarity and the independent variable, percentage of women on the board, was found to be non-stationary at the level. The study therefore lagged the variable, which was found to be stationary at the first difference.

Table 8 presents the regression results of the relationship between corporate governance factors namely, board independence, board diversity, board size and CEO duality with long-term debt. Board diversity, represented by the percentage of women on the board is found to be statistically significant at the 1% level with a positive relationship to long-term debt. This finding is consistent with those of Rossi, Cebula and Barth (2017), who found that the presence of women on the board significantly increases firm leverage among non-financial public companies in Italy.

The board independence, board size and CEO duality are found to have a negative relationship with long term leverage, although being statistically insignificant. The negative relationship of

all three of these factors is line with empirical literature, which suggests that the better or stronger the corporate governance measures a firm has, the less long-term leverage that firm is expected to have.

Table 8 further shows that 72% of the variation in the long-term debt is explained by variations in the corporate governance factors studied, as reported on by the R-squared of the regression.

Table 8: Fixed Effects Regression of Corporate Governance: Long-term debt as the dependent variable

Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
% of Non-Executive Directors on Board	-0.032174	0.039998	-0.804381	0.4214
D (% of Women on the Board)	**0.094007**	**0.027470**	**3.422143**	**0.0006**
Board Size	-0.001480	0.001709	-0.866125	0.3866
CEO Duality	-0.039520	0.033655	-1.174292	0.2406
Liquidity	**-0.008409**	**0.003712**	**-2.265384**	**0.0237**
Profitability	**-0.222215**	**0.028398**	**-7.824991**	**0.0000**
Firm Size	**0.121885**	**0.015082**	**8.081666**	**0.0000**
C	**-0.273860**	**0.063641**	**-4.303196**	**0.0000**
Cross-section fixed (dummy variables)				
R-squared	0.725124	Mean dependent var		0.155535
Adjusted R-squared	0.699541	S.D. dependent var		0.141988
S.E. of regression	0.077830	Akaike info criterion		-2.186537
Sum squared resid	6.118034	Schwarz criterion		-1.756019
Log likelihood	1303.062	Hannan-Quinn criter.		-2.023705
F-statistic	28.34449	Durbin-Watson stat		0.789210
Prob(F-statistic)	0.000000			

Note: C stands for the common intercept

Corporate governance measures explain 62% of the variation of short-term debt of South African listed firms as reflected by the adjusted R-squared in Table 9. None of the corporate governance factors studied are found to be statistically significant in explaining short-term debt variations. This suggests that board independence, board size, board gender diversity and CEO duality have no effect on short-term leverage of JSE listed firms.

Table 9: Fixed Effects Regression of Corporate Governance: Short-term debt as the dependent variable

Variable	Coefficient	Std. Error	t-Statistic	Prob.
% of Non-Executive Directors on Board	-0.003949	0.024950	-0.158292	0.8743
D (% of Women on the Board)	-0.007588	0.021653	-0.350417	0.7261
Board Size	-0.000458	0.001032	-0.443588	0.6574
CEO Duality	-0.022770	0.020529	-1.109132	0.2677
Liquidity	**-0.017876**	**0.002090**	**-8.554266**	**0.0000**
Profitability	-0.037714	0.016509	-2.284461	0.0226
Firm Size	0.011094	0.008662	1.280821	0.2006
C	0.061403	0.037500	1.637401	0.1019
Cross-section fixed (dummy variables)				
R-squared	0.653089	Mean dependent var		0.065190
Adjusted R-squared	0.618323	S.D. dependent var		0.069491
S.E. of regression	0.042931	Akaike info criterion		-3.370956
Sum squared resid	1.710405	Schwarz criterion		-2.917557
Log likelihood	1816.559	Hannan-Quinn criter.		-3.198815
F-statistic	18.78532	Durbin-Watson stat		1.247854
Prob(F-statistic)	0.000000			

Note: C stands for the common intercept

In Table 10 we find that all corporate governance factors are statistically insignificant in their explanation of total corporate debt. This suggests that board independence, board size, board gender diversity and CEO duality on their own have no effect on total leverage of JSE listed firms.

The control variables are statistically significant at the 1% level. Liquidity and profitability have an inverse relationship to total corporate debt and a positive one to firm size.

Table 10: Fixed Effects Regression of Corporate Governance: Total debt as the dependent variable

Variable	Coefficient	Std. Error	t-Statistic	Prob.
% of Non-Executive Directors on Board	-0.027061	0.050004	-0.541174	0.5885
D (% of Women on the Board)	0.053754	0.043397	1.238671	0.2158
Board Size	-0.003209	0.002068	-1.551404	0.1211
CEO Duality	-0.056525	0.041144	-1.373843	0.1698
Liquidity	**-0.025635**	**0.004188**	**-6.120822**	**0.0000**
Profitability	**-0.271619**	**0.033087**	**-8.209302**	**0.0000**
Firm Size	**0.164130**	**0.017360**	**9.454548**	**0.0000**
C	**-0.313377**	**0.075156**	**-4.169667**	**0.0000**
Cross-section fixed (dummy variables)				
R-squared	0.732923	Mean dependent var		0.222196
Adjusted R-squared	0.706157	S.D. dependent var		0.158727
S.E. of regression	0.086041	Akaike info criterion		-1.980510
Sum squared resid	6.870087	Schwarz criterion		-1.527110
Log likelihood	1106.041	Hannan-Quinn criter.		-1.808368
F-statistic	27.38332	Durbin-Watson stat		0.634580
Prob(F-statistic)	0.000000			

Note: C stands for the common intercept

4.3.3 Model 3: The Effect of Ownership Type and Corporate Governance on Capital Structure

Testing for stationarity of the variables, the fixed-effects model was found to be the most appropriate model to use.

Table 11 displays the results of a study of the simultaneous effect of both ownership types and corporate governance factors on long-term debt. The explanatory power of the regression analysis into long-term debt has increased significantly with the addition of both ownership type and corporate governance factors. The variation in long-term debt is explained almost 80% by the variation in the independent variables.

Institutional and managerial ownership both report a statistically significant at the 1% level negative relationship with long-term leverage. Shares held by BBBEE shareholders is positively although statistically insignificantly related to long-term leverage. These findings are congruent with those presented in Model 1 of the study, in which ownership types were the only independent variables used to explain the variation in long-term leverage of JSE listed firms over the studied period.

Board independence, board size and CEO duality have a statistically significant relationship with long-term debt. Board independence is found to have a positive relationship with leverage, thereby implying that an increase in non-executive directors on the board will likely increase long term leverage by c.30%. This finding contrasts with the findings in model 2 of the study. although model 2 produced statistically insignificant results for the abovementioned factors. CEO duality has a negative relationship with long-term debt, implying that companies with CEOs who also hold the position of Chairman for the same company have lower long-term leverage. Given the limited empirical studies into CEO duality and its effect on capital structure, the robustness of these results would need to be tested by future research.

Table 11: Fixed Effects Regression of Ownership Type & Corporate Governance: Long-term as the dependent variable

Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
% of Non-Executive Directors on Board	**0.302676**	**0.080658**	**3.752588**	**0.0002**
D (% of Women on the Board)	-0.022542	0.053938	-0.417919	0.6763
Board Size	-0.006240	0.003385	-1.843317	0.0662
CEO Duality	-0.086998	0.045770	-1.900779	0.0582
Liquidity	0.003003	0.007048	0.426129	0.6703
Profitability	**-0.213525**	**0.061251**	**-3.486048**	**0.0006**
Firm Size	-0.016636	0.042904	-0.387741	0.6985
% of BBBEE Ownership	0.044043	0.039460	1.116135	0.2652
% of Institutional Ownership	**-0.097940**	**0.033964**	**-2.883666**	**0.0042**
% Shares Held by Management	**-1.044674**	**0.312409**	**-3.343932**	**0.0009**
C	0.157536	0.186384	0.845224	0.3986
Cross-section fixed (dummy variables)				
R-squared	0.795361	Mean dependent var		0.175292
Adjusted R-squared	0.751821	S.D. dependent var		0.139715
S.E. of regression	0.069603	Akaike info criterion		-2.332431
Sum squared resid	1.593856	Schwarz criterion		-1.623946
Log likelihood	537.4862	Hannan-Quinn criter.		-2.051862
F-statistic	18.26728	Durbin-Watson stat		1.288364
Prob(F-statistic)	0.000000			

The effect of ownership type and corporate governance on short-term debt is seen in Table 12. The explanatory power of the independent variables to short-term debt is considered fair 68%. All the corporate governance factors are found to be statistically insignificant in explaining short-term leverage. The percentage of black ownership and percentage of institutional ownership is inversely related to short-term debt and statically significant.

Table 12: Fixed Effects Regression of Ownership Type & Corporate Governance: Short-term as the dependent variable

Variable	Coefficient	Std. Error	t-Statistic	Prob.
% of Non-Executive Directors on Board	0.018215	0.040361	0.451296	0.6521
D (% of Women on the Board)	-0.006230	0.026990	-0.230814	0.8176
Board Size	-0.000524	0.001694	-0.309104	0.7574
CEO Duality	0.000765	0.022903	0.033414	0.9734
Liquidity	**-0.022238**	**0.003527**	**-6.305898**	**0.0000**
Profitability	-0.032784	0.030650	-1.069641	0.2856
Firm Size	**0.049071**	**0.021469**	**2.285668**	**0.0229**
% of BBBEE Ownership	**-0.039836**	**0.019746**	**-2.017455**	**0.0445**
% of Institutional Ownership	**-0.065087**	**0.016995**	**-3.829764**	**0.0002**
% Shares Held by Management	0.210730	0.156327	1.348007	0.1786
C	-0.070745	0.093265	-0.758537	0.4487
Cross-section fixed (dummy variables)				
R-squared	0.682193	Mean dependent var		0.058077
Adjusted R-squared	0.614574	S.D. dependent var		0.056101
S.E. of regression	0.034829	Akaike info criterion		-3.717155
Sum squared resid	0.399090	Schwarz criterion		-3.008670
Log likelihood	814.4311	Hannan-Quinn criter.		-3.436586
F-statistic	10.08884	Durbin-Watson stat		1.875137
Prob(F-statistic)	0.000000			

Note: C stands for the common intercept

The combination of a variation in ownership types and corporate governance factors explains 82% of the variation in total debt as shown in Table 13. This is the found to be the strongest regression in this research in explaining total debt of JSE listed companies in South Africa. Institutional ownership and managerial ownership are found to have a statistically significant at the 1% level, inverse relationship with total debt. This is in line with the findings in Model 1, which purely tested the impact of ownership types on long-term debt. All corporate governance factors with the exception of women on the board are found to be statistically significant in explaining total debt. Board size, CEO duality and women on the board have an inverse relationship with total debt. The liquidity and profitability control variables are also found to be statistically significant and negatively related to total debt as expected.

Table 13: Fixed Effects Regression of Ownership Type & Corporate Governance: Total Debt as the Dependent Variable

Variable	Coefficient	Std. Error	t-Statistic	Prob.
% of BBBEE Ownership	0.004207	0.040958	0.102717	0.9182
% of Institutional Ownership	**-0.163027**	**0.035253**	**-4.624544**	**0.0000**
% of Non-Executive Directors on Board	**0.320891**	**0.083719**	**3.832948**	**0.0002**
% Shares Held by Management	**-0.833944**	**0.324265**	**-2.571797**	**0.0106**
D (% of Women on the Board)	-0.028771	0.055985	-0.513913	0.6077
Board Size	**-0.006764**	**0.003514**	**-1.924937**	**0.0551**
CEO Duality	**-0.086233**	**0.047507**	**-1.815171**	**0.0704**
Liquidity	**-0.019235**	**0.007315**	**-2.629503**	**0.0090**
Profitability	**-0.246309**	**0.063576**	**-3.874256**	**0.0001**
Firm Size	0.032435	0.044533	0.728349	0.4669
C	0.086791	0.193457	0.448631	0.6540
Cross-section fixed (dummy variables)				
R-squared	0.823831	Mean dependent var		0.233368
Adjusted R-squared	0.786349	S.D. dependent var		0.156297
S.E. of regression	0.072244	Akaike info criterion		-2.257933
Sum squared resid	1.717130	Schwarz criterion		-1.549448
Log likelihood	522.5867	Hannan-Quinn criter.		-1.977364
F-statistic	21.97897	Durbin-Watson stat		1.131293
Prob(F-statistic)	0.000000			

Note: C stands for the common intercept

4.4 Conclusion

The aim of this chapter was to present the research results. The fixed effects regression model was found to be the most appropriate model. Firm leverage was studied through the lens of long-term debt, short-term debt and total debt. It was found that institutional and managerial ownership have a statistically significant inverse relationship with capital structure. Black ownership has no effect on firm leverage, with the exception of short-term debt, where an inverse relationship was recorded. The effect of corporate governance on its own was found to have no effect on firm leverage, however, when simultaneously studied with ownership types the results were as follows: 1) board size and CEO duality were negatively related to capital structure and 2) board independence and board gender diversity positively affect firm leverage. The next chapter details the conclusion of the research.

CHAPTER FIVE

CONCLUSION

This study set out to investigate the effect of ownership types and corporate governance factors on the capital structure choice of South African listed firms between 2000 and 2022.

In terms of ownership type, institutional ownership and managerial ownership are found to have an inverse relationship with capital structure, specifically measured as the long-term and total debt of JSE listed firms. These findings are consistent with Chaganti and Damanpour (2017), Muazeib et al. (2015) and with the pecking order theory, suggesting that in the presence of asymmetric information, managers would prefer to use internal resources before external debt. Given that the JSE is considered a weak-form efficient market, institutional investors are seen as monitors of managers and in their presence, firms are expected to follow the pecking order theory. The relationship with short-term leverage is more nuanced, with an inverse relationship recorded between institutional ownership and short-term debt and managerial ownership being statistically insignificant in explaining short-term leverage. Ownership by black shareholders is generally found to be statistically insignificant in explaining long-term and total leverage. However, a statistically significant inverse relationship is recorded between BBBEE ownership and short-term leverage. Further study is required that focuses on black ownership to draw generally applicable results.

This research chose four corporate governance factors to study with respect to long-term, short-term and total debt capital structure proxies. These were the percentage of non-executive board members, percentage of women on the board, board size, and CEO duality. In the isolated study of corporate governance factors, all factors with the exception of board gender diversity were found to be irrelevant in explaining changes in firm leverage. The percentage of women on the board was found to be positively related to long-term debt. When studying the simultaneous effect of ownership type and corporate governance on capital structure, board size and CEO duality are significantly inversely related to firm leverage. Board independence is positively related to leverage implying that increases in the percentage of independent directors increases the leverage in a firm. This finding is consistent with literature by Agyei and Owusu (2014).

Suggestions for future research include understanding the impact of the PIC on capital structure decisions in South Africa, given that as the largest investment manager in Africa, the PIC owns a substantial interest in almost every stock listed on the JSE. Further, understanding the effect

of concentrated ownership on capital structure decisions in South Africa, could positively add to the body literature on the key financing decision. Lastly, a study purely focusing on the BBBEE ownership on capital structure and firm performance, could help provide South Africa's policymakers with the empirical results of the legislations, hopefully guiding relevant changes and or additions to this legislation.

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