

https://dspace.org/

Institutional quality, capital structure and financial performance: the case of listed firms in Africa

Celliers, Jacqueline

2024
University of the Witwatersrand, Johannesburg
https://hdl.handle.net/10539/44211
Celliers, Jacqueline . (2024). Institutional quality, capital structure and financial performance: the case of listed firms in Africa [Master's dissertation PhD thesis, University of the Witwatersrand, Johannesburg].https://hdl.handle.net/10539/44211

Downloaded from a DSpace repository. https://dspace.org/

Institutional quality, capital structure and financial performance: the case of listed firms in Africa

Jacqueline Celliers

(2632081)

Master of Commerce in Finance (50% Research)

in the

School of Economics and Finance

Supervisors:

Prof C. Chipeta

Ms M. Moletsane

Date of Final Submission:

23 August 2024

ABSTRACT

This research report examines the relationship between institutional quality, capital structure and the financial performance of firms listed on selected African stock markets. Panel data estimation techniques are carried out on a set of 347 firms from five African countries over the period 2003 to 2022 using the two-step system Generalised Method of Moments.

The results show that only the Economic Freedom Index and the significance of the stock market have a significant negative effect on total leverage. The Economic Freedom Index also has a negative significant impact on short-term debt, while the legal rights index has a significant positive effect. The other measures of institutional quality included in this study, such as rule of law, control of corruption and significance of the banking sector, have insignificant effects on total- and short-term debt, while all institutional quality indicators have insignificant effects on long-term leverage. The results also indicate that all three measures of leverage have a significant negative impact on firm performance, and that institutional quality may moderate the negative effects of total- and long-term debt on the financial performance of firms but doesn't appear to play a part in mitigating the effects of short-term leverage.

This study adds value to the literature by investigating the link between institutional quality, capital structure and firm performance in Africa, as most previous studies focus on developed countries. Furthermore, it also explores the role of institutional quality in influencing the relationship between leverage and financial performance, specifically relating to firms in Africa.

Keywords: Institutional quality, capital structure, leverage, Africa, financial performance, system Generalised Method of Moments (GMM)

DECLARATION

I, the undersigned, JACQUELINE CELLIERS, hereby declare that this whole research report is my own original and unaided work, unless referenced otherwise. It has never been submitted as part of any other degree or examination at this or any other institution before.



Jacqueline Celliers

30 March 2024

ACKNOWLEDGEMENTS

I am thankful to God for His guidance and blessing that resulted in the completion of this research and would like to express my sincere gratitude to the many people for their invaluable contributions to this research project.

Firstly, I want to thank my supervisors, Prof. Chipeta and Ms. Moletsane for their on-going guidance, encouragement, suggestions and valuable contributions to this research report. Their guidance and support helped shape and produce this study.

Secondly, my sincere thanks to my family, for their emotional support and for their continuous prayers during the course of this research. A special thanks especially to my three children, for their understanding, patience and encouragement throughout this period.

Lastly, I would like to thank a trusted colleague, as well as a very dear friend, for their support and assistance. It is also greatly appreciated.

TABLE OF CONTENTS

CHAPTER 1: INTRODUCTION 1

1.1 Introduction 1

1.2 Background and overview 1

1.3 Purpose of the study 4

1.4 Importance of the study 6

1.5 Research Questions 7

1.6 Research Objectives 8

1.7 Hypotheses 8

1.8 Chapter Outline 9

CHAPTER 2: LITERATURE REVIEW 11

2.1 Introduction 11

2.2 Capital structure theory 12

2.3 Institutional quality and capital structure 17

2.4 Capital structure and firm financial performance 20

2.5 Institutional quality and firm financial performance 22

2.6 Summary 24

CHAPTER 3: RESEARCH DESIGN AND METHODS 26

3.1 Introduction 26

3.2 Data sources and sampling 26

3.3 Definitions and measures of variables 28

3.4 Research design and methodology 33

3.5 Summary 38

CHAPTER 4: DATA ANALYSIS AND DISCUSSION 39

4.1 Introduction 39

4.2 Descriptive statistics 39

4.3 Correlation coefficients 45

4.4 The impact of institutional quality on capital structure 48

4.5 The impact of capital structure on firm financial performance 56

4.6 The indirect impact of institutional quality on firm financial performance 61

4.7 Results of specification tests 63

4.8 Summary 63
CHAPTER 5: SUMMARY AND CONCLUSION 65
5.1 Introduction 65
5.2 Summary of research methodology 65
5.3 Research findings 65
5.4 Research contributions 67
5.5 Research implications 68
5.6 Research limitations 69
5.7 Future research directions and recommendations 70
5.8 Summary 70
REFERENCES 71
APPENDIX 80

LIST OF TABLES

Table 1: Definitions of variables ……..……..……..…. 28

Table 2: Descriptive statistics (Africa) …….……..……... 39

Table 3: Correlation Matrix ……. 46

Table 4: Impact of institutional quality on firm leverage ……..… 49

Table 5: Direct impact of firm leverage and indirect impact of institutional quality on financial performance ……..……..… 57

Table A1: Descriptive statistics (Per country) ……...……. 80

Table A2: Results of specification tests …….…….. 83

Table A3: Impact of institutional quality of firm leverage over time …….……. 85

Table A4: Direct impact of firm leverage on financial performance over time …….……. 87

Table A5: Indirect impact of institutional quality on financial performance over time ……..…. 89

LIST OF ABBREVIATIONS

AR:	Autoregression
AR(1):	First-order autoregression
AR(2):	Second-order autoregression
CC:	Control of corruption
Coeff.:	Coefficient
Cont.:	Continued
EFI:	Economic Freedom Index
EPS:	Earnings per share
FE:	Fixed Effect model
FP:	Financial performance
GDP:	Gross domestic product
GFC:	Global Financial Crisis
GMM:	Generalised Method of Moments
IP:	Investor protection
IQ:	Institutional quality
Lev:	Leverage
LRI:	Legal rights index
LTD:	Long-term debt
POLS:	Pooled Ordinary Least Square
PSCGDP:	Private sector credit to GDP
RE:	Random Effects model
ROA:	Return on assets
ROE:	Return on equity
ROL:	Rule of law
RQ:	Regulatory quality
SE:	Standard error

SMCGDP:	Stock market capitalisation to GDP
STD:	Short-term debt
TA:	Total assets
Tangib.:	Tangibility
TD:	Total debt
TQ:	Tobin’s Q

CHAPTER 1: INTRODUCTION

1.1 Introduction

The purpose of this study is to examine the relationship between institutional quality, capital structure and the financial performance of firms listed on selected African stock markets, including Ghana, Kenya, Nigeria, South Africa and Zimbabwe. Many of the previous empirical studies have explored the traditional determinants of leverage (Rajan & Zingales, 1995; Frank & Goyal, 2009), while further studies have acknowledged the impact of non-traditional influences of leverage – including the effects of institutional quality (Gleason, Mathur & Mathur, 2000; Gwatidzo & Ojah, 2014). Furthermore, findings from prior research studying the link between capital structure and financial performance provide varying results, especially for less-developed countries. Despite these contributions, there also exists a shortage of literature on the role of institutional quality in influencing the relationship between capital structure and firm financial performance, especially in an African context.

The first chapter is organised as follows: the first two sections introduce the study and present the background and overview for the study. The sections thereafter discuss the purpose and importance of the study, as well as the research questions and objectives. The hypotheses are discussed in section 1.7, while the structure of the research study is outlined in the last section.

1.2 Background and overview

Investing in Africa can offer significant opportunities for growth and diversification, but it also presents several challenges. In particular, some African countries have a history of political instability, corruption, and inconsistent regulatory frameworks (Gyimah-Brempong & Traynor, 1999; Kieh Jr, 2009; Leal & Marques, 2021). These factors can pose risks to investments and affect the ease of doing business. Limited access to financing options and high interest rates can make it challenging for businesses to secure funding for their operations and expansion plans, and fluctuations in currency values and restrictions on currency convertibility can introduce uncertainty and impact the profitability of investments (Asongu & Odhiambo, 2020; Odionye & Chukwu, 2021).

Institutional quality refers to the effectiveness, strength, and overall quality of a country's institutions, including its legal, regulatory, and governance frameworks. Strong institutional quality is essential for

economic development and growth (Hayat, 2019; Rodrik, 2000; Acemoglu, Johnson & Robinson, 2005), whereas a weak institutional environment, characterised by corruption, inefficiency, lack of transparency, and inadequate rule of law, can hinder economic progress, discourage investment, and create an environment of uncertainty and risk (Anderson, 1999; Acemoglu et al., 2005).

Over the past decade or two a reasonable amount of literature has emerged on the role of institutional quality in economic performance and growth. Empirically, studies show that better institutional quality (and less corruption) is associated with greater investment, economic growth, income equality, and technical efficiency (Mauro, 1995; Rodrik, 1999; Li, Xu & Zou, 2000; Doh, Rodriguez, Uhlenbruck, Collins & Eden, 2003; Dollar, Hallward-Driemier & Mengistae, 2005).

Institutional quality can also have a significant impact on a firm's financial performance, and ultimately firm value. Firm financial performance refers to the maximizing of a firm's profits or present value (Jensen & Meckling, 1976) or the "rate of return on assets" (Rumelt, 1991). Performance measurement is important in assessing the overall success of the firm (Parker, 2000), and is necessary to examine a firm's financial position and returns in relation to risk with a view to forecasting its future prospects (Correia, 2019). Various studies suggest that stronger institutional quality, portrayed by effective legal systems, investor protection, reduced corruption, and efficient regulations, tends to be positively associated with firm value and firm performance indicators such as profitability, growth, and access to finance (Demirgüç-Kunt & Maksimovic, 1998; Beck & Demirgüç-Kunt, 2008; Hasan, Ahsan, Rahaman, & Alam, 2014; Tunyi, Agyei-Boapeah, Areneke & Agyemang, 2019).

A firm's capital structure has similarly been linked to its performance. Capital structure, also often referred to as leverage, signifies the proportion of debt to equity financing of a firm (Correia, 2019) used to finance its operations, expansions and investments. Capital structure theory justifies the company's financial policy in determining a mix between debt and equity that aims to optimise the value of the firm. Firms should target the capital structure that they believe will create the highest firm value as this capital structure will be most beneficial to the firm's stockholders (Ross, Westerfield & Jaffe, 2013).

Since the seminal work of Modigliani and Miller (1958), many theoretical and empirical studies have tried to explain the determinants of capital structure decisions of firms. The Modigliani-Miller theory

states that in an efficient or perfect capital market, and in the absence of taxes, bankruptcy costs, and asymmetric information, a firm's value is independent of how it is financed, irrespective of whether its capital comprises of debt or equity. However, when one or more of these assumptions are relaxed, studies have shown how firm value is affected by a change in the debt-equity mix.

Alternative theories suggest that capital structure decisions are determined by some of the following imperfections: tax advantages of debt (Modigliani & Miller, 1963); financial distress and bankruptcy costs (Kraus & Litzenberger, 1973); information asymmetries (Myers & Majluf, 1984; Myers, 1984); and market timing behaviour (Baker & Wurgler, 2002).

Furthermore, much of the capital structure literature has been largely governed by three theories. Firstly, the assumptions of the trade-off theory of Kraus and Litzenberger (1973), in which firms offset the tax benefits of debt against the possible costs of financial distress and bankruptcy. Secondly, the agency cost theory of debt and equity of Jensen and Meckling (1976), where firms try to reduce the conflicts of interests between the parties involved. Thirdly, the pecking order theory of Myers and Majluf (1984), in which firms, in an attempt to minimise costs resulting from information asymmetry, follow a financing hierarchy among various sources of financing. Empirical tests of these theories have, however, generated mixed results (Fama & French, 2002, 2005; Frank & Goyal, 2003; Leary & Roberts, 2010).

Institutional quality and capital structure have also been found to interplay. The general consensus is that low institutional quality is a major constraint in developing countries, which can hinder some firms from easily obtaining the external capital that is important for the funding of investments that generate returns. The literature suggests that certain institutional factors affect a firm's use of a particular security and can influence their choice of capital structure, as well as debt maturity choices (Rajan & Zingales, 1995; Demirgüç-Kunt & Maksimovic, 1998,1999; Booth, Aivazian, Demirgüç-Kunt & Maksimovic, 2001; Fan, Titman & Twite, 2012; Chipeta & Deressa, 2016; Matemilola, Bany-Ariffin, Azman-Saini, & Nassir, 2019). Overall, the research suggests that firms in countries with weaker institutional quality tend to use more debt, especially short-term debt, due to limited financial alternatives available to them (Fan et al., 2012; Chipeta & Deressa, 2016). In addition, better institutions provide a more favourable business environment, enhancing the productivity of firms and

reducing information asymmetry, transaction costs and agency problems, as well as the need for sole reliance on external financing.

1.3 Purpose of the study

The debate as to which capital structure theory provides a better explanation for the capital structure decisions of firms is still unresolved, according to Gaud, Jani, Hoesli and Bender (2005). Even though these capital structure theories have tried to explain firms' capital structure decisions, various other firm-specific factors, industry-specific factors, country-specific factors and macro-economic conditions influence a firm's capital structure in different backgrounds. Many empirical studies on capital structure have investigated the traditional determinants of leverage, including firm size, profitability, growth opportunities and asset tangibility (Rajan & Zingales, 1995; Frank & Goyal, 2009), while further studies have also acknowledged the influence of non-traditional impacts of leverage. In this regard, Gwatidzo and Ojah (2014) suggest that non-traditional factors, such as skill, levels of management, firm location and institutional factors, influence the leverage decisions of African firms, while Gleason et al. (2000) argue that the legal environment, the tax environment and the economic system impact the capital structure in the 14 European countries observed in their study. In addition, according to the study by Korajczyk and Levy (2003), both firm-specific factors and macro-economic conditions have an impact on a firm's capital structure choices. Furthermore, Antoniou, Guney and Paudyal (2002) suggest that the capital structure choices of firms are not only the product of its own characteristics, but that the strength and nature of the effect of these factors are dependent on the surrounding financial environment and tradition of the country in which it operates. The surrounding environment and tradition of a country may influence the firm's capital structure in various ways and includes the improvement or deterioration in the state of the economy, the existence of a secondary capital market or even the size and effectiveness of the banking sector.

More specifically, various researchers suggest the need to focus on institutional factors as a determinant of firms' capital structure. In particular, Fan et al. (2012) find that institutional factors, including a country's legal system and control of corruption, explain substantial variation in debt ratios. Based on their study, Lemma and Negash (2012) suggest that factors such as legal and financial institutions make a difference in the capital structure choices of firms in African countries, while Oztekin and Flannery (2012) find that firms' adjustment speeds are significantly affected by legal and

financial factors. They conclude that firms operating in weaker institutional environments adjust their capital structure at a slower pace, and therefore their results support the theory that better institutional quality reduces transaction costs that is linked to firms' adjusting their debt. In a survey of firms in 16 European countries, Bancel and Mittoo (2004) also find that firms' institutional environments influence their capital structure choices.

Although the empirical research provides support that institutional factors are an important determinant of firms' capital structure, it also reports conflicting results. For example, many studies suggest that firms in countries with weaker institutional quality (including countries in Africa) tend to use more debt (Fan et al., 2012; Chipeta & Deressa, 2016). However, low institutional quality in developing countries seems to diminish the accessibility of loans, as lenders are not willing to provide credit to these firms as a result of the financial risk (Qian & Strahan, 2007) and that better developed financial systems ease external financing constraints of firms (Levine, 2004).

Furthermore, the findings from prior literature studying the link between capital structure and firm financial performance is also controversial as they show various interpretations of this relationship (Singh & Bagga, 2019; Abdullah & Tursoy, 2021; Ayalew, 2021) and suggest that more studies are required to investigate this link, especially in less-developed countries (Ayalew, 2021; Sdiq & Abdullah, 2022). Most of the capital structure theories claim that debt may impact firm financial performance or firm value in an imperfect market, and in addition, most empirical studies also show that leverage does have an impact on firm value and firm performance. The results of these studies, however, have shown mixed results regarding the link between capital structure and firm financial performance, with some studies supporting a positive relationship (Gill & Obradovich, 2013; Jaishi, 2020; Abdullah & Tursoy, 2021), some a negative relationship (Abor, 2005; Siddik, Kabiraj & Joghee, 2017; Li, Niskanen & Niskanen, 2019) and some even a nonlinear relationship (Ngatno, Apriatni & Youlianto, 2021; Tretiakova, Shalneva & Lvov, 2021; Sdiq & Abdullah, 2022).

Despite the above contributions, there also appears to be a shortage of literature on the role of institutional quality in influencing the relationship between capital structure and firm financial performance (and ultimately firm value), specifically relating to countries in Africa. In addition, the author is also not aware of any studies that document whether this association changes over time.

This study, therefore, aims to provide an additional understanding of how institutional quality and capital structure interact to affect the financial performance of firms in Africa, and to pinpoint whether there are specific institutional quality factors (e.g., economic, legal or financial systems) that have a greater impact on this relationship than others. These findings may provide insights for policymakers to strengthen institutions that promote a conducive business environment, improve business practices and support sustainable economic development and investment opportunities throughout Africa. Furthermore, it aims to study the relationship between leverage and performance of firms, thereby assisting African companies to manage financial risk more effectively by avoiding excessive debt levels that could lead to financial distress.

1.4 Importance of the study

As discussed above, the goal of this study is to add to the existing literature by examining the relationship between institutional quality, capital structure and the financial performance of firms listed on selected African stock markets and investigate whether this relationship changes over time. Many of the previous studies have explored the relationship between institutional quality and firm performance (Dollar et al., 2005; Commander & Svejnar, 2011; Gomez, 2016) or institutional quality and capital structure (Fan et al., 2012; Chipeta & Deressa, 2016; Matemilola et al., 2019). To the author's knowledge, very few studies have investigated the role institutional quality plays in influencing the relationship between capital structure and financial performance, especially in an African context.

Performing a study which examines the relationship between institutional quality, firm leverage and the financial performance of African firms could have significant benefits and implications for countries in Africa. Establishing a link between institutional quality and leverage means that firms can optimise their capital structures by understanding how institutional quality affects access to different sources of financing. This could result in lower costs of capital (Hail & Leuz, 2006; Alvarez-Botas & Gonzalez-Mendez, 2019) and improved financial performance (Dollar et al., 2005; Commander & Svejnar, 2011). As a result, better financial performance can boost investor confidence, attracting both domestic and international investments.

Furthermore, better institutional quality often leads to improved credit availability and terms (La Porta, Lopez-de-Silanes, Shleifer & Vishny, 1997), which can support business growth and innovation. A better understanding of the links between institutional quality, capital structure and firm performance can provide governments with insights to develop and implement policies that enhance institutional quality, and in turn, improve business growth. A more conducive environment for business growth can lead to increased job creation, while the improved financial performance of firms can also contribute to poverty reduction through better wages and increased employment opportunities, which would benefit countries throughout Africa immensely.

1.5 Research Questions

The primary question that this study attempts to answer is what is the relationship between institutional quality, capital structure and financial performance of firms listed on selected African stock markets? This will be broken down as follows:

- What is the link between institutional quality and capital structure of firms listed on select African stock markets?
- What is the link between capital structure and financial performance of firms listed on select African stock markets?
- What is the role institutional quality plays in influencing the link between capital structure and financial performance of firms listed on select African stock markets?

In addition, the following sub-questions will also be answered:

- How does this relationship between institutional quality, capital structure and financial performance of listed firms change over time?
    - What is the link between institutional quality and capital structure over time?
    - What is the link between capital structure and financial performance over time?
    - What is the role institutional quality plays in influencing the link between capital structure and financial performance over time?
- How does institutional quality, capital structure and financial performance of listed firms differ for the African countries included in this study?
- Does this relationship between institutional quality, capital structure and financial performance of firms listed on African stock markets have an impact on debt maturity structures?

1.6 Research Objectives

The primary objective of this study is to examine how changes in institutional environments have been reflected by changes in capital structure and eventually financial performance of firms listed on select African stock markets, and the role institutional quality plays in influencing the link between capital structure and financial performance of firms.

The secondary objectives of this study are to examine:

- Whether this relationship between institutional quality, capital structure and financial performance of listed firms in Africa changes over time.
- Whether institutional quality, capital structure and financial performance of listed firms differ for the African countries included in this study.
- Whether the above relationship between institutional quality, capital structure and financial performance for firms listed on African stock markets has an impact on debt maturity structures.

1.7 Hypotheses

In their study, Bancel and Mittoo (2004) find that firms' capital structure choices are influenced by their institutional environment. Furthermore, they propose that the trade-off between the benefits and costs of debt financing determine a firm's optimal capital structure (debt). In addition, the trade-off theory argues that a firm's decision to use more debt is the result of the trade-off between the costs (e.g. bankruptcy costs) and the benefits (interest tax-shield) of debt (Myers, 1984). This study argues in favour of the trade-off theory – that as developing countries' institutional quality improves, lenders are more willing to grant credit (e.g. debt capital) to firms. As a result, firms in developing countries with better institutional quality are likely to increase debt, when keeping the firms' assets and investment plans constant. This is because lenders are encouraged to lend money as institutional quality increases as it lowers bankruptcy costs, resulting in firms using more debt to capitalise on tax-shield benefits of debt interest. Therefore, one can expect that listed firms' debt ratios in developing countries is positively impacted by a country's institutional quality. Additionally, the theoretical framework shows that the stronger a country's institutional quality, the easier the firm's access to long-term funds.

Therefore, the following hypothesis will be tested:

H1: There is a significant positive relationship between institutional quality and leverage, more specifically long-term leverage.

Trade off theory suggests that by increasing leverage, profitability will increase if debt is utilised correctly (Myers, 1977). However, as a firm increases its leverage, this will also lead to an increase in the potential risk of financial distress, which could result in a decrease in financial performance. Various empirical studies have, however, shown conflicting results. Following from this, this study intends to re-examine the effect of capital structure on profitability, specifically relating to firms listed on African stock markets, with the hypothesis:

H2: Firms' leverage has a significant negative effect on its financial performance.

In addition, research shows that stronger institutional quality and factors that define the economic environment, tend to be positively associated with firm value and financial performance (Demirgüç-Kunt & Maksimovic, 1998; Hasan et al., 2014). Because "good" institutions facilitate better firm performance, the following hypothesis will be tested:

H3: Institutional quality has an effect as an intervening variable mediating the influence of capital structure on a firm's financial performance.

1.8 Chapter Outline

This chapter focuses on the introduction of the study, briefly explaining the overview and background, expressing the purpose and importance of the study and discusses the research questions and objectives. This chapter also outlines the remaining chapters.

Chapter 2 deals with the literature review, including the various capital structure theories, as well as the links between institutional quality and capital structure, capital structure and firm financial performance, as well as institutional quality and firm financial performance.

The research methodology used in the study is dealt with in chapter 3. Making use of samples from various African countries, quantitative methods are used to collect, analyse and interpret the data, with

the research processes and procedures described in this chapter. Chapter 3 also assesses the methods of how the different variables are measured and the data collection methods applied.

Chapter 4 focuses on the presentation of the results and data analysis. Tests are performed with the aim of providing empirical evidence that would answer the research questions: (i) What is the relationship between institutional quality, capital structure and financial performance of firms listed on select African stock markets and; (ii) does this relationship change over time?

Chapter 5 summarises and concludes the research, summarising the main findings and contributions of the research, while also recognising the research limitations and making recommendations for future research.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

Modigliani and Miller (1958) originally suggested that the market value of any firm and its cost of capital are completely independent of its capital structure (under the assumptions of no taxes, transaction costs, information asymmetry and bankruptcy costs) and therefore, no optimal capital structure exists.

Since then, researchers have produced various views to explain how firms choose their capital structure, and whether in fact an optimal capital structure does exist. The three main views being that (i) the existence of taxes and bankruptcy costs do make debt relevant (trade-off theory); (ii) that the debt equity mix of a firm is affected by the conflict between the parties involved (agency cost theory); and (iii) that the existence of asymmetric information between investors and managers could result in a signalling opportunity (pecking order theory).

Empirical studies on capital structure, on the other hand, have predominantly identified four main factors that have consistently proved to be correlated with leverage – namely firm size, profitability, growth opportunities and asset tangibility (Rajan & Zingales, 1995; Frank & Goyal, 2009; Karim, Rabbani & Khan, 2021). Further studies have examined the influence of more non-traditional influences of leverage, such as macro-economic aspects (Lemma & Negash, 2012; Chipeta & Mbululu, 2013), institutional influences (Bancel & Mittoo, 2004; Gwatidzo & Ojah, 2014) and country-specific factors (De Jong, Kabir & Nguyen, 2008) which can also play a role in the capital structure decisions of firms.

In addition to impacting the capital structure of firms in different environments, the effect of a country's institutional quality can also be linked to a firm's financial performance (Dollar et al., 2005; Commander & Svejnar, 2011). Furthermore, studies show a firm's financial performance, can in turn, also be impacted by capital structure (Abdullah & Tursoy, 2021; Ayalew, 2021).

This chapter discusses the literature in more detail and is divided into six sections, with the current section introducing the literature review. The following section details the theories of capital structure, while the third section discusses the impact of institutional quality on capital structure decisions. Parts

four and five focus on the link between capital structure and firm financial performance, and institutional quality and firm financial performance, respectively. The chapter concludes with a summary.

2.2 Capital structure theory

Ever since the seminal work of Modigliani and Miller (1958), researchers have introduced theories that tried to explain the way firm managers decide on the capital structure of firms. Modigliani and Miller (1958) propose that the capital choice plays no role in determining the cost of capital but suggest that as the company becomes more leveraged, the cost of equity increases. Therefore, the cost benefit due to taking on a cheaper source of capital (debt) is offset by the increased cost of the capital (equity), as the equity holders require compensation for the increase in risk. The assumption, however, is that capital markets are perfect where there is free access to information, no transaction costs, no bankruptcy costs and no taxation. As a result, the choice between debt and equity financing has no significance on the firm's value and therefore firm managers should not be concerned about the mix of debt and equity.

Since then, capital structure theories and their association with the firm's financial performance and firm value has been an important issue in corporate finance literature. A series of theoretical and empirical studies have developed from Modigliani and Miller's (1958) "irrelevance theorem". Although Modigliani and Miller (1958) is based on restrictive assumptions which do not exist in reality, it resulted in the development of various other theoretical models.

Traditional theories of capital structure include three main approaches, namely the trade-off theory, the agency cost theory (free cash flow theory) and the pecking order theory. Each offers a unique explanation of corporate financing decisions. Based on these three categories, the capital structure of firms is determined by the following:

1. Firms attempt to balance the net tax benefits of debt financing against the related leverage costs such as bankruptcy costs (the trade-off theory).
2. Firms try to reduce the conflicts of interests between the parties involved (the agency cost theory).

3. Firms convey inside information to external parties or reduce adverse selection effects (the pecking order theory).

In addition, two more modern theories of capital structure include the signalling theory and market timing theory.

2.2.1 The trade-off theory

Relaxing the assumption of no taxation in Modigliani and Miller (1958), Modigliani and Miller (1963) conclude that the tax advantages of taking on debt are better than initially proposed, with debt payments being tax deductible and therefore resulting in a tax benefit (tax shield) for the company. Miller (1977), on the other hand, suggests that the tax benefit is negligible, given that a lender will require a higher rate of return to compensate for income tax on the benefit.

Furthermore, there are also bankruptcy and financial distress costs connected to leverage. The capital structure decision is a trade-off between the benefits of debt (reduction of agency costs and tax shield) and the associated costs (bankruptcy and financial distress related), as proposed by Kraus and Litzenberger's (1973) static trade-off theory.

There are, however, various assumptions of this trade-off theory. Firstly, the theory assumes that firms will follow an optimal capital structure, and gradually adjust towards the optimal target. Secondly, profitable firms with fewer non-debt tax shields will issue more debt, and as a result shield their profits from tax (DeAngelo & Masulis, 1980). Consequently, in countries where the tax regime is favourable, and with lower bankruptcy costs, more debt in the capital structure of firms is expected, especially for more profitable firms.

Much of the research finds evidence to support the trade-off theory. Leary and Roberts (2005) empirically examine the trade-off theory of capital structure, allowing for costly adjustment. Their dynamic duration model shows that firms actively rebalance their leverage to stay within an optimal range, as though following a dynamic trade-off policy. Their findings show that firms adjust their leverage two to four years post a change in equity value, caused by price shocks or equity issues. The presence of adjustment costs, however, often prevents this response from occurring immediately.

Khoa and Thai (2021) also conclude that many companies choose an optimal level of leverage based on the trade-off between interest and debt costs. Their study utilises a dynamic panel data regression of GMM to test the existence of trade-off theory in capital structure for a sample of real estate companies listed on the Vietnamese stock market and finds that a firm's target capital structure is determined by long-term influential factors.

On the other hand, some studies find evidence that is contrary to static trade-off theory. For example, research by Hovakimian, Kayhan and Titman (2012) finds that firms with lower costs of bankruptcy and higher potential tax gains from debt tend to choose capital structures with lower exposure to bankruptcy risk (i.e. less debt), while a study by Lemmon, Roberts and Zender (2008) concludes that capital structures of firms remain stable over long periods of time – firms that have high leverage tend to remain as such for over 20 years.

2.2.2 The agency cost theory

According to Jensen and Meckling (1976), the separation of ownership and management of companies leads to a conflict between the agents (shareholders and managers or debtholders), as most large companies are not owner managed. As the agents act in their own best interests, agency costs occur. Two types of conflicts exist, one between shareholders and managers ("equity agency cost"), and the other between shareholders and debtholders ("debt agency cost"). An "equity agency cost" arises when management makes decisions that may not be in the best interest of the firm and will not, according to the shareholders, increase shareholder value. "Debt agency cost", on the other hand, occurs when debtholders place limits on the use of their capital, usually in the form of debt covenants, if they believe that management will take actions that favour shareholders rather than debtholders.

The optimal capital structure of the firm can, therefore, be obtained by choosing the mix of debt and equity that balances the costs and benefits of debt, as well as minimises the agency costs arising from both conflicts. Jensen (1986), therefore proposes that an effective way to reduce agency costs is to limit the amount of free cash that is available to the managers of the company, which can be achieved by increasing the company's leverage. As a result of the higher debt, the increased interest payments will then lessen the free cash flow available, and therefore dissuade managers from investing in insignificant investments. This will also enhance the overall value of the firm.

A study by Miller (1977) investigated the relationship between leverage and corporate performance which concluded that leverage and firm value have a favourable relationship, with the evidence supporting agency theory. Further studies, such as the one by Berger and Di Patti (2006) also confirm the agency cost hypothesis, where high leverage reduces the agency costs of outside equity. The results show higher profit efficiency and an increase in firm value as managers are encouraged to act more in the interests of shareholders.

On the other hand, Dawar (2014), using a fixed effect panel regression model, empirically investigates the impact of capital structure decisions on firm performance in India as one of the emerging economies, and concludes that leverage has a negative impact on financial performance of firms, which is not consistent with the assumptions of agency theory.

2.2.3 The pecking order theory

In contrast to the static trade-off theory of Kraus and Litzenberger (1973) and the agency theory of Jensen and Meckling (1976), Myers (1984) suggests a "pecking order theory", which is based on two main assumptions. Firstly, that managers are better informed about their own firm's prospects than outside investors, and secondly, that these managers act in the best interest of existing shareholders.

This theory states that there is no optimal capital structure. Instead, management follow a hierarchy when it comes to financing – first by using retained earnings (the cheapest source of finance available), followed by debt and lastly equity, while maintaining flexibility to expand should the need arise. The preference for using internal funds for investment financing is due to the existence of asymmetric information between issuers and investors, as managers are generally better informed of the price sensitive information of firms and don't necessarily want to disclose it through their financing decisions. Therefore, the pecking order theory predicts that firms prefer to use internal financing when available and will choose debt over equity when external financing is required (Ross, 1977). As a result, one would expect low leverage ratios for profitable firms that have limited growth opportunities.

According to La Rocca, La Rocca, and Cariola (2011), the pecking order theory is also a useful tool for analysing the financing behaviour of firms along their business life cycle. Older firms have a greater ability to accumulate and retain earnings, and as a result, the need to rely on external financing will be less than in the case of younger firms.

This theory has, however, been criticised on various levels. Myers and Majluf (1984) and Ross (1977) argue that the use of the pecking order approach will send a signal to the market, as a result of the information asymmetry that exists between issuers and investors. They believe that investors generally realise that managers are better informed of the price sensitive information of firms. The market will assume that if management issues equity the company is over-valued, and therefore the share price will drop. Alternatively, if a company undertakes more debt, it sends out a positive signal as it indicates to the market that management believes the company will be able to repay that debt, and the share price should increase as a result.

The evidence for the pecking order theory has been confirmed by several previous empirical studies in the form of an inverse relationship between profitability and capital structure (Rajan & Zingales, 1995; Booth et al., 2001; Chipeta, Wolmarans, Vermaak & Proudfoot, 2013). These studies found that profitable firms actually reported a lower debt ratio. In their study, Booth et al. (2001) use a basic cross-sectional regression of three different measures of the firm's debt ratio against various factors, such as the firm's tax rate, tangibility of assets, return on assets and market-to-book ratio. Their empirical model extends the model used by Rajan and Zingales (1995) by including average tax rate and business risk variables. As with Rajan and Zingales (1995), Booth et al. (2001) include size as an independent variable. Chipeta et al. (2013), utilise a panel least squares estimation technique (namely GMM) to test for lagged, current and leading structural breaks in the firm specific determinants of leverage, for a sample of listed non-financial firms on the JSE.

Several other studies, on the other hand, found a contradicting result (Helwege & Liang, 1996; Frank & Goyal, 2003). In their study of a set of firms from 23 emerging market economies, Seifert and Gonenc (2010) show that pecking order financing behaviour is more prevailing in those markets characterised by a greater degree of information asymmetry and agency costs. Bessler, Drobetz and Gruninger (2011) agree, in a related study, that information asymmetry is the main cause of dynamic pecking order financing behaviour, while Yang, Chueh and Lee (2014) conclude that firms with symmetric (asymmetric) information show evidence of trade-off (pecking order) financing behaviour.

2.2.4 The signalling theory

Based on the information asymmetry that exists between managers of a firm and external investors, Ross (1977) introduces the signalling theory. Through the choice of capital structure, inside information is shared with outside investors. Ross (1977) proposes that investors interpret an increase in leverage as a positive signal, as managers will only increase leverage if the firm is likely to be able to meet the interest payments or that additional investment opportunities exist over and above what can be financed by internally generated funds. Therefore, managers communicate information regarding profitability and risk of the firm to external investors through changes in capital structure.

2.2.5 The market timing theory

Baker and Wurgler (2002) suggest that low leveraged firms tend to increase equity when their share valuation is low, while the opposite is true for firms with high leverage. Therefore, firms issue equity when the cost of equity is relatively low and repurchase equity when the cost is relatively high. According to this theory, there is no optimal capital structure, but fluctuations in a firm's share price affects its leverage. They argue that market timing appears to be an important aspect of corporate financial decisions, and management's effort to time the market influences the firm's capital structure more meaningfully than a pecking order.

Additionally, Fama and French (2005) conclude that firms often issue equity when they are actually in a position to issue debt or use internal funds. This suggests that the pecking order and trade-off theories are not necessarily mutually exclusive and that both theories may explain capital structure decisions.

2.3 Institutional quality and capital structure

Although the theories of capital structure discussed above attempt to explain the financial structure of firms in general, institutional factors can also play an important role in determining the capital structure of firms in different environments. Institutional quality theory suggests that a country's economic performance is mainly driven by the country's institutional environment as it establishes the costs of production and transaction (North, 1990) and therefore financial decisions. According to law and finance literature, a country's institutional environments affect market frictions and imperfections,

which then influence corporate financing decisions. More specifically, a strong institutional environment enhances effectiveness of the judicial system and accounting standards (La Porta, Lopez-de-Silanes, Shleifer & Vishny, 1998), financial development (Acemoglu & Johnson, 2005), as well as corporate governance and transparency (Doidge, Karolyi & Stulz, 2007). Additionally, it decreases agency problems (Demirgüç-Kunt & Maksimovic, 1999), cost of equity (Hail & Leuz, 2006), cost of debt (Alvarez-Botas & Gonzalez-Mendez, 2019), and asymmetric information problems (Alves & Ferreira, 2011).

Several empirical studies have found that institutional factors are important influences in the choice of capital structure. Rajan and Zingales (1995), Demirgüç-Kunt and Maksimovic (1999), and Booth et al. (2001) investigate the effect of institutional characteristics on firms' financing decisions in 7 developed countries, in 30 developed and developing countries, and in 10 developing countries, respectively, and all conclude that institutional factors are important contributors of financing decisions. Gleason et al. (2000) also find that institutional considerations, such as the legal environment, the tax environment and the economic system, have an impact on the capital structure of retailers in the 14 European countries they studied.

Furthermore, Fan et al. (2012) conclude that the institutional environment plays an important part in influencing a firm's capital structure and debt maturity choices. Based on their study of firms in 39 developed and developing countries, through a GMM regression to estimate the effect of country-level explanatory variables on capital structure decisions, while controlling for firm- and industry-level characteristics, they observe that firms in more corrupt countries and those with weaker laws tend to use more debt, especially short-term debt. Furthermore, explicit bankruptcy codes are associated with higher levels of debt, specifically long-term debt.

Similarly, in their study of determinants of capital structure in 12 Sub Saharan African countries, using panel data estimation techniques on a sample of 412 firms run for individual countries, Chipeta and Deressa (2016) conclude that country-specific factors, especially the development of the banking sector, the development of the stock market and the strength of the legal system have a strong influence on the choice of capital structure. Various firm-specific determinants of leverage, such as size, growth, profitability, tangibility as well as risk and tax were included in the analysis, and the authors find that firm profitability also plays a significant part in predicting capital structure. In addition, firms in the

most developed stock markets of Sub Saharan Africa appear to have lower mean debt ratios, due to these firms having alternate sources of capital, such as equity. On the other hand, firms operating in underdeveloped stock markets depend more on debt due to limited financial alternatives accessible in these countries.

In addition to the above, in their study on the effects of institutional quality on firms' capital structures, based on a sample of firms from 23 developing countries and using a two-step system-GMM model, Matemilola et al. (2019) find that overall, institutional quality has a significantly positive effect on firms' capital structures. However, at a regional level for the sample of firms from African countries, they find that institutional quality as a single aggregated index measure is not significantly and positively related to either the book value or market value measures of capital structure. Furthermore, the results remain insignificant for four of the six disaggregated measures of institutional quality which suggests that institutional quality appears to have little effect on debt ratios among African countries.

Research also shows that corporate financing decisions vary between developed and developing countries due to institutional and cultural differences (Booth et al., 2001; Chen, 2004; Foster & Young, 2010). After empirically examining the traditional determinants of capital structure, the results show that a number of macro-economic factors (Cook & Tang, 2010; Chipeta & Mbululu, 2013), as well as country-specific factors (De Jong et al., 2008) are very influential in choosing the mix of debt and equity of a firm. In addition, according to La Porta et al. (1997, 1998) a country's legal system plays a vital role in the development of financial markets, as it impacts the establishment of shareholder and creditor rights.

Low institutional quality is a major limitation in developing countries, making it challenging for firms to raise the external debt capital needed for growth (Agca, De Nicolo & Detragiache, 2013). Strong institutions, where laws protect creditors' rights, encourage lenders to provide debt capital to firms which improves loan availability, according to Qian and Strahan (2007). Furthermore, firms that operate in countries with strong institutional quality have access to external capital and can expand faster as well-developed legal institutions are important for firm growth (Demirgüç-Kunt & Maksimovic, 1999).

On the other hand, La Porta et al. (1997) suggest that countries with weak institutional quality, specifically in terms of legal rules, low investor protection and low quality of law enforcement, are likely to be characterised by narrower capital markets. As a result, the capital available to firms to fund profitability investments that ultimately increase shareholder returns, is limited. Weak institutions also impact lenders' ability to effectively channel resources to fund profitable investments (Law, Tan & Azman-Saini, 2014).

Furthermore, lenders are likely to provide credit on more favourable terms where there is evidence of strong creditor protection, a component of institutional quality (La Porta et al., 1997). This can result in firms using more debt. Lenders would most likely be more willing to grant credit (e.g., debt capital) to firms in developing countries, as their institutional quality improves. This is in line with the trade-off theory of Myers (1984), where a firm's decision to use more debt is the outcome of the trade-off between the benefits and the costs of debt, and therefore more debt would be expected in institutional environments with higher tax-shields and lower bankruptcy costs.

2.4 Capital structure and firm financial performance

Since the seminal work of Modigliani and Miller (1958), the capital structure concept and its association with a firm's performance has been a well-studied subject in corporate finance literature. As indicated above, most of the capital structure theories claim, however, that debt may impact firm financial performance or firm value in an imperfect market. A company that performs well tends to generate higher profits, attract investment and create value for its shareholders. Managers should therefore choose the capital structure that they believe will result in the highest firm value, because this capital structure will be most beneficial to the firm's shareholders (Ross et al., 2013). According to Pandey (2004), the firm's capital structure decision influences its shareholders' return and risk, and as a result, the market value of its shares. However, the link between capital structure and corporate financial performance is still controversial, and the empirical studies support different interpretations of this relationship.

Most empirical studies show that leverage has an impact on firm value, however these studies have shown mixed results regarding the link between capital structure and firm financial performance (Mansyur, Mus, Rahman & Suriyanti, 2020; Abdullah & Tursoy, 2021; Ayalew, 2021). Various

factors, such as the size of the firm, market conditions and industry dynamics, appear to have an impact on building this relationship.

Gill and Obradovich (2013) investigated the impact of corporate governance and financial leverage on the value of American companies, using a multiple regression analysis. They conclude that various factors, such as financial leverage, firm size, return on assets, and insider holdings had a positive impact on the value of American firms. In their study of companies listed on two Vietnamese stock markets, Cuong and Canh (2012) apply an advanced panel threshold regression model to test the panel threshold effect of capital structure on firm value, and find that a debt ratio of 59.27% is optimal, at which point the debt ratio positively impacted return on equity, a proxy for firm value. Utilising a GMM regression, Cheng and Tzeng (2011) test the effect of leverage and other related variables on firm values. Based on their sample of 645 listed Taiwanese companies, they conclude that the value of firms with higher leverage are greater than those of unleveraged firms, where the risk of bankruptcy is ignored.

In their study, Berger and Di Patti (2006) analysed data from the US banking sector and found that a greater debt ratio is associated with better corporate performance, when profitability was used as a measure. They suggest a different approach in their testing using profit efficiency, or how similar a firm's profits are to a benchmark of a firm facing the same exogenous conditions, and in addition utilise a simultaneous-equations model that accounts for reverse causality from performance to capital structure. Further investigations have also found financial performance is positively affected by capital structure (Jouida, 2018; Jaishi, 2020; Abdullah & Tursoy, 2021), where the authors use various models, including a panel vector autoregression model, a causal-comparative regression analysis and GMM.

On the other hand, some investigations have concluded that the capital structure and firm value or firm performance are negatively associated, specifically those performed in emerging economies (Abor, 2005; Sadeghian, Latifi, Soroush & Aghabagher, 2012; Ahmed Sheikh & Wang, 2013; Siddik et al., 2017; Li et al., 2019). As their sample of non-financial listed firms contained data across firms and over time, Ahmed Sheikh and Wang (2013) employ three panel econometric techniques, namely pooled ordinary least squares, fixed effects and random effects to investigate the relationship between performance measures and key explanatory variables. In their study, Siddik et al. (2017) extract panel

data from 22 banks from audited annual reports over a period of time. As their data is also pooled data, they use a pooled ordinary least square technique, controlling for various factors, such as bank-specific control variables, as well as macro-economic factors such as economic growth and inflation.

In addition, further studies have found a nonlinear connection between capital structure and corporate performance, meaning capital structure has both a positive and negative impact on firm financial performance (Hasan et al., 2014; Ngatno et al., 2021; Tretiakova et al., 2021; Sdiq & Abdullah, 2022), while some studies even reported that capital structure has no or weak influence on firm performance or company value (El-Sayed Ebaid, 2009; Antwi, Mills & Zhao, 2012; Al-Taani, 2013).

2.5 Institutional quality and firm financial performance

A reasonable amount of literature has emerged on the role of institutional quality in a country's economic performance and growth over the last couple of years. Although a country's economic growth depends largely on government policy and the quality of economic and political institutions, other important factors include the quality of a country's legal framework and the development of a country's financial system (Demirgüç-Kunt & Maksimovic, 1998). Previous studies in the economics literature examine and find a positive relationship between the quality of various institutions and economic performance (Rodrik, 2000; Acemoglu & Johnson, 2005; Acemoglu et al., 2005; Bowen & De Clercq, 2008).

Institutional quality factors, such as the legal environment and property rights, strongly influence business activity within a country. Investors prefer places where contracts are clear and enforced, and where property rights are effective, as it guarantees valuable business relations with the parties involved and decreases an investor's risk of recovering their funds (Acemoglu et al., 2005). Generally, countries with a high risk of expropriation and insecure property rights tend to demonstrate lower investments. Likewise, crime and violence also have a negative impact on investment and economic growth. These factors are costly for institutions and individuals because public funds intended for promoting growth and efficiency are reallocated to fund crime prevention and treatment (Anderson, 1999).

Although the focus of the literature has largely been on the effect of institutional factors on the macro-performance of economies, as manifested in economic growth, some researchers have also examined

the impact of various aspects for the business environment on firm performance (Bhaumik & Estrin, 2007; Commander & Svejnar, 2011; Gomez, 2016). Research shows that factors that portray the economic environment, such as legal institutions and property rights, also affect variables such as firm performance (Dollar et al., 2005; Commander & Svejnar, 2011; Yasar, Paul & Ward, 2011). It is often argued, that a "good" business environment enhances the productivity of firms, which would eventually increase the overall productivity of industries and entire economies. In a similar way, "good" institutions facilitate better firm performance.

Using firm-level data on mostly Asian developing economies, and after controlling for country fixed effects, Dollar et al. (2005) find that cross-country differences do affect firm performance. Yasar et al. (2011) empirically examine the link between firms' performance and institutional quality and find a significantly positive relationship between firms' performance and perceived property rights protection, while SN and Sen (2017) find that the level of corruption has a negative effect on firm performance in their study of manufacturing firms in India. Studying a sample of firms located in 22 European countries, Gomez (2016) examines the relationship between rule of law and firm performance and finds strong evidence that there is a positive and significant link between rule of law and sales growth for the entire sample of 29,839 firms.

Bhaumik and Dimova (2014) also find that institutions do indeed influence firm-level efficiency, after controlling for factors such as size and ownership. However, they argue that their findings suggest that there may be vast differences in the macro- and micro- impacts of institutional quality. On the other hand, in their study including the post-socialist countries of Central and Eastern Europe, Commander and Svejnar (2011) find that the impact of institutional quality (or "business environment") on firm performance is limited.

Studies on the effect of institutional quality on firm performance in African countries show mixed results. In examining the effects of informal institutional risks on firm performance over 18 African countries, Zoogah (2018) finds that control of corruption has an effect, but corruption per se does not relate significantly to firm performance. In their study of South African firms, Roxas, Chadee and Erwee (2012) find that crime and theft have the largest impact on business performance (when using a composite measure of the financial, economic and strategic dimensions of firm performance), followed by corruption and tax administration. However, political instability and the effectiveness of

the court system did not appear to have a significant impact on business performance. On the other hand, Williams and Kedir (2016) conclude that, based on their firm-level analysis of the impacts of corruption on firm performance across 40 African countries, corruption significantly enhances rather than harms firm performance. This is supported by Imran, Ur Rehman and Khan (2019), who find that corruption increases firm performance (using firms' annual real sales growth and export performance as a proxy) of low-income nations but reduces the sales and exports of middle-income and high-income nations.

2.6 Summary

This chapter reviews the traditional theories of capital structure, beginning with the seminal work by Modigliani and Miller (1958), who argue that capital structure is irrelevant to the value of the firm. Since then, various theories have been developed – including the trade-off theory, agency cost theory and pecking order theory. Two more recent theories are also briefly discussed.

Although the majority of studies on capital structure have been performed in developed countries, there has been an increase in studies covering emerging economies. Traditional theories of capital structure (trade-off theory, agency cost theory and pecking order theory) have been used to explain the differences in leverage ratios across firms, as well as countries. These theories suggest that firms select their debt ratios based on balancing the benefits and the costs that are associated with using debt versus equity. The more modern theories of capital structure (signalling theory and market timing theory), on the other hand, suggest that market conditions determine a firm's capital structure decisions, as firms issue equity when the market is overvalued and issue debt when the market is undervalued.

This chapter also discusses the impact of institutional quality on the capital structure decision, as well as the links between capital structure and firm financial performance, and institutional quality and firm financial performance.

Empirical studies show that institutional factors have a major impact in the choice of capital structure and, as a result, corporate financing decisions vary between developed and developing countries (Booth et al., 2001; Chen, 2004; Foster & Young, 2010). Low institutional quality is a major limitation in developing countries, making it challenging for firms to raise the external debt capital needed for

growth, as lenders would most likely be more willing to grant debt capital to firms where there is evidence of strong creditor protection, an element of institutional quality (Qian & Strahan, 2007; Agca et al., 2013).

On the other hand, the link between leverage and firm financial performance is still controversial, as the empirical studies show different interpretations of this relationship (Singh & Bagga, 2019; Abdullah & Tursoy, 2021; Ayalew, 2021). Most of the capital structure theories discussed above claim that debt may impact firm financial performance or firm value in an imperfect market. In addition, most empirical studies also show that leverage has an impact on firm value, however these studies have shown mixed results regarding the link between capital structure and firm financial performance, with some studies supporting a positive relationship (Gill & Obradovich, 2013; Jaishi, 2020; Abdullah & Tursoy, 2021), some a negative relationship (Abor, 2005; Siddik et al., 2017; Li et al., 2019) and some even a nonlinear relationship (Ngatno et al., 2021; Tretiakova et al., 2021; Sdiq & Abdullah, 2022).

A country's institutional quality can also be linked to firm value and firm performance. Although the focus of the research has largely been on the effect of institutional factors on economic growth, some researchers have also studied the impact of various aspects on firm performance (Bhaumik & Estrin, 2007; Commander & Svejnar, 2011; Gomez, 2016). Research shows that factors that define the economic environment also affect firm performance, and that "good" institutions facilitate better firm performance. Empirical studies on the effect of institutional quality on firm performance generally support this, however, studies in African countries show mixed results (Roxas et al., 2012; Zoogah, 2018; Imran et al., 2019) .

Based on these traditional capital structure theories, as well as previous research studies discussed above, the following chapter details the data collection, research design and methodology used in the current study to test the hypotheses developed in chapter 1.

CHAPTER 3: RESEARCH DESIGN AND METHODS

3.1 Introduction

In the previous chapter, capital structure theory was discussed, and the links between institutional quality and capital structure, capital structure and firm financial performance, as well as institutional quality and firm financial performance were demonstrated. The research hypotheses were formulated in the first chapter in the light of capital structure theories. In the third chapter, the data collection and the examination of the data are explained, and the methodology detailed. This chapter is divided into five sections – the current section introduces the chapter, while the second section discusses the selection of the sample and data used in the study. The third section defines the dependent, independent and control variables used in the study, and the fourth section assesses the research design and methodology adopted. The final section concludes the chapter.

3.2 Data sources and sampling

The scope of the study is limited to non-financial firms listed on select stock exchanges of certain countries in Africa, namely Ghana, Kenya, Nigeria, South Africa and Zimbabwe. The choice of these countries is motivated by several factors. Firstly, they are all in Africa, where literature on the role of institutional quality on capital structure decisions, as well as the effect of capital structure on firm financial performance, is scarce (Ayalew, 2021; Sdiq & Abdullah, 2022). Secondly, these countries have different institutional setups, such as legal traditions, financial markets and level of economic development. As these five countries are all current or previous members of the British Commonwealth, they do have some common features in corporate governance and corporate control, however there is considerable difference in their economic development. In addition, the stock exchanges in Ghana, Kenya, Nigeria and Zimbabwe are recently emerging and developing exchanges, while the Johannesburg Stock Exchange in South Africa is more established (Chipeta & Deressa, 2016; Siavhundu & Nyabunze, 2020)

The research is restricted to listed companies as listed firms are required to prepare and publish their financial information in compliance with the prevailing accounting regulations. As part of the data sampling process, financial firms and insurance companies are excluded as their financial statements

differ significantly from that of non-financial listed firms because they are subject to specific regulation and financial reporting characteristics.

The population is represented by the total number of listed non-financial companies on the various African stock exchanges. These companies cover a wide variety of industries, including industrials, goods, services, health care and technology, to name a few. A total number of 347 firms with 5,488 firm-year observations are included in the sample for the period 2003 to 2022 – with 257 from Ghana, 455 from Kenya, 1,666 from Nigeria, as well as 2,558 from South Africa and 552 from Zimbabwe respectively.

The study employs data collected over the period from 2003 to 2022, with the start and end dates being determined by the availability of reliable data for these countries. A two-decade time frame allows for a longitudinal perspective, which can be valuable for understanding how the link between institutional quality, capital structure and firm performance has changed over time. This extended period may capture various political and economic changes, such as the Global Financial Crisis (GFC) and the effects of the Covid-19 pandemic, that could have had an impact on institutional quality and capital structure decisions in a particular country. In addition, a longer time frame provides a larger sample size, which can help mitigate the impact of short-term economic fluctuations to provide a more stable view of institutional quality trends and capital structure decisions.

The data set measures capital structure and firm financial performance in the selected African countries from 2003 until 2022. Firstly, the tests are run over the full period of 20 years. As a robustness test, the tests are repeated for four periods of five years each to investigate whether the relationship between institutional quality, capital structure and financial performance differs over time. This allows one to examine changes that occur within each interval and compare them across periods. The sample includes the GFC of 2008 and 2009 and the effects of Covid-19 in 2020 and the years thereafter. By splitting the data into 5-year periods the impact of these events can be assessed and one can determine whether they possibly influence the results.

Conducting certain robustness checks using alternative datasets, specifications, or models can also aid in assessing the degree of survivorship bias present in the study. Unfortunately, the fact that poor performers tend to disappear, and possibly de-list, can distort the results of the study. Samples that do

not include all the results of disappearing firms introduce survivorship bias, especially in performance measures. Because complete data is difficult to find, some degree of survivorship bias is unavoidable.

Analysing the data over time, can help account for survivorship bias. Pawley (2006) analyses the effect that survivorship bias has on unit trust performance for the period 1972 – 2004, over varying time intervals and using a dataset that is free from survivorship bias. His study proves that the magnitude of the bias is directly proportional to the time period, therefore as the time period increases, so does the bias. Because this study observes subjects at multiple points in time – every five years – changes and outcomes over the entire duration of the study can be compared and analysed better, including those who may have dropped out or been excluded. In addition, the shorter time period of five years decreases the risk of survivorship bias of a firm's results during that period.

All five countries have credible data for the period 2003 to 2022, except for Zimbabwe which has very little data up until 2008. The panel is therefore, unbalanced to allow for as many firms as possible to be included in the analysis. A firm must have data for at least three years of the 20-year period to be included in the sample, and countries must have at least ten firms.

The type of data used in the study is quantitative data and all data on the countries' macro-economic, market conditions and institutional quality, except for the Economic Freedom Index (EFI), is acquired from either the World Development Indicators or the Financial Structure Database of the World Bank (World Bank, 2022). The EFI is obtained from the Heritage Foundation. Data on leverage, firm financial performance and firm-specific variables are collected from the Bloomberg database, which provides aggregated financial and company specific data. Annual company financial statements are also used to supplement data as required for firm-specific data.

3.3 Definitions and measures of variables

The dependent, independent and control variables are defined in Table 1 below.

Table 1: Definitions of variables

Variable	Definition	Source
Leverage variables		
TD/TA	The total debt ratio is calculated as total interest-bearing debt divided by total assets	Author's calculation

Variable	Definition	Source
Leverage variables (continued)		
LTD/TA	The long-term debt ratio is calculated as long-term interest-bearing debt divided by total assets	Author's calculation
STD/TA	The short-term debt ratio is calculated as short-term interest-bearing debt divided by total assets	Author's calculation
Firm financial performance variables		
ROA	Return on assets is calculated as net income divided by total assets	Author's calculation
TQ	Tobin's Q is calculated as the market value of the firm divided by total assets	Author's calculation
Institutional Quality variables		
EFI	Economic Freedom Index measures the economic freedom of a country based on 12 quantitative and qualitative factors, including government integrity, government size, business freedom and investment freedom	The Heritage Foundation
ROL	Rule of Law represents the degree of confidence and abiding by the rules of society, including the quality of contract enforcement, property rights, the police and courts	World Bank Governance Indicators
CC	Control of Corruption represents the perceptions of the degree of control or prevention of public power exercised for private gain	World Bank Governance Indicators
RQ	Regulatory Quality measures the perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development	World Bank Governance Indicators
LRI	Legal rights index measures the extent to which bankruptcy and insolvency laws are utilised to protect the rights of lenders and borrowers	World Bank Doing Business Report
IP	Investor protection measures the degree to which investors are protected through disclosure of ownership and financial information	World Bank Doing Business Report
PSCGDP	Private sector credit to GDP measures the significance of the banking sector. It is calculated as the total credit extended to the private sector as a percentage of the GDP	World Bank Financial Indicators
SMCGDP	Stock market capitalisation to GDP measures the significance of the stock market. It is calculated as the total market capitalisation as a percentage of the GDP	World Bank Financial Indicators
Country-level control variables		
GDP	GDP growth rate is defined as the nominal GDP adjusted for inflation	World Bank Financial Indicators
INTEREST	Real interest rate is defined as the nominal interest rate adjusted for inflation	World Bank Financial Indicators
Firm-level control variables		
SIZE	Size of the firm is calculated as the logarithm of total assets	Author's calculation

Variable	Definition	Source
Firm-level control variables (continued)		
TANGIBILITY	Asset tangibility is the collateral value of assets and is calculated as fixed assets divided by total assets	Author's calculation
GROWTH	Growth refers to the growth prospects of the company and is calculated as the annual percentage change in total assets	Author's calculation
Interaction terms		
EFI*TD	Calculated as the product of the Economic Freedom Index and total debt ratio	Author's calculation
EFI*LTD	Calculated as the product of the Economic Freedom Index and long-term debt ratio	Author's calculation
EFI*STD	Calculated as the product of the Economic Freedom Index and short-term debt ratio	Author's calculation

3.3.1 Capital structure (leverage)

The study of the determinants of capital structure has been documented widely (Luigi & Sorin, 2009; Kumar, Colombage & Rao, 2017; Gleason et al., 2000), and in order to empirically examine the impact of institutional quality on capital structure decisions, the appropriate capital structure measures should be used. Traditionally, three leverage measures are used to express the capital structure – namely total debt to total assets, long-term debt to total assets, and short-term debt to total assets (Modigliani & Miller, 1958; Booth et al., 2001; Bevan & Danbolt, 2002; Fama & French, 2011). Although total debt to total assets is the most commonly used, most empirical studies use some combination of these three measures. Because the different measures of capital structure can produce different results, this study uses all three measures – the total debt ratio to capture the dynamics of total leverage, and the long-term debt and short-term debt ratios to capture the debt maturity structure of the sampled firms. The leverage variables are defined in Table 1. From the statistical analysis, it was found that African firms prefer the use of equity over debt as their financing source, with the split between long-term debt and short-term debt nearly identical (refer to Table 2).

While the ratio of total debt to total assets is the primary and most used measure of capital structure (Frank & Goyal, 2009; Bany-Ariffin, Nor & McGowan Jr, 2010), studies usually use either book value of total debt or market value of total debt. Most studies, however, do not use market-based measures as book-based measures may better reflect management's target capital structure and information obtained from financial statements is more credible (Lemma & Negash, 2012). In addition, often the market value of debt is not available (Fama & French, 2002), and the book value of total debt ratio is

preferred as it is not affected by stock price changes. Consistent with various previous literature (Abor, 2005; Hasan et al., 2014; Abdullah & Tursoy, 2021), this study uses book value of debt as the main proxy of capital structure.

3.3.2 Firm financial performance

Firm financial performance includes both profitability, as well as firm value. According to previous studies, the financial performance of a firm is represented by various ratios, including return on assets (ROA), return on equity (ROE), Tobin's Q and earnings per share (EPS) (Akintoye, 2008; Salim & Yadav, 2012). While ROA, ROE, and EPS are accounting based measurement calculated from firms' financial statements, Tobin's Q is a measurement mixed between market values and accounting values. Furthermore, Ganguli and Agrawal (2009) suggest that the Tobin's Q model incorporates inherent finance risk, resulting in a more forward-looking valuation of the firm.

Consistent with previous literature (Abor, 2005; Hasan et al., 2014; Jouida, 2018; Abdullah & Tursoy, 2021), this study measures firm performance in terms of profitability, more specifically ROA, and firm value (Tobin's Q). Refer to Table 1 for definitions.

3.3.3 Institutional quality

In line with the growing importance of macro-economic, legal and financial institutions in firms' capital structure decisions (Gleason et al., 2000; Booth et al., 2001; Korajczyk & Levy, 2003; Lemma & Negash, 2012; Gwatidzo & Ojah, 2014), the impact of these components of institutional quality on firms' leverage, is explored in this study. All institutional quality variables are defined in Table 1.

Economic institutions: The economic development of a country can often be associated with the financing decisions of firms in that country (Rajan & Zingales, 1995). Furthermore, a firm's capital structure decisions might be affected by the rate at which a country's economy grows, as this can impact firm growth (Demirgüç-Kunt & Maksimovic, 1998) and economic development may, in turn, also impact access to finance (Qian & Strahan, 2007; Agca et al., 2013). Because of the importance of economic freedom in attracting foreign investment, this study examines the influence of the EFI on capital structure decisions of firms in Africa. The index scores countries on 12 factors grouped into four broad categories of economic freedom using statistics from organisations like the World Bank

and the International Monetary Fund. Because the index uses extensive categories such as rule of law, government size, regulatory efficiency and open markets, it is also used as a proxy for a composite index of institutional quality in this study.

Legal institutions: The literature highlights the important role that legal institutions, specifically factors such as quality of law enforcement, control of corruption and investor protection, play in corporate finance decisions in different countries (La Porta et al., 1997, 1998). Capital structure theory also suggests that the existence of agency costs is a major factor in firms' choice of leverage. According to Fan, Rui and Zhao (2008), the extent of agency problems that exist between management and corporate outsiders, can be impacted by the legal environment in which contracting takes place, and the rights of the parties concerned. This in turn can affect outsiders' confidence in the markets and consequently their development. Because of the importance of legal factors, this study examines the influence of various variables which capture the legal institutions of a country, including rule of law, control of corruption, regulatory quality, legal rights and investor rights protection.

Financial institutions: Another important factor influencing the capital structure decisions of a firm, according to the literature, is the level of development of financial institutions (Beck, Demirgüç-Kunt & Levine, 2010), including the size of the stock market and banking sector. Consequently, the influence of stock market development (captured by stock market capitalisation relative to the size of the economy) and banking sector development (captured as the ratio of credit extended to the private sector by financial institutions to GDP) on capital structure decisions of a firm are investigated in this study.

3.3.4 Control variables

Country level factors such as GDP growth rates and interest rates can have a significant influence on the choice of leverage of firms (Gleason et al., 2000; Korajczyk & Levy, 2003; Lemma & Negash, 2012). Booth et al. (2001) investigate the capital structure of developing countries and find that real economic growth tends to increase the overall debt ratio and long-term debt ratio of firms, while Cook and Tang (2010) conclude that firms adjust to target leverage faster in positive states (including times of GDP growth) than negative states. The GDP growth rate is measured by the change in the country's GDP from one year to another and is defined in Table 1.

Interest rates, especially the lending rate is also an important determinant of the choice of capital structure of firms. Higher interest rates increase the cost of debt financing, discouraging firms to use more debt. Barry, Mann, Mihov and Rodriguez (2008) examine the relation between debt issues and the level of interest rates relative to historical levels. They find that companies issue more debt when interest rates are low relative to historical rates, which is consistent with various other studies. Therefore, this study accounts for these country level factors as control variables, as these may impact the dependent variable. Variables are defined in Table 1.

Based on previous studies, a company's size and expansion can affect its performance, as larger companies have a wider range of capabilities and can benefit from economies of scale (Frank & Goyal, 2003; Salim & Yadav, 2012). The trade-off theory predicts that the size of a firm is positively related to debt as bigger companies are more stable and as a result, less likely to go bankrupt. Therefore, by integrating the size, asset tangibility and growth variable in the model as firm-level control variables, this study is able to account for the impacts of firm size, asset tangibility and growth on the dependent variable. Refer to Table 1 for the definitions of these variables.

3.3.5 Dummy variables

In order to control for country-specific heterogeneity, country dummy variables for each of the sample countries are included in the regression models discussed below.

3.4 Research design and methodology

According to Baltagi (2010), the use of panel data regression over cross-sectional regression procedures is generally preferred as it allows researchers to examine both individual-specific effects and time-specific effects. Panel data also usually provides more observations than cross-sectional data alone, which can increase the efficiency and statistical power of estimators. The econometrics literature further identifies three basic panel data estimation procedures, namely: (i) Pooled Ordinary Least Square (POLS), which operates assuming homogeneity among the subject units; (ii) the Fixed Effect Panel Data Model (FE), which assumes that there are differences across time and subject units; and (iii) the Random Effect Model (RE), which on the other hand assumes the individual-specific effects are random and have a specific distribution. In panel data analysis, many authors (Chen, 2004; Ahmed Sheikh & Wang, 2013; Hasan et al., 2014; Singh & Bagga, 2019; Ayalew, 2021) use the POLS

estimation model, however, the shortcoming with this model is its failure to control for time-invariant firm specific heterogeneity (or the unobserved fixed effect), and the model may produce biased results.

In order to overcome the issue of heterogeneity, the panel Generalised Methods of Moments (GMM) estimator is one of the most popular analyses for estimating dynamic panels with unobserved heterogeneity and pre-determined regressors (Arellano & Bond, 1991). Because the relationship between variables is often dynamic, dynamic panel data models are more suitable for use in econometric analysis. In addition, GMM estimators provide various benefits over linear regression techniques. Firstly, GMM estimators assist with handling the endogeneity problem in regression analyses, which can avoid inconsistent estimates and incorrect inferences (Ullah, Akhtar & Zaefarian, 2018). Secondly, they account for autocorrelation in the presence of a lagged dependant variable (Chipeta & Deressa, 2016).

According to Hall (2005), the GMM offers a reliable technique for obtaining consistent and normally distributed estimates of the parameters of statistical models. In addition, the model relies on minimal assumptions and is better in the case of large sample size over a short time span, in which the stationarity of variables is less important. Even in panels with few time series observations per individual, the Arellano and Bond (1991) estimator provides consistent estimates. It does, however, require large samples in the cross-section dimension, especially if the variables under analysis are persistent (Moral-Benito, 2013).

Furthermore, the two-step system GMM estimator of Blundell and Bond (1998) is more efficient that the difference GMM estimator of Arellano and Bond (1991). The two-step system GMM corrects for endogenous and reverse causality problems between variables using an efficient instrument variable technique (Blundell & Bond, 1998). It combines level-equations and difference-equations simultaneously, thereby minimising the loss of valuable information arising from transformations (Chipeta & Deressa, 2016; Matemilola, et al., 2019).

The aim of this study is to investigate the relationship between institutional quality and capital structure, the relationship between capital structure and firm financial performance, as well as the role institutional quality plays in influencing this link between capital structure and financial performance. In order to achieve this, panel data techniques are used for this analysis, as it combines the cross-

section nature of data with time series and provides a more comprehensive analysis than pure time series or cross-sectional data (Brooks, 2014). Furthermore, dynamic panel data techniques allow for the control of firm level heterogeneity and other problems prone to cross-sectional specification, such as collinearity among the explanatory variables.

Therefore, and more specifically, the Blundell and Bond (1998) system GMM is used in this study to examine the links between institutional quality, capital structure and firm financial performance, because there is a possibility of reverse causality between the dependent and explanatory variables used in this study, and because GMM is argued to be a valid estimator for dynamic panel data, as it captures cause-and-effect relationships between underlying occurrences that change over time, allowing it to deal with time series and random walks (Blundell & Bond, 1998).

3.4.1 Institutional quality and capital structure

To analyse whether the capital structure decisions of firms are impacted by the institutional quality of the country in which they operate, the following regression model is used:

$$Lev_{i,j,t} = \alpha + Lev_{i,j,t-1} + \beta_1 IQ_{j,t} + \beta_2 Y_{j,t} + \beta_3 Z_{i,j,t} + \varepsilon_{i,j,t} \quad (1)$$

where $Lev_{i,j,t}$ is one of three different measures of capital structure for firm *I* in country *j* for period *t*. $Lev_{i,j,t-1}$ is the one-period lagged measure of capital structure for firm *I* in country *j*. $IQ_{j,t}$ is the country-level institutional quality score in country *j* for period *t*; $Y_{j,t}$ and $Z_{i,j,t}$ denote a set of country- and firm-level control variables respectively, α is the constant term and $\varepsilon_{i,j,t}$ is the residual term. All variables are defined in Table 1.

This model will be used to test the following hypothesis:

H1: There is a significant positive relationship between institutional quality and leverage, more specifically long-term leverage.

3.4.2 Capital structure and firm financial performance

To examine the influence of capital structure choice on firms' financial performance, the following model is used:

$$FP_{i,j,t} = \alpha + FP_{i,j,t-1} + \beta_1 Lev_{i,j,t} + \beta_2 Y_{j,t} + \beta_3 Z_{i,j,t} + \varepsilon_{i,j,t} \quad (2)$$

where $FP_{i,j,t}$ is one of two different measures of firm financial performance for firm *I* in country *j* for period *t*. $FP_{i,j,t-1}$ is the one-period lagged measure of firm financial performance for firm *I* in country *j*. $Lev_{i,j,t}$ is the leverage metric; $Y_{j,t}$ and $Z_{i,j,t}$ denote a set of country- and firm-level control variables respectively, α is the constant term and $\varepsilon_{i,j,t}$ is the residual term. All variables are defined in Table 1.

This model will test the following:

H2: Firms' leverage has a significant negative effect on its financial performance.

In addition to the above, in order to study the role institutional quality plays in influencing the link between capital structure and financial performance, the following model is used:

$$FP_{i,j,t} = \alpha + FP_{i,j,t-1} + \beta_1 Lev_{i,j,t} + \beta_2 Lev_{i,j,t} IQ_{j,t} + \beta_3 Y_{j,t} + \beta_4 Z_{i,j,t} + \varepsilon_{i,j,t} \quad (3)$$

where $FP_{i,j,t}$ is one of two different measures of firm financial performance for firm *I* in country *j* for period *t*. $FP_{i,j,t-1}$ is the one-period lagged measure of firm financial performance for firm *I* in country *j*. $Lev_{i,j,t}$ is the leverage metric; $Lev_{i,j,t} IQ_{j,t}$ is the product of the country-level institutional quality score and leverage metric; $Y_{j,t}$ and $Z_{i,j,t}$ denote a set of country- and firm-level control variables respectively, α is the constant term and $\varepsilon_{i,j,t}$ is the residual term. All variables are defined in Table 1.

Model (3) will be used to test the following hypothesis:

H3: Institutional quality has an effect as an intervening variable mediating the influence of capital structure on a firm's financial performance.

3.4.3 Specification tests for panel data

Regression diagnostic tests are used to evaluate the model assumptions and investigate whether there are observations with a large, undue influence on the analysis. Such tests also assist in identifying whether and when a model transformation or modification is needed. Several statistical tests and graphical tools can be applied to test model "lack of fit", detect violation of assumptions or invalidity of the inferences, as well as outliers and influential observations (Ngo & La Puente, 2012).

When the GMM method is applied, post-estimation diagnostic tests are performed to assess the validity of the estimated model and the adequacy of the moment conditions used in the estimation process. These tests help evaluate whether the chosen model is a good fit for the data. The following diagnostic tests are necessary and implemented in this study, namely (i) the first order/ second order auto correlation tests; (ii) the Sargan (1958) test to evaluate the validity of over-identifying restrictions; and (iii) the Wald Chi-squared test to assess the joint significance of parameters in the model.

A possible issue with data included in a sample is the serial and cross-sectional correlations (autocorrelation) of observations, which may cloud the analysis. Ideally observations should be independent, and the assumption is that the covariance between the error terms over time and cross-sections is zero (Wooldridge, 2002). For this study, the Arellano-Bond test for zero autocorrelation in first-differenced errors is implemented at the first and second orders. In order for the models to pass the autocorrelation test and show the absence of serial correlation, the p-values need to be insignificant, especially at the second-order level.

In addition, the Sargan (1958) test of over-identifying restrictions is applied to check the validity of the instruments used. Over-identification implies that the number of endogenous regressors is less than the number of instruments used in the given equation. In order to prove the validity of the instruments used in the models, the p-values of the Sargan (1958) test also need to be insignificant.

A further test performed is the Wald Chi-Squared Test, which is a parametric statistical measure to determine whether a set of independent variables are collectively "significant" for a model or not. The Wald test p-values need to be statistically significant to prove that the set of variables add value to the model.

The results of these three tests are included in Table A2 of the appendix.

3.4.4 Dealing with outliers

In addition to the above, there should be no significant outliers in the data. An outlier is an observed data point that has a dependent variable value that is very different to the value predicted by the regression equation and will therefore have a large residual. The challenge with outliers is that they can have a negative effect on the regression analysis (reduce the fit of the regression equation) that is used to predict the value of the dependent variable based on the independent variable. In order to eliminate any significant outliers in the data, all firm-level variables are trimmed at their 1st and 99th percentiles, before the regression models are run.

3.5 Summary

This chapter fully describes the steps taken in the preparation of the analysis phase, and includes identifying the sampling and data collection processes, defining the dependent, independent and control variables, and developing the hypothesis for each model. This chapter also discusses the assumptions around the data, describes the research design and the selection of the appropriate analytical techniques. In addition, this chapter provides details regarding the issues considered during the implementation of each step, and the specification tests that are required with the use of panel data.

The following chapter presents and analyses the results of the methodology and tests discussed above.

CHAPTER 4: DATA ANALYSIS AND DISCUSSION

4.1 Introduction

The results of the data analysis according to the research methodology described previously are discussed in this chapter. Various statistical tests deliver empirical evidence aimed at answering the research questions: (i) What is the relationship between institutional quality, capital structure and financial performance of firms listed on select African stock markets and; (ii) does this relationship change over time? In this chapter, the three hypotheses discussed in chapter 1 are tested. This research adopts three empirical models to be used in testing these hypotheses.

The descriptive statistics of all the variables adopted are illustrated and presented in the following section, and thereafter, the correlation coefficients are presented and discussed. A presentation and discussion of the results produced from testing the hypotheses for each empirical model are provided in sections 4.4, 4.5 and 4.6. The section thereafter includes the results of the specification tests, and finally, section 4.8 concludes and summarises the analysis and findings.

4.2 Descriptive statistics

The descriptive statistics of all the variables are presented in Table 2. The results shown are for the full period of 20 years, after removing financial firms as well as outliers, for all five countries in Africa included in this study. In addition, the two-decade period is broken down into four periods of five years to observe the change in capital structure over time.

Table 2: Descriptive statistics (Africa)

	Mean	**Standard Deviation**	**Minimum**	**Maximum**
Total Debt/Total Assets	**0.17865**	**0.19246**	**0.00000**	**0.93920**
2003:2007	0.15186	0.18673	0.00000	0.91690
2008:2012	0.16143	0.17201	0.00000	0.72860
2013:2017	0.18980	0.19045	0.00000	0.92160
2018:2022	0.20231	0.22648	0.00000	0.93920
Long Term Debt/Total Assets	**0.09137**	**0.13509**	**0.00000**	**0.66190**
2003:2007	0.07299	0.12614	0.00000	0.65830
2008:2012	0.07567	0.11825	0.00000	0.55990
2013:2017	0.09547	0.13301	0.00000	0.66190

	Mean	Standard Deviation	Minimum	Maximum
Long Term Debt/Total Assets (cont.)				
2018:2022	0.11425	0.16125	0.00000	0.66190
Short Term Debt/Total Assets	**0.08827**	**0.12400**	**0.00000**	**0.68820**
2003:2007	0.08876	0.12960	0.00000	0.70920
2008:2012	0.08790	0.12027	0.00000	0.63390
2013:2017	0.09418	0.12364	0.00000	0.67040
2018:2022	0.08282	0.12622	0.00000	0.76090
Return on Assets	**0.04299**	**0.13741**	**-0.63150**	**0.46680**
2003:2007	0.06117	0.14719	-0.81960	0.38360
2008:2012	0.05672	0.12043	-0.54260	0.39270
2013:2017	0.03191	0.11879	-0.52600	0.32920
2018:2022	0.03178	0.19290	-0.87190	0.46680
Tobin's Q	**0.99425**	**1.37090**	**0.00000**	**8.41690**
2003:2007	1.24834	1.55241	0.00000	9.20000
2008:2012	1.02593	1.32789	0.00000	7.97000
2013:2017	0.98347	1.35466	0.00000	7.91950
2018:2022	0.93315	2.09014	0.00000	18.4240
Economic Freedom Index	**0.56564**	**0.08961**	**0.21400**	**0.67100**
2003:2007	0.58995	0.06913	0.32000	0.67100
2008:2012	0.55505	0.12405	0.21400	0.63800
2013:2017	0.56571	0.08401	0.28600	0.64200
2018:2022	0.56026	0.06342	0.33100	0.63000
Rule of Law	**0.35083**	**0.20763**	**0.00940**	**0.62500**
2003:2007	0.36488	0.21171	0.01440	0.57890
2008:2012	0.33274	0.23535	0.00940	0.59150
2013:2017	0.35911	0.21641	0.02350	0.62500
2018:2022	0.35006	0.16493	0.07140	0.55240
Control of Corruption	**0.35004**	**0.23090**	**0.01900**	**0.69760**
2003:2007	0.42909	0.27293	0.02910	0.69760
2008:2012	0.34644	0.23950	0.01900	0.62140
2013:2017	0.32279	0.22040	0.02370	0.57140
2018:2022	0.33275	0.19243	0.08490	0.54290
Regulatory Quality	**0.40540**	**0.22704**	**0.01460**	**0.72550**
2003:2007	0.49508	0.24954	0.01460	0.72550
2008:2012	0.43563	0.23392	0.01900	0.70390
2013:2017	0.39481	0.22102	0.01900	0.64450
2018:2022	0.33543	0.18557	0.05240	0.55240
Legal Rights Index	**0.60103**	**0.16648**	**0.41670**	**1.00000**
2003:2007	0.73621	0.11248	0.60000	1.00000
2008:2012	0.74052	0.09972	0.70000	1.00000
2013:2017	0.50391	0.12266	0.41670	1.00000
2018:2022	0.55168	0.16493	0.41670	0.91670
Investor Protection	**0.68462**	**0.12866**	**0.46700**	**0.92000**
2003:2007	0.67219	0.13973	0.46700	0.80000
2008:2012	0.64416	0.14282	0.46700	0.80000
2013:2017	0.69090	0.11773	0.46700	0.80000
2018:2022	0.73811	0.09403	0.54000	0.92000

	Mean	Standard Deviation	Minimum	Maximum
Private sector credit to GDP	**0.64082**	**0.52942**	**0.05240**	**1.42420**
2003:2007	0.72919	0.57174	0.08120	1.42420
2008:2012	0.63866	0.53161	0.07160	1.25960
2013:2017	0.66718	0.54600	0.11530	1.28840
2018:2022	0.56348	0.47088	0.05240	1.18380
Stock market capitalisation to GDP	**1.36396**	**1.14578**	**0.03640**	**3.22710**
2003:2007	1.20861	0.94531	0.03640	2.48650
2008:2012	1.11323	0.95654	0.07880	2.42310
2013:2017	1.62859	1.27348	0.07360	3.22710
2018:2022	1.52070	1.29521	0.07470	3.10840
GDP growth rate	**0.03465**	**0.03961**	**-0.17670**	**0.21450**
2003:2007	0.05619	0.01734	-0.17000	0.09250
2008:2012	0.05550	0.04938	-0.17670	0.21450
2013:2017	0.02362	0.02176	-0.01620	0.08130
2018:2022	0.01435	0.03828	-0.07820	0.08470
Interest	**0.02724**	**0.12383**	**-0.81130**	**0.18180**
2003:2007	0.03826	0.04658	-0.08010	0.09940
2008:2012	0.05205	0.04621	-0.10100	0.18180
2013:2017	0.06113	0.03415	0.01530	0.13600
2018:2022	-0.03301	0.20633	-0.81130	0.08490
Size	**7.91416**	**0.95544**	**5.31290**	**9.82650**
2003:2007	7.70539	0.91310	5.18900	9.65250
2008:2012	7.90340	0.81407	5.85520	9.70960
2013:2017	8.01655	0.89396	5.82020	9.76140
2018:2022	7.93763	1.15120	4.41780	10.0081
Tangibility	**0.37100**	**0.25333**	**0.00000**	**0.93320**
2003:2007	0.34946	0.24180	0.00000	0.87580
2008:2012	0.36880	0.24902	0.00000	0.90550
2013:2017	0.38296	0.25856	0.00010	0.92660
2018:2022	0.37398	0.25798	0.00000	0.96920
Growth	**0.16234**	**0.51158**	**-0.69070**	**3.92170**
2003:2007	0.26583	0.80210	-0.64810	6.13740
2008:2012	0.17148	0.37312	-0.40990	2.38300
2013:2017	0.10602	0.25443	-0.40140	1.49310
2018:2022	0.22437	1.20227	-0.87280	10.32180
EFI*TD	**0.10188**	**0.11179**	**0.00000**	**0.62826**
2003:2007	0.09027	0.10967	0.00000	0.61524
2008:2012	0.09065	0.10138	0.00000	0.46193
2013:2017	0.10734	0.10946	0.00000	0.59167
2018:2022	0.11533	0.13097	0.00000	0.76362
EFI*LTD	**0.05316**	**0.07970**	**0.00000**	**0.44413**
2003:2007	0.04415	0.07655	0.00000	0.44172
2008:2012	0.04465	0.07155	0.00000	0.35722
2013:2017	0.05496	0.07792	0.00000	0.41435
2018:2022	0.06544	0.09334	0.00000	0.52118
EFI*STD	**0.04920**	**0.06965**	**0.00000**	**0.44182**
2003:2007	0.05129	0.07195	0.00000	0.40850

	Mean	Standard Deviation	Minimum	Maximum
EFI*STD (cont.)				
2008:2012	0.04714	0.06649	0.00000	0.39746
2013:2017	0.05232	0.06943	0.00000	0.43040
2018:2022	0.04686	0.07239	0.00000	0.45426
Observations	**5,488**			
2003:2007	950			
2008:2012	1,388			
2013:2017	1,570			
2018:2022	1,580			

Based on the findings from the sample included in Table 2, firms in Africa prefer equity to debt as their source of financing, with total debt to total assets at only 18% for the 20-year period. The split between long-term debt to total assets of about 9% is relatively equal to the ratio of short-term debt to total assets. The sample shows that the total debt ratio increases steadily over time, from about 15% in the 5-year period 2003 to 2007, to around 20% in last 5-year period. The split between the long-term debt ratio and short-term debt ratio also appears to change over time, moving from a split of 7% long-term debt versus 9% short-term debt in the first 5-year period to being more in favour of long-term debt at 11% to 8% short-term debt in the 5-year period 2018 to 2022.

Firms in Africa may prefer equity financing over debt due to various reasons such as limited access to credit markets (Agca et al., 2013) and higher perceived risk associated with debt (Alvarez-Botas & Gonzalez-Mendez, 2019). In addition, the increase in the total debt ratio over time could be attributed to the growing need for capital among African firms to finance expansions or invest in new projects. This also explains the shift in the composition of debt towards long-term debt, as a source of more stable and long-term financing.

The results show that financial performance in Africa over the two-decade period appears to be decreasing. The total sample displays an average of approximately 4% ROA and market value to total assets (Tobin's Q) of 99%. In the first five-year period, the ROA and Tobin's Q are around 6% and 125% respectively, while for the period 2018 to 2022 these have declined to around 3% and 93% respectively.

The declining profitability, in the form of ROA, over the sample period may be influenced by various factors such as increasing competition, regulatory changes or economic downturns. The fact that

profitability appears to be decreasing, while debt, and more specifically long-term debt is on the increase, is consistent with the literature, specifically those concerning emerging economies, which find that capital structure and firm value or firm performance are negatively associated (Abor, 2005; Siddik et al., 2017; Li et al., 2019). It is also in line with the second hypothesis of this study.

Furthermore, based on the statistics, institutional quality has also generally decreased over the sample period. More specifically, the overall EFI has a mean value of 57% for the period 2003 to 2022 but deteriorated from 59% in the first 5-year period to 56% in the last 5-year period. The legal institutional quality components show mixed results, with most components showing a deterioration over the period. However, investor protection has a mean of 68% for the 20-year period, improving from 67% to 74% in the last period 2018 to 2022. The financial quality components of the African countries also show varied results – private sector credit to GDP has a mean value of 64% for the full sample period, deteriorating from 73% to 56% over the period, while stock market capitalisation to GDP with a mean value 136% improves from 121% to 152% over the period, indicating that while access to credit is decreasing, stock market development appears to be on the rise.

The decrease in institutional quality over the 20-year period could have a negative impact on firms' performance and financing decisions. Factors such as declining legal institutions, weakening economic freedom, and a decrease in access to credit markets may hinder firms' ability to operate efficiently and access necessary financing. Furthermore, research shows that factors which portray the economic environment also affect variables such as firm performance (Dollar et al., 2005; Commander & Svejnar, 2011; Yasar et al., 2011). Changes in institutional quality and financial performance may also be influenced by broader economic conditions, such as fluctuations in commodity prices or political instability. This is confirmed by previous studies in the economics literature, which examine and find a positive relationship between the quality of various institutions and economic performance (Rodrik, 2000; Acemoglu & Johnson, 2005; Acemoglu et al., 2005; Bowen & De Clercq, 2008).

4.2.1 Analysis by country

The means of the variables are also presented per country (as disclosed in Table A1 of the appendix) to answer the following sub-question: How does institutional quality, capital structure and financial

performance of listed firms differ for the African countries included in this study? A brief analysis of the findings is presented below.

Ghana has the highest mean total debt ratio of the countries included in the study for the 20-year period at 22%. Zimbabwe, on the other hand, has the lowest total debt ratio of the sampled countries, at only 14%. Of the five countries included in the study, three appear to prefer short-term debt over long-term debt, namely Ghana, Nigeria and Zimbabwe.

Of the sampled countries, Zimbabwe has the highest mean ROA of 7% over the full-period, with a 16% ROA earned in the last 5-year period. Kenya and South Africa, on the other hand, report a mean ROA of 6% and 5% respectively for the 20-year period, with a decreasing trend over time. Ghana, with the highest debt ratio of the countries included in the study, has one of the lowest ROA ratios at 3%, also decreasing over time.

Of the five African countries, South Africa has the highest overall institutional quality scores. For the full sample period, the South African EFI mean is 62%, while the legal institutional quality components have mean values ranging from 54% for rule of law to 80% for investor protection. All these indicators, however, appear to weaken over the 20-year period, except for investor protection which remains constant. Ghana also has relatively high legal institutional quality results, ranging from 49% for regulatory quality to 63% for the legal rights index, but also show a slight deterioration over the period. Furthermore, South Africa has the most developed financial institutions of the five African countries and consistent with the results for Africa as a whole, South Africa's private sector credit to GDP worsens over the period, from a mean of 125% to 106%, while stock market capitalisation to GDP increases from 199% to 265%.

Zimbabwe, on the other hand, displays mostly low institutional quality results. The overall 20-year mean of the EFI is only 34%, however the index improves to 40% for the last 5-year period. Most of the legal institutional quality indices are also poor, with rule of law, control of corruption and regulatory quality showing mean values of 5%, 6% and 4% respectively for the 20-year period. Private sector credit to GDP is a mere 13% for the full sample period.

Ghana's relatively high total debt ratio could be as a result of its stable economic and legal environment, evidenced by its good legal institutional quality compared to other countries in the study.

These stable conditions may encourage borrowing for growth and investment purposes, however the slight deterioration over time could signal increased uncertainty or challenges in the regulatory environment. Furthermore, Ghana's low ROA and high debt ratio may indicate less effective use of borrowed funds or challenges in generating profits.

On the other hand, Zimbabwe's low total debt ratio may reflect its historically unstable economic and political situation, displayed by its poor institutional quality results, which may deter borrowing and investment by limiting access to credit and investment opportunities. Changes in economic policies, or other factors such as international aid or investment may also influence borrowing behaviours and institutional quality over time. The improvement in Zimbabwe's EFI in the last 5-year period may reflect efforts to address economic challenges and attract investment. Zimbabwe's high ROA suggests a higher return on investment compared to other countries and is consistent with various other studies in the literature which show a negative relationship between debt and financial performance, especially in developing countries.

Despite displaying an average total debt ratio and average ROA relative to the other countries included in the study, South Africa's higher institutional quality scores and developed financial institutions may contribute to its ability to access financing more efficiently compared to other countries. This can be reflected in its higher private sector credit to GDP ratio and increasing stock market capitalisation.

4.3 Correlation coefficients

Table 3 presents the Pearson correlation matrix for all the dependent, independent and control variables for the full period from 2003 to 2022 for all five African countries. The results reveal that the degree of association between most of the variables is weak, as the correlation coefficients are generally quite low.

According to the matrix, total debt is correlated with both long-term debt and short-term debt, with correlation coefficients of 78% and 63% respectively, however long-term debt and short-term debt are weakly correlated. Furthermore, profitability is found to have a negative non-significant correlation with leverage under the use of all three measures of capital structure. Therefore, it appears that firms in Africa with higher leverage are less profitable. Leverage and the various aspects of institutional quality also appear to be poorly correlated, with total- and short-term leverage displaying negative

Table 3: Correlation Matrix

2003:2022		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
TD/TA	**(1)**	1.000																	
LTD/TA	**(2)**	0.775	1.000																
STD/TA	**(3)**	0.626	0.013	1.000															
ROA	**(4)**	-0.246	-0.134	-0.202	1.000														
TQ	**(5)**	-0.156	-0.110	-0.126	0.167	1.000													
EFI	**(6)**	-0.089	-0.004	-0.128	0.192	0.127	1.000												
ROL	**(7)**	-0.078	0.025	-0.141	0.160	0.103	0.871	1.000											
CC	**(8)**	-0.073	0.035	-0.147	0.163	0.105	0.866	0.966	1.000										
RQ	**(9)**	-0.093	0.018	-0.153	0.204	0.130	0.853	0.927	0.946	1.000									
LRI	**(10)**	-0.057	-0.083	-0.001	0.089	0.051	-0.029	-0.221	-0.232	-0.049	1.000								
IP	**(11)**	-0.027	0.039	-0.086	0.021	0.015	0.518	0.729	0.694	0.508	-0.425	1.000							
PSCGDP	**(12)**	-0.072	0.036	-0.144	0.157	0.106	0.864	0.970	0.985	0.943	-0.300	0.695	1.000						
SMCGDP	**(13)**	-0.043	0.066	-0.134	0.099	0.065	0.697	0.860	0.899	0.824	-0.461	0.649	0.923	1.000					
GDP	**(14)**	-0.087	-0.096	-0.014	0.133	0.141	0.128	-0.009	-0.022	0.151	0.421	-0.269	-0.007	-0.237	1.000				
Interest	**(15)**	0.039	-0.007	0.072	-0.085	-0.039	-0.439	-0.396	-0.363	-0.424	-0.206	-0.063	-0.356	-0.386	0.229	1.000			
Size	**(16)**	0.123	0.195	-0.016	0.216	-0.063	0.134	0.195	0.201	0.192	-0.152	0.141	0.214	0.241	-0.082	-0.082	1.000		
Tangib.	**(17)**	0.300	0.346	0.046	-0.086	-0.010	-0.241	-0.264	-0.272	-0.273	0.055	-0.164	-0.273	-0.251	-0.001	0.126	0.145	1.000	
Growth	**(18)**	0.022	0.055	-0.021	0.139	0.070	0.124	0.083	0.097	0.113	0.046	0.023	0.097	0.053	0.092	-0.023	0.033	-0.067	1.000

correlation with institutional quality factors in most cases. This may be due to the fact that institutional quality is a multidimensional concept (La Porta et al., 1997, 1998; Qian & Strahan, 2007; Beck et al., 2010; Agca et al., 2013) incorporating various aspects such as the rule of law, regulatory environment, property rights protection, corruption levels and ease of doing business. These dimensions may not directly relate to a firm's capital structure decisions. Furthermore, changes in institutional quality may not immediately impact leverage decisions as there be time lags before changes in institutional quality translate into observable effects on capital structure decisions.

As can be seen in Table 3, most of the institutional quality indicators in Africa are strongly positively correlated with one another, with most of these factors having correlation coefficients of over 80%. This is consistent with Nawaz, Iqbal and Khan (2014) and Langbein and Knack (2010), who find that each of the indexes measure the same underlying governance idea, even though they are intended to capture different concepts. They also conclude that the six institutional quality indicators included in their study are highly correlated.

More specifically and according to this study, rule of law is very highly correlated with control of corruption, regulatory quality and private sector credit to GDP, with correlation coefficients of 0.97, 0.93 and 0.97 respectively. Furthermore, control of corruption is also strongly correlated with regulatory quality (0.95) and private sector credit to GDP (0.99), while regulatory quality and private sector credit to GDP also prove to be extremely correlated and yield a correlation coefficient of 0.94. In addition, stock market capitalisation to GDP is strongly correlated with private sector credit to GDP (0.92).

As in Matemilola et al. (2019), the use of separate regressions for each institutional quality variable to avoid multicollinearity problems is driven by the high correlation among the institutional quality indicators. When the explanatory variables are highly correlated, it becomes difficult to unravel the separate effects of each of the explanatory variables on the dependent variable. This leads to substantial increases in the standard errors of the coefficient estimates of these indicators and statistical inference based on these standard errors would be problematic. In this study, this is also overcome by using the institutional quality indicators separately for each regression.

Although the correlation coefficients are fairly small, the results also indicate that GDP growth in Africa is negatively correlated with leverage but positively correlated with profitability, while interest is negatively correlated with profitability. This may imply that firms in countries with high GDP growth have lower total leverage and are more profitable, as this growth in economic activity may reduce the need for debt financing as companies can fund their investments through internally generated funds or equity financing. Higher interest rates, on the other hand, increase the cost of borrowing for firms, leading to higher interest expenses, which can reduce profitability.

In addition, firm size, tangibility and growth are positively correlated with total- and long-term leverage. Furthermore, the results show that tangibility is negatively related to profitability while growth is positively related to profitability. Based on these results, larger firms, firms that are growing and firms with higher levels of intangible assets in Africa tend to use more debt, specifically long-term debt. Additionally, firms that are growing appear more profitable as growth opportunities can contribute to increased revenue and market share, while firms that have a higher tangible asset to total assets ratio appear to be less profitable.

Further to the assessment of correlation above, the models are also tested using the Arellano-Bond test for zero autocorrelation in first-differenced errors at the first and second orders. The values, especially at the second order, are generally insignificant (refer to Table A2 in the appendix) which suggest that the models are free from any serial correlation. Therefore, autocorrelation does not threaten the interpretation of regression coefficients of the independent variables in this model.

4.4 The impact of institutional quality on capital structure

Table 4 reports the main findings of the effect of institutional quality on the three measures of capital structure for the full sample of listed firms from the five African countries included in this study.

4.4.1 Institutional quality

In order to examine Hypothesis 1, the effect of institutional quality on the three measures of leverage are tested in accordance with equation 1. The issue with an average institutional quality index is that it tells us very little about which factor of institutional quality attention should be directed towards. In addition, because of multicollinearity issues, the elements of institutional quality are regressed one at

Table 4: Impact of institutional quality on firm leverage

2003:2022	Model 1a (EFI)	Model 1b (ROL)	Model 1c (CC)	Model 1d (RQ)	Model 1e (LRI)	Model 1f (IP)	Model 1g (PSCGDP)	Model 1h (SMCGDP)
	Coeff (SE)	Coeff (SE)	Coeff (SE)	Coeff (SE)	Coeff (SE)	Coeff (SE)	Coeff (SE)	Coeff (SE)
Dependent Variable: Total Debt / Total Assets								
TD/TA (lagged)	0.53715*** (0.06171)	0.53421*** (0.06221)	0.54307*** (0.06322)	0.53458*** (0.06183)	0.58187*** (0.07492)	0.52612*** (0.07107)	0.53461*** (0.06095)	0.55390*** (0.05494)
EFI	-0.21672*** (0.08294)							
ROL		0.03318 (0.06074)						
CC			-0.08400 (0.06877)					
RQ				-0.03238 (0.05932)				
LRI					-0.01022 (0.01874)			
IP						-0.03979 (0.05225)		
PSCGDP							0.00061 (0.02507)	
SMCGDP								-0.00858* (0.00469)
GDP growth	-0.15746*** (0.05823)	-0.15350** (0.06116)	-0.15110** (0.05915)	-0.15580** (0.06239)	0.16264** (0.06479)	0.00808 (0.06645)	-0.14857** (0.06209)	-0.19686 (0.12072)
Interest	0.02651 (0.02428)	0.03110 (0.02583)	0.02655 (0.02511)	0.03289 (0.02650)	0.01982 (0.02441)	0.00703 (0.02684)	0.03049 (0.02530)	-0.03579 (0.07006)
Size	0.01383 (0.01153)	0.01417 (0.01160)	0.01124 (0.01148)	0.01278 (0.01260)	0.00708 (0.01241)	0.02001 (0.12965)	0.01490 (0.01185)	0.02737 (0.01765)

Tangibility	0.13270***	0.13317***	0.13575***	0.13735***	0.18239***	0.14377***	0.13257***	0.20115***
	(0.04632)	(0.04442)	(0.04650)	(0.04693)	(0.04500)	(0.04089)	(0.04503)	(0.04305)
Growth	0.00762	0.00767	0.00842	0.00857	0.01461*	0.00892	0.00770	0.02067***
	(0.00622)	(0.00611)	(0.00626)	(0.00639)	(0.00751)	(0.00651)	(0.00632)	(0.00790)
2003:2022	**Model 1a (EFI)**	**Model 1b (ROL)**	**Model 1c (CC)**	**Model 1d (RQ)**	**Model 1e (LRI)**	**Model 1f (IP)**	**Model 1g (PSCGDP)**	**Model 1h (SMCGDP)**
	Coeff (SE)	**Coeff (SE)**	**Coeff (SE)**	**Coeff (SE)**	**Coeff (SE)**	**Coeff (SE)**	**Coeff (SE)**	**Coeff (SE)**
Dependent Variable: Long term Debt / Total Assets								
LTD/TA (lagged)	0.54385***	0.54098***	0.54953***	0.54376***	0.51333***	0.51678***	0.54214***	0.52328***
	(0.04890)	(0.04925)	(0.05007)	(0.05077)	(0.06594)	(0.05525)	(0.04877)	(0.05660)
EFI	-0.07952							
	(0.07182)							
ROL		-0.02883						
		(0.04667)						
CC			-0.06412					
			(0.04631)					
RQ				-0.01834				
				(0.04762)				
LRI					-0.01141			
					(0.01644)			
IP						-0.03302		
						(0.04605)		
PSCGDP							-0.00196	
							(0.02007)	
SMCGDP								-0.00235
								(0.00389)
GDP growth	-0.10135*	-0.08270	-0.08895*	-0.09423**	0.08462	0.05528	-0.10002*	-0.06463
	(0.05234)	(0.05063)	(0.04945)	(0.05218)	(0.06713)	(0.06058)	(0.05383)	(0.10031)
Interest	0.02153	0.02131	0.01953	0.02122	0.00525	0.00447	0.02293	0.01915
	(0.02153)	(0.02098)	(0.02121)	(0.02018)	(0.02513)	(0.02211)	(0.02120)	(0.04450)

Size	0.00076 (0.00721)	0.00095 (0.00750)	-0.00061 (0.00765)	0.00032 (0.00802)	-0.00054 (0.00887)	-0.00050 (0.00734)	0.00147 (0.00770)	0.02158** (0.01030)
Tangibility	0.13044*** (0.02864)	0.12878*** (0.02870)	0.13410*** (0.02794)	0.13195*** (0.02864)	0.16616*** (0.03641)	0.15046*** (0.02686)	0.13021*** (0.02870)	0.18552*** (0.04157)
Growth	0.00944* (0.00529)	0.00931* (0.00538)	0.00974* (0.00531)	0.00959* (0.00524)	0.01704** (0.00718)	0.01212* (0.00640)	0.00919* (0.00536)	0.01609** (0.00704)
2003:2022	**Model 1a (EFI)**	**Model 1b (ROL)**	**Model 1c (CC)**	**Model 1d (RQ)**	**Model 1e (LRI)**	**Model 1f (IP)**	**Model 1g (PSCGDP)**	**Model 1h (SMCGDP)**
	Coeff (SE)	**Coeff (SE)**	**Coeff (SE)**	**Coeff (SE)**	**Coeff (SE)**	**Coeff (SE)**	**Coeff (SE)**	**Coeff (SE)**
Dependent Variable: Short term Debt / Total Assets								
STD/TA (lagged)	0.46874*** (0.04428)	0.46745*** (0.04368)	0.46983*** (0.04508)	0.46879*** (0.04441)	0.47611*** (0.04467)	0.48959*** (0.04760)	0.46780*** (0.04437)	0.48587*** (0.04549)
EFI	-0.12620* (0.06884)							
ROL		0.01147 (0.04257)						
CC			-0.02457 (0.04254)					
RQ				0.00266 (0.03997)				
LRI					0.02815* (0.01643)			
IP						-0.04833 (0.04877)		
PSCGDP							0.00330 (0.01736)	
SMCGDP								-0.00241 (0.00366)
GDP growth	-0.00688 (0.04212)	0.00333 (0.04389)	0.00629 (0.04111)	0.00370 (0.04135)	-0.03008 (0.05957)	0.01348 (0.05647)	0.00138 (0.04124)	-0.11083 (0.09210)

Interest	0.03418* (0.01777)	0.04006** (0.01778)	0.03853** (0.01770)	0.03896** (0.01821)	0.05632*** (0.02061)	0.05217*** (0.01880)	0.03762** (0.01813)	-0.00637 (0.04899)
Size	0.00660 (0.00635)	0.00516 (0.00633)	0.00447 (0.00611)	0.00540 (0.00643)	0.00645 (0.00681)	0.00066 (0.00667)	0.00528 (0.00618)	0.00582 (0.01210)
Tangibility	-0.00756 (0.02314)	-0.00919 (0.02326)	-0.00923 (0.02342)	-0.00817 (0.02342)	0.00483 (0.02201)	-0.00353 (0.02024)	-0.00882 (0.02294)	0.01006 (0.03026)
Growth	-0.00235 (0.00294)	-0.00192 (0.00295)	-0.00170 (0.00296)	-0.00193 (0.00305)	-0.00120 (0.00331)	-0.00028 (0.00329)	-0.00221 (0.00291)	0.00292 (0.00417)

This table represents the system-GMM two-step estimation results using Total Debt / Total Assets, Long-term Debt / Total Assets and Short-term Debt / Total Assets for 5,488 firm-year observations from five African countries for the period 2003 to 2022. Financial firms are excluded. Refer to Table 1 for the definition of variables and measurements. All firm-level variables are trimmed at their 1st and 99th percentiles. Models 1a-1h analyse the effect of the Economic Freedom Index (EFI), Rule of Law (ROL), Control of Corruption (CC), Regulatory Quality (RQ), Private sector credit to GDP (PSCGDP), Stock Market Capitalisation to GDP (SMCGDP), Legal Rights Index (LRI) and Investor Protection (IP) respectively, after controlling for firm- and country-level variables. Asterix indicate significance (***p<0.01; **p<0.05; *p<0.1). The standard errors (in parenthesis) of the two-step system-GMM model are WC-robust.

time to determine its effect on leverage (models 1a to 1h), and the impact of each component is recorded.

The empirical results confirm that based on the sample, only the EFI (which is also used as a proxy for overall institutional quality) and the significance of the stock market have a statistically significant negative effect on total leverage, where a unit increase in the EFI translates to a 22% decrease in total leverage. Four of the six remaining measures – namely control of corruption, regulatory quality, legal rights index and investor protection – also have a negative effect on total leverage, albeit insignificant. Additionally, the EFI has a significant, but smaller, negative impact on short-term debt (a one unit increase in EFI results in a 13% decrease in short-term leverage), whereas the legal rights index has a significant positive effect. The other measures of institutional quality have insignificant effects on short-term debt, some positive and some negative, while all the institutional quality factors have negative but insignificant effects on long-term leverage. These results are consistent with Matemilola et al. (2019) who find that the effect of institutional quality on capital structure for firms from African countries is mostly insignificant, demonstrating that institutional quality may have little impact on debt ratios in Africa.

On the other hand, these results are inconsistent with hypothesis 1, based on the trade-off theory, which states that there is a significant positive relationship between institutional quality and leverage, specifically long-term leverage. This assumes that lenders are more willing to grant debt financing to firms as developing countries' institutional quality improves. Although lenders may be more willing to grant credit to firms in countries with stronger institutional quality due to greater economic predictability and lower perceived risk, it appears that entities in Africa seem to prefer to finance their activities through equity or internal funding which are less risky, rather than taking on significant amounts of debt. Therefore, the first hypothesis is rejected.

In addition, and consistent with La Porta et al. (1997), countries with strong institutional quality, specifically in terms of legal rules, investor protection and quality of law enforcement, are likely to have better access to capital markets. This means that businesses can obtain funding on more favourable terms, such as lower interest rates and longer maturities, resulting in less need to rely heavily on debt financing and leading to lower overall debt levels.

Strong institutional quality is also associated with better-developed financial markets, including stock markets. In line with the results of this study, where the significance of the stock market has a significant negative impact on total leverage, and according to Chipeta and Deressa (2016), the most developed stock markets of Sub Saharan Africa tend to have lower mean debt ratios, which could be due to these firms having alternate sources of capital in the form of equity. In such environments, firms may find it easier to raise equity capital or secure long-term financing from sources other than debt, and this reduced reliance on debt for long-term financing can lead to lower long-term leverage levels.

This study also demonstrates that the EFI has a significant, negative impact on short-term debt, which is consistent with the findings of Fan et al. (2012), who conclude that firms in more corrupt countries and those with weaker laws tend to use more debt, especially short-term debt. Countries with lower institutional quality often face challenges in establishing credibility and trustworthiness, due to an environment of uncertainty and instability. Lenders may be hesitant to offer long-term financing to entities operating in these environments, due to risk of default and issues with the enforcement of contractual agreements. Borrowers, on the other hand, may resort to short-term debt, as it entails shorter repayment periods and avoids long-term commitments that may be subject to unpredictable changes in regulations or economic conditions. Furthermore, since short-term debt matures relatively quickly, it provides borrowers with more flexibility to adapt to changing circumstances.

4.4.2 Other country-specific factors

Country-specific factors, namely GDP growth rate and interest, consistently affect the debt ratios, which is in line with previous findings in the literature (Gleason et al., 2000; Barry et al., 2008; Cook & Tang, 2010). According to this study, GDP growth rate has a mostly significant negative impact on both the total- and long-term debt structure, whereas interest has a predominantly significant positive effect on short-term debt. The impact of GDP growth on short-term debt and of interest on total- and long-term debt are statistically insignificant.

Higher GDP growth rates can lead to higher revenue and profit generation capacity of businesses; thus, providing them with greater internal funds to finance operations and investments, and thereby reducing their reliance on debt. In addition, higher GDP growth rates also signal stability, which can reduce borrowing costs and increase access to capital markets, especially over the long-term. As a result,

entities may be able to secure debt financing on more favourable terms, leading to lower leverage levels.

Rising interest rates, on the other hand, could incentivise lenders to provide short-term loans due to the prospect of higher returns. In an environment of increasing interest rates, lenders may demand higher yields on short-term debt to compensate for the higher risk of lending in a rising rate environment. In addition, borrowers may be reluctant to enter into long-term financing agreements when interest rates are on the increase, and therefore opt for short-term financing instead.

4.4.3 Firm-specific factors

When looking at firm-specific factors, based on the results of this study, tangibility has a statistically significant positive impact on both total- and long-term leverage, but a predominantly insignificant negative effect on short-term leverage. Because tangible assets can serve as collateral for loans and provide lenders with security in the case of default, firms with higher levels of tangibility may find it easier to obtain debt financing, especially long-term debt, resulting in higher debt levels. Furthermore, some industries require significant investments in tangible assets, such as manufacturing or construction. Firms operating in these sectors may have higher tangibility, along with long-term debt to finance the acquisition and maintenance of these assets.

Firm growth, and in a few instances firm size, also influence long-term leverage positively and significantly, but don't appear to have a significant effect on short-term debt structures. Growing firms often require substantial investments in capital expenditures, research and development, or expansion of production capacity to capitalize on growth opportunities. Because these firms require funding over an extended period, mostly long-term debt is used as a source of financing. Furthermore, by using long-term debt to finance growth, firms can match the maturity structure of their debt with the expected life of the assets being financed. In addition, larger firms typically have greater access to capital markets and a broader range of financing options compared to smaller firms. The trade-off theory predicts that the size of a firm is positively related to debt as bigger companies are more stable and as a result, less likely to go bankrupt. Larger companies also have a wider range of capabilities and can benefit from economies of scale (Frank & Goyal, 2003; Salim & Yadav, 2012), which can reduce their overall cost of capital.

4.4.4 Robustness test

As a robustness test, the tests are repeated for four periods of five years, to examine whether the impact of institutional quality on leverage changes over time by analysing each interval and comparing them across periods. When the same analysis is run per 5-year period (refer to Table A3 in the appendix), with the EFI as a proxy for overall institutional quality, the results are similar for total debt as the dependent variable, in that the impact of institutional quality is negative for three of the four periods, although it appears to be mostly insignificant. Only for the period 2018 to 2022 is the impact of EFI on total debt statistically significant, and a one unit increase in EFI translates to a 60% decrease in total leverage. When determining the impact of EFI on long-term debt as the dependent variable, however, the results show that the effect of EFI is mostly positive, which is not in line with the results of the total sample. Only the period 2008 to 2012 shows the impact of EFI on long-term leverage as being statistically significant. It is important to note, however, that the specification tests are not met for the period 2008 to 2012, where total leverage is the dependent variable (Sargan test and AR(2)), as well as for the period 2013 to 2017, where long-term debt is the dependent variable (Sargan test).

A possible explanation for the significant and positive impact of institutional quality on long-term leverage for the period 2008 to 2012 is that countries with higher institutional quality are more robust which provides a buffer against economic shocks. During the GFC and its aftermath, countries with strong institutional quality were generally better able to withstand the turmoil in financial markets and maintain access to long-term credit.

The results for all other country-specific variables and firm-specific variables that have a statistically significant impact on either total- or long-term leverage are in line with the results of the 20-year sample.

4.5 The impact of capital structure on firm financial performance

The results of the impact of capital structure on African firm financial performance are reported in Table 5.

Table 5: Direct impact of firm leverage and indirect impact of institutional quality on financial performance

2003:2022	Model 2a (TD)	Model 2b (LTD)	Model 2c (STD)	Model 3a (TD)	Model 3b (LTD)	Model 3c (STD)
	Coeff (SE)	Coeff (SE)	Coeff (SE)	Coeff (SE)	Coeff (SE)	Coeff (SE)
Dependent Variable: Return on Assets						
ROA (lagged)	0.20609*** (0.04629)	0.21876*** (0.04562)	0.22095*** (0.04604)	0.20612*** (0.04633)	0.21865*** (0.04522)	0.22085*** (0.04595)
TD	-0.14942*** (0.03774)			-0.15979 (0.32690)		
LTD		-0.10619** (0.05317)			-0.31983 (0.47915)	
STD			-0.17243*** (0.04179)			0.05677 (0.28599)
EFI*TD				0.02124 (0.55569)		
EFI*LTD					0.36799 (0.83022)	
EFI*STD						-0.41286 (0.49310)
GDP growth	0.27978*** (0.06612)	0.28554*** (0.06826)	0.29839*** (0.06880)	0.27975*** (0.06598)	0.28168*** (0.06885)	0.29436*** (0.06968)
Interest	-0.13792*** (0.02802)	-0.14119*** (0.02856)	-0.13792*** (0.02825)	-0.13596*** (0.02751)	-0.13777*** (0.02828)	-0.13975*** (0.02799)
Size	0.00635 (0.02024)	0.00111 (0.01930)	-0.00017 (0.01977)	0.00638 (0.02003)	0.00216 (0.01933)	-0.00081 (0.01974)
Tangibility	0.01365 (0.05502)	-0.00477 (0.05443)	-0.00826 (0.05553)	0.01175 (0.05403)	-0.00957 (0.05294)	-0.00838 (0.05608)
Growth	0.00915 (0.00789)	0.01035 (0.00795)	0.00909 (0.00781)	0.00902 (0.00775)	0.01040 (0.00791)	0.00910 (0.00784)

This table represents the system-GMM two-step estimation results using Return on Assets for 5,488 firm-year observations from five African countries for the period 2003 to 2022. Financial firms are excluded. Refer to Table 1 for the definition of variables and measurements. All firm-level variables are trimmed at their 1st and 99th percentiles. Models 2a-2c analyse the effect of the Total Debt / Total Assets, Long-term Debt / Total Assets and Short-term Debt / Total Assets respectively, while models 3a-3c include an interaction term, after controlling for firm- and country-level variables. Asterix indicate significance (***p<0.01; **p<0.05; *p<0.1). The standard errors (in parenthesis) of the two-step system-GMM model are WC-robust.

4.5.1 Capital structure (leverage)

The regressions to test the effect of the three measures of leverage on firm financial performance in line with Hypothesis 2, are run according to equation 2. The second hypothesis is accepted, as the results indicate that all three measures of capital structure have a significant negative effect on financial performance, when financial performance is measured as ROA. When financial performance is measured as Tobin's Q, on the other hand, the specification tests are not met, and these models have therefore been dropped from the study. The results of these specification tests are included in Table A2 of the appendix.

Based on the results, a one unit increase in total-, long-term and short-term leverage translates to a 15%, 11% and 17% decrease in ROA, respectively. These findings are in line with the pecking order theory, as well as the second hypothesis, which states that firms' leverage has a significant negative effect on its financial performance.

The results are also consistent with previous research, especially studies on emerging economies (Abor, 2005; Sadeghian et al., 2012; Siddik et al., 2017). Siddik et al. (2017) conclude that there are significant negative impacts of all capital structure variables – namely total-, long-term and short-term leverage – on the performance of Bangladeshi banks. In addition, they suggest that these negative impacts can be explained by the characteristics of an underdeveloped bond and equity market in developing countries like Bangladesh, for which there exists a high cost of debt. In their study, Sadeghian et al. (2012) also conclude a negative relationship between firms' capital structure and its performance, especially for total- and short-term debt. They propose that based on their study, there are other factors which may also affect a firm's performance and therefore does not mean that the firm should decrease debt in order to improve financial performance. On the other hand, it appears that firms attempt to increase their debt ratio and move toward an optimised ratio of debt to equity.

A further explanation as to why leverage can have a negative impact on firm financial performance is due to high interest costs which reduce a firm's net income, especially in countries with poor institutional quality where economic growth risk is perceived as high. Increased debt levels also raise the financial risk of a firm, and if the firm is unable to meet its debt obligations, it may face bankruptcy

or financial distress. As a result, lenders may impose strict terms or higher interest rates on the firm's debt, which could further exacerbate financial difficulties.

High debt levels are also often perceived as unfavourable by investors and stakeholders, as they are viewed as a sign of financial weakness or instability. This can therefore lead to a decline in the firm's share price and difficulty in attracting investment capital, resulting in a decrease in the value of the firm.

4.5.2 Other country-specific factors

Considering the effect of the control variables on firm performance for this study, shows that the country-specific variables have a significant impact on firm performance, with GDP growth displaying a positive impact and interest a negative effect.

Economic growth usually leads to higher consumer spending and investment, driving up demand for goods and services. As a result, firms experience increased revenues, which can contribute to improved financial performance, including higher profits and margins. Positive GDP growth can also boost investor confidence, leading to an increase in investment. Firms may, in turn, benefit from increased business investment and higher stock prices, both of which can contribute to improved financial performance and firm value.

As discussed above, high interest payments relative to earnings as a result of increased debt levels, can lead to lower net income and profitability. This will, in turn, have a negative effect on financial performance ratios such as ROA and ROE and is in line with the impact of an increase in leverage on financial performance. In addition, firms may face an opportunity cost because of higher interest payments. By allocating resources towards servicing debt, firms may forego opportunities to expand operations or improve efficiency that could contribute to long-term growth and profitability.

4.5.3 Firm-specific factors

The results of the study show that firm-specific control variables – such as firm size, tangibility and firm growth – however, do not seem to display any significant impact on firm performance.

4.5.4 Robustness test

As a robustness test, the same model is then run for each of the 5-year periods to test whether the impact of total- and long-term debt on ROA (refer to Table A4 in the appendix) changes over time. The effect of total leverage on firm performance is consistent with the results above, being negative for all the periods and statistically significant in three of the four periods. The impact on long-term debt is also mostly negative, although only significant in one of the four periods.

Also consistent with the results for the full sample period, country-specific variables such as GDP growth rate and interest have a positive and negative impact respectively on firm performance, which is generally statistically significant.

In the full sample period, firm-specific factors did not appear to display any significant impact on firm performance. However, when the 20-year period is broken down into 5-year periods, firm size, tangibility and firm growth appear to have a statistically significant impact on ROA in some of the periods.

The results show that firm size has a significant positive impact on financial performance in the period 2008 to 2012, but a significant negative impact on financial performance in the 2013 to 2017 period. This may be because, during the GFC of 2008 to 2009 and its aftermath, larger firms benefited from economies of scale, allowing them to spread fixed costs over a larger revenue base, resulting in higher profit margins and improved financial performance. Furthermore, larger firms often have greater access to financial resources, such as capital markets, bank financing and internal funds. This may have provided them with a competitive advantage during the period of economic uncertainty, enabling them to withstand market volatility. On the other hand, in the post-recession period (2013 to 2017), some industries may have experienced market saturation or increased competition, making it challenging for larger firms to sustain growth and profitability, leading to a decrease in financial performance. Smaller competitors may also have entered the market, eroding the market share of larger companies. This reasoning also supports the results which show that tangibility has a statistically significant negative impact on financial performance in 2013 to 2017, whereas firm growth displays a significant positive effect for the same period.

4.6 The indirect impact of institutional quality on firm financial performance

In addition to the tests above and in order to test Hypothesis 3, the indirect effect of institutional quality on firm performance is investigated as part of this study, to determine the role institutional quality plays in influencing the link between leverage and the financial performance of firms. The model is run in accordance with equation 3. These indirect effects are investigated by interacting institutional quality (namely the EFI component, used as a proxy for an overall institutional quality factor) with the leverage components, to determine whether the effect on firm performances changes the results recorded previously.

The empirical results for the full sample, as recorded in Table 5, show that the coefficient on the interaction terms (of the economic freedom index and leverage measures) are positive for both total- and long-term debt albeit insignificant, and negatively insignificant for short-term debt. These results indicate that institutional quality may have an impact in influencing the effects of total- and long-term leverage on financial performance but doesn't seem to play a part in mitigating the effect of short-term debt on financial performance of firms in Africa. This confirms hypothesis 3 for total- and long-term debt, which states that institutional quality has an effect as an intervening variable mediating the influence of capital structure on a firm's financial performance, and the third hypothesis is therefore accepted. In addition, the results show that the magnitude of the interaction term's coefficient for long-term debt (37% impact) is greater than for total debt (2% impact), which indicates that the interaction effect is stronger for long-term debt.

The results of this study confirm that institutional quality may play a part in influencing the relationship between leverage and financial performance, through the legal, regulatory and governance frameworks within which firms operate. Stronger institutional quality provides a supportive environment for firms to use leverage prudently and responsibly, thereby mitigating the negative effects of debt on financial performance.

For example, countries with strong institutional quality typically provide better legal protection for creditors and investors (La Porta et al., 1997). In such environments, firms can use leverage with greater confidence, knowing that their rights as borrowers or lenders are protected. This reduces the

risk of default and lowers the cost of debt financing, which can positively impact financial performance.

Furthermore, a country's institutional quality can influence firms' access to capital markets and the cost of capital (La Porta et al., 1997). In countries with strong institutional frameworks, firms are more likely to have access to a diverse range of financing sources, including equity markets, bond markets, and bank loans. This access to capital markets provides firms with alternative funding options and reduces their reliance on debt financing. Lower borrowing costs are also associated with strong institutions which can have a positive impact on firms' financial performance.

Good corporate governance practices, including transparency, accountability and ethical conduct, can mitigate agency problems between managers and shareholders (Doidge et al., 2007). This, in turn, reduces the likelihood of excessive risk-taking or value-destroying activities associated with high leverage. Well-governed firms, therefore, are more likely to use leverage prudently and allocate capital efficiently, leading to improved financial performance.

4.6.1 Robustness test

When looking at the indirect impact of institutional quality on financial performance for each of the 5-year periods (as per Table A5 in the appendix), the results show the same positive impact of the interaction term on financial performance as the full sample, for the periods 2008 to 2012 (the GFC and its aftermath) and 2018 to 2022 (which includes the effects of the Covid-19 pandemic) for both total- and long-term debt. This confirms that institutional quality may play a part in mitigating the negative effect of debt on financial performance, especially during crisis times. In addition, the coefficient is quite large for the period of the GFC, indicating that the magnitude of the impact is greater during this period, than during the last 5-year period. The interaction term is negative, however, for the other two periods for both total- and long-term debt respectively, demonstrating that institutional quality doesn't seem to play a role in moderating the impact of debt on financial performance during these periods.

According to the literature, factors that portray the economic environment, also affect variables such as firm performance (Dollar et al., 2005; Commander & Svejnar, 2011). Countries with stronger institutional quality are better positioned to withstand economic shocks and manage debt levels in a

sustainable manner, thereby alleviating the negative impact on financial performance. These countries are often able to respond more effectively to crises through coordinated policy actions – such as fiscal stimulus, monetary policy adjustments, or targeted interventions to support the financial system – which can help cushion the impact of debt on financial performance during crises. An example of this is where a reduction in the interest rate of a country will have a positive impact on the financial performance of firms, especially those with substantial debt.

4.7 Results of specification tests

The diagnostic tests on the two-step system GMM (as reported in Table A2 of the appendix) for the total 20-year sample show that the models pass the AR(2) tests (other than model 1e with total debt as the dependent variable), as indicated by the insignificant p-values. This demonstrates the absence of second-order serial correlation in the models.

Furthermore, the Sargan (1958) test p-values are also insignificant for model 1 of the 20-year sample, proving the validity of the instruments used in these models. In addition, the p-values of the Sargan (1958) test are insignificant for models 2 and 3, with ROA as the dependent variable. However, when running these models with Tobin's Q as the dependent variable, the p-values are significant, showing that the diagnostic test has not been met. Therefore, these regressions have been excluded from the study.

The Wald test p-values are significant, demonstrating that the set of variables add value to the model, and therefore this specification test is met for all models.

4.8 Summary

This chapter presents the results of the data analysis based on the research methods discussed in the previous chapter. The descriptive statistics for the variables used in this research are presented and the correlation coefficients discussed. The results of the regressions are presented for each empirical model and discussed in line with the research objectives and hypotheses of the study.

Based on the findings above, institutional quality (when using the EFI as a composite measure) has a statistically significant negative effect on total- and short-term leverage of firms in Africa, and an

insignificant negative impact on long-term leverage. Overall, institutional quality appears to have a negative impact on leverage when using various other measures, however the tests are mostly statistically insignificant. This is consistent with Matemilola et al. (2019) who find that the effect of institutional quality on capital structure for firms from African countries is mostly insignificant.

Additionally, all three measures of capital structure appear to have a significant negative effect on firms' financial performance, which is also consistent with previous research, especially studies on emerging economies. Furthermore, institutional quality appears to play a part in mitigating the negative effects of total- and long-term leverage on firms' financial performance but doesn't seem to have an impact on the effect of short-term debt, however, these results are insignificant.

The following chapter concludes the research by summarising the research methodology and the main findings. In addition, the contributions of the research are discussed, and the limitations of the study are identified.

CHAPTER 5: SUMMARY AND CONCLUSION

5.1 Introduction

The major findings of this study are summarised in this chapter. The first two sections following this introduction summarise the research methodology and the main research findings. The fourth part highlights the research contributions, while the section thereafter identifies the main implications of this study regarding the impact of institutional quality on capital structure decisions of firms, and the effect of these choices. The chapter concludes with the limitations of this research study and consequently opportunities for future research, as well as a summary.

5.2 Summary of research methodology

This research is designed to empirically investigate the impact of the institutional quality of various African countries on firm leverage, as well as the impact of these capital structure decisions on the firms' financial performance and ultimately its value. This study also looks at the role institutional quality plays in influencing the link between leverage and the financial performance of firms. Three models are established to test the three hypotheses.

The samples used for testing these models are derived from those companies listed on the stock markets of selected African countries. Firms in the financial and banking sectors are excluded from this study as they have different characteristics than those in other sectors as they are naturally specialised. A final sample of 5,488 firm-year observations from five countries in Africa was obtained: 257 from Ghana, 455 from Kenya, 1,666 from Nigeria, as well as 2,558 South African and 552 Zimbabwean firms respectively.

The research covers a time period of 20 years from 2003 to 2022, and the Blundell and Bond (1998) system GMM is used as the method for testing these hypotheses.

5.3 Research findings

The empirical examination of the hypotheses reveals a mixed set of results. The findings of the research hypotheses are summarised below:

According to hypotheses 1, there is a significant positive relationship between institutional quality and leverage, especially long-term leverage. The trade-off theory argues that a firm's decision to use more debt is the result of the trade-off between the costs (e.g. bankruptcy costs) and the benefits (interest tax-shield) of debt. Therefore, as developing countries' institutional quality improves, lenders are more willing to grant credit to firms, and as a result, firms in developing countries with strong institutions are likely to increase debt. This is because as better institutional quality encourages lenders to lend money, it lowers bankruptcy costs, resulting in firms using more debt to capitalise on tax-shield benefits of debt interest. One can, therefore, expect that institutional quality has a positive direct effect on listed firms' debt ratios in developing countries. Additionally, the theoretical framework shows that the stronger a country's institutional quality, the easier the firm's access to long-term funds.

The results, however, show that based on the sample, only the EFI and the significance of the stock market have a significant effect on total leverage, but the impact is negative, not positive. The EFI also has a negative significant impact on short-term debt, whereas the legal rights index has a significant positive effect. The other measures of institutional quality have insignificant effects on total- and short-term debt, while all institutional quality indicators have insignificant effects on long-term leverage, and mostly negative. The first hypothesis is therefore rejected. The results are, however, consistent with Matemilola et al. (2019) who find that the effect of institutional quality on leverage for African firms is mostly insignificant, demonstrating that institutional quality may have little impact on debt ratios in Africa.

Hypothesis 2 states that firms' leverage has a significant negative effect on its financial performance. The trade-off theory, however, proposes a positive relationship between leverage and profitability, whereas a negative relationship between debt and profitability is consistent with the pecking order theory. As a firm increases its leverage, this could lead to an increase in the potential risk of financial distress, which could, in turn, result in a decrease in financial performance. Various empirical studies have, however, shown conflicting results.

The results of this study indicate that all three measures of leverage have a significant negative impact on firm performance, when firm performance is measured as ROA, which is consistent with hypothesis 2, and therefore this hypothesis is accepted. These findings are also in line with previous research on emerging economies (Abor, 2005; Siddik et al., 2017).

In the third model, hypothesis 3 predicts that institutional quality has an effect as an intervening variable mediating the influence of capital structure on a firm's financial performance. Previous research shows that stronger institutional quality and factors that define the economic environment, tend to be positively associated with firm value and financial performance (Demirgüç-Kunt & Maksimovic, 1998; Hasan et al., 2014). In addition, "good" institutions facilitate better firm performance.

According to the results of this study, the third hypothesis is accepted as institutional quality may moderate the negative effects of total- and long-term debt on the financial performance of firms, although it doesn't appear to play a part in mitigating the effects of short-term leverage. These results are, however, statistically insignificant.

5.4 Research contributions

This research is conducted to add to the existing literature by examining the relationship between institutional quality, capital structure and the financial performance of firms on select African stock markets, and whether this association changes over time. In addition, this research investigates the role institutional quality plays in influencing the relationship between leverage and financial performance. Various contributions emerge from this study.

The main contribution of this study is extending the literature on the impact of non-traditional influences of capital structure in Africa, and more specifically institutional quality factors. This study reveals that institutional quality has mostly a negative impact on capital structure, although insignificant, and therefore confirms the conclusion of previous studies, that institutional quality generally demonstrates little impact on debt ratios for firms in Africa. However, when EFI is used as a proxy for overall institutional quality, it has a negative significant impact on total- and short-term debt.

In addition, this study adds value to the literature by investigating the link between capital structure and firm performance in Africa, as the findings from previous studies provide conflicting results. Furthermore, most previous studies focus on developed countries, and therefore there is a shortage of research on the less-developed countries in Africa. There also exists a lack of literature on the role of institutional quality in influencing the relationship between leverage and financial performance,

specifically relating to firms in Africa, which this study addresses. The results of this study confirm that all three measures of leverage have a significant negative impact on firm performance, while institutional quality may play a role in mitigating the negative effects of total- and long-term debt on the financial performance of firms.

Capital structure decisions are very important for African firms, as these financing decisions have an impact on the firm's value, according to the study. Therefore, an optimal capital structure is crucial to improve firms' performance and value in the market, and as a result, attract new investors. Although this study finds that overall, the various dimensions of institutional quality have little impact on the debt ratios of firms in Africa, the study highlights other country-specific factors, especially GDP growth, and in some instances interest, that have a significant effect in influencing leverage. This is something that managers should consider when making financing decisions.

Finally, this research covers a twenty-year time period, from 2003 to 2022. This extended period was selected in order to determine if any changes in the financial behaviour of firms in Africa existed due to the GFC in 2008 and 2009 and the effects of the Covid-19 pandemic in 2020 to 2021. The descriptive statistics show that firms in Africa prefer equity over debt as a source of financing, and although this preference for equity hasn't changed over the two-decade period, the debt ratio is on the increase. Overall, the split between long-term and short-term debt is reasonably identical for the twenty-year period but moves more in favour of long-term debt over time. This increase in the debt ratio, and long-term debt in particular, is evidence of the growing need for capital among African firms to finance new projects and expansions. Because of the time period, this study reflects the most up-to-date situation and financial behaviour in Africa.

5.5 Research implications

Despite the potential limitations discussed below, this research provides several contributions to literature regarding the relationship between institutional quality, capital structure and firm performance. It documents evidence that some forms of institutional quality, and other country-specific factors, have an impact on determining the level of debt of firms in Africa. It also shows that these financing decisions ultimately impact the performance and value of the firm. This research helps

provide decision-makers of companies with the practical implications that would assist in creating shareholder wealth and attract potential investors, through the maximisation of the firm's value.

In addition, as many African countries are characterised by weak institutional quality, confirmed by the data from the study, policymakers in these countries should embark on institutional modifications that attempt to improve the quality of institutions to ensure that firms have easier access to debt. Improving the quality of institutions could potentially remove barriers to financing through debt, which could enhance the utilisation of financial resources in developing countries.

5.6 Research limitations

The limitations of this study are mostly empirical, mainly relating to the data and sample limitations. As mentioned previously, only listed firms from selected African stock markets are included in this study, as only listed firms are required to publish their financial results. As a result, the sample does not include small and medium sized companies and other non-listed companies, as well as non-performing companies which may have de-listed during the period (survivorship bias), which could have an impact on the results. In addition, only the data from five countries in Africa are included in the sample. Listed firms from other countries in Africa may also have an impact on the results of this study.

Furthermore, this study only uses ROA as a proxy for firm performance. When Tobin's Q is included as the dependent variable in the models, the p-values for the Sargan (1958) test are significant, and therefore these regressions are excluded from the study. Other firm performance variables, such as ROE or EPS, could produce different results.

In addition, the author elects to use the GMM in this study, as it is often used to overcome the issue of heterogeneity. The FE model, however, also overcomes heterogeneity, and if endogeneity is not present, the FE model may produce more accurate results when compared to the GMM. Therefore, the results of this study may also be impacted by the model used.

Nevertheless, this research reveals similar results to other research conducted previously, and therefore, despite its limitations, the findings and the adopted methodology of this study may lead to further research in this area.

5.7 Future research directions and recommendations

There are various ways in which this current study could possibly be extended. For example, there are other additional institutional quality attributes that may have an impact on capital structure, such as political stability or voice and accountability, which are not included in this study specifically. Furthermore, when investigating the role institutional quality plays in impacting the relationship between leverage and financial performance in the current study, EFI is used as a proxy for overall institutional quality. This could be extended by testing the role of other institutional quality factors, even those such as control of corruption or rule of law included in this study, as these may have a more significant impact in moderating the negative effect of leverage on financial performance.

Additionally, other recommendations for future directions regarding the sample used, would be to increase the sample size, mainly by including more African countries in the sample, or if possible, by incorporating small, medium and non-listed companies in the sample.

As mentioned previously, this study only uses ROA as a proxy for firm financial performance. Future research could also possibly explore the indirect effects of institutional quality on stock returns or other firm performance measures, such as EPS.

5.8 Summary

This chapter summarises and concludes the research. A summary of the research methodology and findings is presented, followed by the research contributions and a discussion of the implications of the current research. Finally, this chapter presents the potential limitations of the study and consequently highlights the possible opportunities for future research.

REFERENCES

Abdullah, H., & Tursoy, T. (2021). Capital structure and firm performance: evidence of Germany under IFRS adoption. *Review of Managerial Science 15(2)*, 379-398.

Abor, J. (2005). The effect of capital structure on profitability: An empirical analysis of listed firms in Ghana. *Journal of Risk Finance 6(2)*, 438-445.

Acemoglu, D., & Johnson, S. (2005). Unbundling institutions. *Journal of Political Economy 113(5)*, 949-995.

Acemoglu, D., Johnson, S., & Robinson, J. A. (2005). Institutions as a fundamental cause of long-run growth. *Handbook of Economic Growth 1*, 385-472.

Agca, S., De Nicolo, G., & Detragiache, E. (2013). Banking sector reforms and corporate leverage in emerging markets. *Emerging Markets Review 17*, 125-149.

Ahmed Sheikh, N., & Wang, Z. (2013). The impact of capital structure on performance: An empirical study of non-financial listed firms in Pakistan. *International Journal of Commerce and Management 23(4)*, 354-368.

Akintoye, I. R. (2008). Effect of capital structure on firms' performance: the Nigerian experience. *European Journal of Economics, Finance and Administrative Sciences 10(1)*, 233-243.

Al-Taani, K. (2013). The relationship between capital structure and firm performance: evidence from Jordan. *Journal of Finance and Accounting 1(3)*, 41-45.

Alvarez-Botas, C., & Gonzalez-Mendez, V. M. (2019). Corporate debt maturity and economic development. *International Journal of Managerial Finance 15(5)*, 669-687.

Alves, P. F., & Ferreira, M. A. (2011). Capital structure and law around the world. *Journal of Multinational Financial Management 21(3)*, 119-150.

Anderson, D. (1999). The aggregate burden of crime. *Journal of Law and Economics 42(2)*, 611-642.

Antoniou, A., Guney, Y., & Paudyal, K. (2002). The determinants of corporate capital structure: Evidence from European countries. *Working Paper, University of Durham*.

Antwi, S., Mills, E. F., & Zhao, X. (2012). Capital structure and firm value: Empirical evidence from Ghana. *International Journal of Business and Social Science 3(22)*, 103-111.

Arellano, M., & Bond, S. (1991). Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equations. *Review of Economic Studies 58*, 277-297.

Asongu, S. A., & Odhiambo, N. M. (2020). Challengs of doing business in Africa: A systematic review. *Contemporary Issues and Prospects in Business Development in Africa*, 105-114.

Ayalew, Z. A. (2021). Capital structure and profitability: Panel data evidence of private banks in Ethiopia. *Cogent Economics & Finance 9(1)*, 1953736.

Baker, M., & Wurgler, J. (2002). Market timing and capital structure. *Journal of Finance 57*, 1-32.

Baltagi, B. H. (2010). Fixed effects and random effects. *Microeconometrics*, 59-64.

Bancel, F., & Mittoo, U. R. (2004). Cross-country determinants of capital structure choice: a survey of European fims. *Financial Management*, 103-132.

Bany-Ariffin, A. N., Nor, F. M., & McGowan Jr, C. B. (2010). Pyramidal structure, firm capital structure exploitation and ultimate owners' dominance. *International Review of Financial Analysis 19(3)*, 151-164.

Barry, C. B., Mann, S. C., Mihov, V. T., & Rodriguez, M. (2008). Corporate debt issuance and the historical level of interest rates. *Financial Management 37(3)*, 413-430.

Beck, T., & Demirgüç-Kunt, A. (2008). Access to finance: An unfinished agenda. *The World Bank Economic Review 22(3)*, 383-396.

Beck, T., Demirgüç-Kunt, A., & Levine, R. (2010). Financial institutions and markets across countries and over time: The updated financial development and structure database. *The World Bank Economic Review 24(1)*, 77-92.

Berger, A. N., & Di Patti, E. B. (2006). Capital structure and firm performance: A new approach to testing agency theory and an application to the banking industry. *Journal of Banking & Finance 30(4)*, 1065-1102.

Bessler , W., Drobetz, W., & Gruninger, M. C. (2011). Information asymmetry and financing decisions. *International Review of Finance 11(1)*, 123-154.

Bevan, A. A., & Danbolt, J. (2002). Capital structure and its determinants in the UK - a decompositional analysis. *Applied Financial Economics 12(3)*, 159-170.

Bhaumik, S. K., & Dimova, R. (2014). Good and bad institutions: is the debate over? Cross-country firm-level evidence from the textile industry. *Cambridge Journal of Economics 38(1)*, 109-126.

Bhaumik, S. K., & Estrin, S. (2007). How transition paths differ: Enterprise performance in Russia and China. *Journal of Development Economics 82(2)*, 374-392.

Blundell, R., & Bond, S. (1998). Initial conditions and moment restrictions in dynamic panel data models. *Journal of Econometrics 87(1)*, 115-143.

Booth, L., Aivazian, V., Demirgüç-Kunt, A., & Maksimovic, V. (2001). Capital structure in developing countries. *Journal of Finance 56*, 87-130.

Bowen, H. P., & De Clercq, D. (2008). Institutional context and the allocation of entrepreneurial effort. *Journal of International Business Studies 39*, 747-767.

Brooks, C. (2014). *Introductory econometrics for finance, 3rd edition.* Cambridge, UK: University Printing House.

Chen, J. J. (2004). Determinants of capital structure of Chinese-listed companies. *Journal of Business Research 57(12)*, 1341-1351.

Cheng, M. C., & Tzeng, Z. C. (2011). The effect of leverage on firm value and how the firm financial quality influence on this effect. *World Journal of Management 3(2)*, 30-53.

Chipeta, C., & Deressa, C. (2016). Firm and country specific determinants of capital structure in Sub Saharan Africa. *International Journal of Emerging Markets 11(4)*, 649-673.

Chipeta, C., & Mbululu, D. (2013). Firm heterogeneity, macroeconomic conditions and capital structure adjustment speeds: Evidence from the JSE. *Investment Analysts Journal 42(77)*, 69-80.

Chipeta, C., Wolmarans, H. P., Vermaak, F. N., & Proudfoot, S. (2013). Structural breaks in the parameter estimates of the determinants of capital structure: Some evidence from the JSE. *Meditari Accountancy Research 21(1)*, 68-84.

Commander, S., & Svejnar, J. (2011). Business environment, exports, ownership and firm performance. *The Review of Economics and Statistics 93(1)*, 309-337.

Cook, D. O., & Tang, T. (2010). Macroeconomic conditions and capital structure adjustment speed. *Journal of Corporate Finance 16(1)*, 73-87.

Correia, C. (2019). *Financial Management 9th edition.* Claremont: Juta and Company (Pty) Ltd.

Cuong, N. T., & Canh, N. T. (2012). The effect of capital structure on firm value for Vietnam's seafood processing enterprises. *International Research Journal of Finance and Economics 89(89)*, 221-233.

Dawar, V. (2014). Agency theory, capital structure and firm performance: some Indian evidence. *Managerial Finance 40(12)*, 1190-1206.

De Jong, A., Kabir, R., & Nguyen, T. T. (2008). Capital structure around the world: the roles of firm and country specific determinants. *Journal of Banking and Finance 32(9)*, 1954-1969.

DeAngelo, H., & Masulis, R. W. (1980). Optimal capital structure under corporate and personal taxation. *Journal of Financial Economics 8(1)*, 3-29.

Demirgüç-Kunt, A., & Maksimovic, V. (1998). Law, finance and firm growth. *Journal of Finance 53*, 2107-2137.

Demirgüç-Kunt, A., & Maksimovic, V. (1999). Institutions, financial markets and firm debt. *Journal of Financial Economics 54*, 295-336.

Doh, J. P., Rodriguez, P., Uhlenbruck, K., Collins, J., & Eden, L. (2003). Coping with corruption in foreign markets. *Academy of Management Perspectives 17(3)*, 114-127.

Doidge, C., Karolyi, G. A., & Stulz, R. M. (2007). Why do countries matter so much for corporate governance? *Journal of Financial Economics 86(1)*, 1-39.

Dollar, D., Hallward-Driemier, M., & Mengistae, T. (2005). Investment climate and firm performance in developing countries. *Economic Development and Cultural Change 54(1)*, 1-31.

El-Sayed Ebaid, I. (2009). The impact of capital-structure choice on firm performance: empirical evidence from Egypt. *The Journal of Risk Finance 10(5)*, 477-487.

Fama, E. F., & French, K. R. (2002). Testing trade-off and pecking order predictions about dividends and debt. *The Review of Financial Studies 15(1)*, 1-33.

Fama, E. F., & French, K. R. (2005). Financing decisions: Who issues stock? *Journal of Financial Economics 76(3)*, 549-582.

Fama, E. F., & French, K. R. (2011). Capital structure choices. *Available at SSRN 1120848.*

Fan, J. P., Rui, O. M., & Zhao, M. (2008). Public governance and corporate finance: Evidence from corruption cases. *Journal of Comparative Economics 36(3)*, 343-364.

Fan, J. P., Titman, S., & Twite, G. (2012). An international comparison of capital structure and debt maturity choices. *Journal of Financial and Quantitative Analysis 47(1)*, 23-56.

Foster, M., & Young, M. (2010). Capital Structure Determinants in Emerging Markets. *Journal of Applied Financial Research*.

Frank, M. Z., & Goyal, V. K. (2003). Testing the pecking order theory of capital structure. *Journal of Financial Economics 67(2)*, 217-248.

Frank, M. Z., & Goyal, V. K. (2009). Capital structure decisions: Which factors are reliably important? *Financial Management 32*, 1-37.

Ganguli, S. K., & Agrawal, S. (2009). Ownership structure and firm peformance: An empirical study on listed mid-cap Indian companies. *IUP Journal of Applied Finance 15(12)*, 37-52.

Gaud, P., Jani, E., Hoesli, M., & Bender, A. (2005). The capital structure of Swiss companies: an empirical analysis using dynamic panel data. *European financial management 11(1)*, 51-69.

Gill, A., & Obradovich, J. D. (2013). Corporate governance, institutional ownership and potential growth of US firms. *International Journal of Business and Globalisation 10(3)*, 278-292.

Gleason, K. C., Mathur, L. K., & Mathur, I. (2000). The interrelationship between culture, capital structure, and performance: evidence from European retailers. *Journal of Business Research 50(2)*, 185-191.

Gomez, L. (2016). How does rule of law affect firm perfomance? Comparing the effect of rule of law in companies located in countries with different level of development. *Journal of Development Economics 85(2)*, 1-26.

Gwatidzo, T., & Ojah, K. (2014). Firms' debt choice in Africa: Are institutional infrastructure and non-traditional determinants important?. *International Reivew of Financial Analysis 31*, 152-166.

Gyimah-Brempong, K., & Traynor, T. L. (1999). Political instability, investment and economic growth in Sub-Saharan Africa. *Journal of African Eonomies 8(1)*, 52-86.

Hail, L., & Leuz, C. (2006). International differences in the cost of equity capital: Do legal institutions and securities regulation matter? *Journal of Accounting Research 44(3)*, 485-531.

Hall, A. R. (2005). *Generalized Method of Moments. Advanced Texts in Econometrics.* Oxford: Oxford University Press.

Hasan, B., Ahsan, M., Rahaman, A., & Alam, N. (2014). Influence of capital structure on firm performance: Evidence from Bangladesh. *International Journal of Business and Management 9(5)*, 184.

Hayat, A. (2019). Foreign direct investments, institutional quality and economic growth. *The Journal of International Trade & Eonomic Development 28(5)*, 561-579.

Helwege, J., & Liang, N. (1996). Is there a pecking order? Evidence from a panel of IPO firms. *Journal of Financial Economics 40(3)*, 429-458.

Hovakimian, A., Kayhan, A., & Titman, S. (2012). Are corporate default probabilities consistent with the static trade-off theory? *The Review of Financial Studies 25(2)*, 315-340.

Imran, S. M., Ur Rehman, H., & Khan, R. E. (2019). Determinants of corruption and its impact on firm performance: Global evidence. *Pakistan Journal of Commerce and Social Sciences (PJCSS) 13(4)*, 1017-1028.

Jaishi, B. (2020). Capital structure and its impact on financial performance in insurance companies of Nepal. *Journal of Nepalese Business Studies 13(1)*, 89-106.

Jensen, M. C. (1986). Agency costs of free cash flow, corporate finance, and takeovers. *The American Economic Review 76(2)*, 323-329.

Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: managerial behavior, agency costs and ownership structure. *Journal of Financial Economics 3*, 305-360.

Jouida, S. (2018). Diversification, capital structure and profitability: A panel VAR approach. *Research in International Business and Finance 45*, 243-256.

Karim, S., Rabbani, M. R., & Khan, M. A. (2021). Determining the key factors of corporate leverage in Malaysian service sector firms using dynamic modeling. *Journal of Economic Cooperation and Development 42(3)*, 1-20.

Khoa, K. D., & Thai, D. T. (2021). Capital structure and trade-off theory: Evidence from Vietnam. *The Journal of Asian Finance, Economics and Business 8(1)*, 45-52

Kieh Jr, G. K. (2009). The state and political instability in Africa. *Journal of Developing Societies 25(1)*, 1-25.

Korajczyk, R. A., & Levy, A. (2003). Capital structure choice: macroeconomic conditions and financial constraints. *Journal of Financial Economics 68(1)*, 75-109.

Kraus, A., & Litzenberger, R. (1973). A state-preference of optimal capital structure and corporate debt capacity. *Journal of Finance 33*, 45-63.

Kumar, S., Colombage, S., & Rao, P. (2017). Research on capital structure determinants: a review and future directions. *International Journal of Managerial Finance 13(2)*, 106-132.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R.W. (1997). Legal determinants of external finance. *The Journal of Finance 52(3)*, 1131-1150.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. W. (1998). Law and finance. *Journal of Political Economy 106(6)*, 1113-1155.

La Rocca, M., La Rocca, T., & Cariola, A. (2011). Capital structure decisions during a firm's life cycle. *Small Business Economics 37*, 107-130.

Langbein, L., & Knack, S. (2010). The worldwide governance indicators: six, one or none? *The Journal of Development Studies 46(2)*, 350-370.

Law, S. H., Tan, H. B., & Azman-Saini, W. N. (2014). Financial development and income inequality at different levels of institutional quality. *Emerging Markets Finance and Trade 50(1)*, 21-33.

Leal, P. H., & Marques, A. C. (2021). The environmental impacts of globalisation and corruption: Evidence from a set of African countries. *Environmental Science & Policy 115*, 116-124.

Leary, M. T., & Roberts, M. R. (2005). Do firms rebalance their capital structures? *Journal of Finance 60(6)*, 2575-2619.

Leary, M. T., & Roberts, M. R. (2010). The pecking order, debt capacity, and information asymmetry. *Journal of Financial Economics 95(3)*, 332-355.

Lemma, T. T., & Negash, M. (2012). Debt maturity choice of a firm: evidence from African countries. *Journal of Business and Policy Research 7(2)*, 60-92.

Lemmon, M. L., Roberts, M. R., & Zender, J. F. (2008). Back to the beginning: persistence and the cross-section of corporate capital structure. *The Journal of Finance 63(4)*, 1575-1608.

Levine, R. (2004). *The corporate governance of banks: A concise discussion of concepts and evidence (Vol 3404).* World Bank Publications.

Li, H., Xu, L. C., & Zou, H. (2000). Corruption, income distribution and growth. *Economics and Politics 12(2)*, 155-182.

Li, K., Niskanen, J., & Niskanen, M. (2019). Capital structure and firm performance in European SMEs: Does credit risk make a difference? *Managerial Finance 45(5)*, 582-601.

Luigi, P., & Sorin, V. (2009). A review of the capital structure theories. *Annals of Faculty of Economics 3(1)*, 315-320.

Mansyur, A., Mus, A. R., Rahman, Z., & Suriyanti, S. (2020). Financial performance as mediator on the impact of capital structure, wealth structure, financial structure on stock price: The case of Indonesian banking sector. *European Journal of Business and Management Research 5(5)*.

Matemilola, B. T., Bany-Ariffin, A. N., Azman-Saini, W. N., & Nassir, A. M. (2019). Impact of institutional quality on the capital structure of firms in developing countries. *Emerging Markets Review 39*, 175-209.

Mauro, P. (1995). Corruption and growth. *Quarterly Journal of Economics 110(3)*, 681-712.

Miller, M. H. (1977). Debt and taxes. *Journal of Finance 32(2)*, 261-275

Modigliani, F., & Miller, M. H. (1958). The cost of capital, corporate finance and the theory of investment. *American Economic Review 48*, 261-297.

Modigliani, F., & Millier, M. H. (1963). Corporate income taxes and the cost of capital: A correction. *American Economic Review 53*, 433-443.

Moral-Benito, E. (2013). Likelihood-based estimation of dynamic panels with predetermined regressors. *Journal of Business and Economic Statistics 31(4)*, 451-472.

Myers, S. C. (1977). Determinants of corporate borrowing. *Journal of Financial Economics 5(2)*, 147-175.

Myers, S. C. (1984). The capital structure puzzle. *Journal of Finance 39*, 574-592.

Myers, S. C., & Majluf, N. S. (1984). Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics 13*, 187-221.

Nawaz, S., Iqbal, N., & Khan, M. A. (2014). The Impact of Institutional Quality on Economic Growth: Panel Evidence. *The Pakistan Development Review*, 15-31.

Ngatno, Apriatni, E. P., & Youlianto, A. (2021). Moderating effects of corporate governance mechanism on the relation between capital structure and firm performance. *Cogent Business & Management 8(1)*, 1866822.

Ngo, T. H., & La Puente, C. A. (2012). The steps to follow in a multiple regression analysis. *Proceedings of the SAS Global forum*, 22-25.

North, D. C. (1990). *Institutions, Institutional Change, and Economic Performance.* New York: Cambridge University Press.

Odionye, J. C., & Chukwu, J. O. (2021). The asymmetric effects of currency devaluation in selected sub-Saharan Africa. *Economic Annals 66(230)*, 135-155.

Oztekin, O., & Flannery, M. J. (2012). Institutional determinants of capital structure adjustment speeds. *Journal of Financial Economics 103(1)*, 88-112.

Pandey, I. M. (2004). Capital structure, profitability and market structure: Evidence from Malaysia. *The Asia Pacific Journal of Economics & Business 8(2),* 78

Parker, C. (2000). Performance Measurement. *Work Study 49(2),* 63-66.

Parsons, C., & Titman, S. (2008). Capital structure and corporate strategy. *Handbook of Empirical Corporate Finance*, 203-234

Pawley, M. G. (2006). The impact of survivorship bias on South African unit trust performance: 1972-2004. *Investment Analysts Journal 35(64),* 21-26

Qian, J., & Strahan, P. E. (2007). How laws and institutions shape financial contracts: the case of bank loans. *The Journal of Finance 62(6),* 2803-2834.

Rajan, R., & Zingales, L. (1995). What do we know about capital structure? Some evidence from international data. *Journal of Finance 50,* 1421-1460.

Rodrik, D. (1999). Where did all the growth go? External shocks, social conflict and growth collapses. *Journal of Economic Growth 4(4),* 385-412.

Rodrik, D. (2000). Institutions for high-quality growth: what they are and how to acquire them. *Studies in Comparative International Development 35*, 3-31.

Ross, S. A. (1977). The determination of financial structure: the incentive signalling approach. *The Bell Journal of Economics*, 23-40.

Ross, S. A., Westerfield, R. W., & Jaffe, J. (2013). *Corporate Finance, Tenth Edition.* New York: The McGraw-Hill Companies, Inc.

Roxas, B., Chadee, D., & Erwee, R. (2012). Effects of rule of law on firm performance in South Africa. *European Business Review 24(5)*, 478-492.

Rumelt, R. P. (1991). How much does industry matter? *Strategic Management Journal 12(3)*, 167-185.

Sadeghian, N. S., Latifi, M. M., Soroush, S., & Aghabagher, Z. T. (2012). Debt policy and corporate performance: empirical evidence from Tehran Stock Exchange companies. *International Journal of Economics and Finance 4(11),* 217-224

Salim, M., & Yadav, R. (2012). Capital structure and firm performance: Evidence from Malaysian listed companies. *Procedia-social and Behavioral Sciences 65*, 156-166.

Sargan, J. D. (1958). The estimation of economic relationships using instrumental variables. *Econometrica: Journal of the econometric society*, 393-415.

Sdiq, S. R., & Abdullah, H. A. (2022). Examining the effect of agency cost on capital structure-financial performance nexus: empirical evidence for emerging market. *Cogent Economics & Finance 10(1)*, 2148364.

Seifert, B., & Gonenc, H. (2010). Pecking order behaviour in emerging markets. *Journal of International Financial Management and Accounting 21(1)*, 1-31.

Siavhundu, T., & Nyabunze, A. (2020). An econometric test of the Zimbabwe stock exchange's micro-efficiency (2009-2017). *Diverse Journal of Multidisciplinary Research 2(2)*, 7-17.

Siddik, M. N., Kabiraj, S., & Joghee, S. (2017). Impacts of capital structure on performance of banks in a developing economy: Evidence from Bangladesh. *International Journal of Financial Studies 5(2)*, 13.

Singh, N. P., & Bagga, M. (2019). The Effect of Capital Structure on Profitability: An Empirical Panel Data Study. *Jindal Journal of Business Research 8(1)*, 65-77.

SN, R. R., & Sen, K. (2017). Does institutional quality matter for firm performance? Evidence from India. *South Asia Economic Journal 18(2)*, 184-213.

Tretiakova, V. V., Shalneva, M. S., & Lvov, A. S. (2021). The relationship between capital structure and financial performance of the company. *SHS Web of Conferences 91*, 01002.

Tunyi, A. A., Agyei-Boapeah, H., Areneke, G., & Agyemang, J. (2019). Internal capabilities, national governance and performance in African firms. *Research in International Business and Finance 50*, 18-37.

Ullah, S., Akhtar, P., & Zaefarian, G. (2018). Dealing with endogeneity bias: The generalized method of moments (GMM) for panel data. *Industrial Marketing Management 71*, 69-78.

Williams, C. C., & Kedir, A. M. (2016). The impacts of corruption on firm performance: Some lessons from 40 African countries. *Journal of Developmental Entrepreneurship 21(4)*, 1650022.

Wooldridge, J. M. (2002). *Econometric Analysis of Cross Section of Panel Data.* Cambridge, MA: MIT Press.

World Bank. (2022). Worldwide Governance Indicators. Available at: http://databank.worldbank.org.

Yang, G. J., Chueh, H., & Lee, C. H. (2014). Examining the theory of capital structure: signal factor hypothesis. *Applied Economics 46(10)*, 1127-1133.

Yasar, M., Paul, C. J., & Ward, M. R. (2011). Property rights institutions and firm performance: a cross-country analysis. *World Development 39(4)*, 648-661

Zoogah, D. B. (2018). Institutional risk and firm performance in Africa: The moderating role of corruption control. *Journal of Management 4(4)*, 401-425.

APPENDIX

Table A1: Descriptive statistics (Per country)

Ghana	**2003:2022**	**2003:2007**	**2008:2012**	**2013:2017**	**2018:2022**
Mean values					
Total Debt/Total Assets	0.22025	0.20367	0.23018	0.20313	0.24113
Long Term Debt/Total Assets	0.09631	0.07792	0.08819	0.07312	0.13904
Short Term Debt/Total Assets	0.13059	0.13645	0.15910	0.13432	0.10211
Return on Assets	0.03625	0.06712	0.05009	0.03850	0.00345
Economic Freedom Index	0.59323	0.57300	0.59249	0.61668	0.58475
Rule of Law	0.54402	0.52110	0.54379	0.58139	0.52385
Control of Corruption	0.52536	0.50723	0.56750	0.51615	0.51324
Regulatory Quality	0.48890	0.48659	0.54177	0.48028	0.45791
Legal Rights Index	0.62823	0.60000	0.74746	0.62500	0.50000
Investor Protection	0.61592	0.63300	0.63300	0.60688	0.60000
Private sector credit to GDP	0.14990	0.13320	0.16706	0.16650	0.13184
Stock market capitalisation to GDP	0.08523	0.06507	0.08950		0.13200
GDP growth rate	0.05743	0.05495	0.09309	0.04701	0.04142
Interest					
Size	7.41490	7.52976	7.43133	7.37660	7.33949
Tangibility	0.44404	0.42631	0.42118	0.49787	0.42268
Growth	0.19823	0.55336	0.15481	0.22466	0.15635
EFITD	0.13067	0.11640	0.09407	0.12542	0.14160
EFILTD	0.05706	0.04438	0.13609	0.04524	0.08180
EFISTD	0.07752	0.07811	0.05209	0.08285	0.05981
Total observations	**257**	**49**	**59**	**72**	**77**

Kenya	**2003:2022**	**2003:2007**	**2008:2012**	**2013:2017**	**2018:2022**
Mean values					
Total Debt/Total Assets	0.16205	0.12959	0.16250	0.19544	0.15143
Long Term Debt/Total Assets	0.08613	0.07470	0.08506	0.09888	0.08521
Short Term Debt/Total Assets	0.07695	0.05560	0.07869	0.09738	0.06735
Return on Assets	0.05824	0.09197	0.08633	0.04380	0.01775
Economic Freedom Index	0.56673	0.58826	0.58075	0.55926	0.54527
Rule of Law	0.28484	0.20411	0.18919	0.35599	0.36083
Control of Corruption	0.18151	0.18480	0.16051	0.15440	0.23168
Regulatory Quality	0.42111	0.45198	0.45612	0.40610	0.37977
Legal Rights Index	0.84458	1.00000	1.00000	0.66789	0.77618
Investor Protection	0.56966	0.46700	0.50000	0.53128	0.82457
Private sector credit to GDP	0.29110	0.24647	0.25034	0.33643	0.31376
Stock market capitalisation to GDP	0.29796	0.36215	0.27394		0.23034
GDP growth rate	0.04653	0.05809	0.04232	0.04373	0.04575
Interest	0.05566	0.03021	0.03083	0.07918	0.07288
Size	7.97042	7.80839	8.00124	8.02684	7.99200

Tangibility	0.38570	0.41164	0.37259	0.39110	0.37507
Growth	0.10543	0.11478	0.18392	0.08988	0.03532
EFITD	0.09165	0.07641	0.09435	0.10928	0.08241
EFILTD	0.04871	0.04403	0.04934	0.05529	0.04648
EFISTD	0.04353	0.03279	0.04575	0.05447	0.03655
Total observations	**455**	**84**	**121**	**133**	**117**

Nigeria	**2003:2022**	**2003:2007**	**2008:2012**	**2013:2017**	**2018:2022**
Mean values					
Total Debt/Total Assets	0.19314	0.13782	0.15418	0.22162	0.23921
Long Term Debt/Total Assets	0.08148	0.05013	0.05809	0.09827	0.10909
Short Term Debt/Total Assets	0.11623	0.12161	0.10180	0.12135	0.12664
Return on Assets	0.01921	0.04233	0.04149	0.00816	-0.00898
Economic Freedom Index	0.55312	0.50352	0.56046	0.55932	0.57252
Rule of Law	0.14587	0.09587	0.12237	0.14751	0.19752
Control of Corruption	0.12242	0.09238	0.14224	0.11166	0.13463
Regulatory Quality	0.19209	0.16230	0.25064	0.20575	0.14572
Legal Rights Index	0.61069			0.50000	0.75000
Investor Protection	0.61792	0.53000	0.53000	0.65812	0.72000
Private sector credit to GDP	0.12525	0.09607	0.14436	0.13080	0.12162
Stock market capitalisation to GDP	0.12122	0.17264	0.11998	0.10756	0.09940
GDP growth rate	0.04261	0.07114	0.06412	0.02935	0.01795
Interest	0.05913	0.01491	0.07430	0.09708	0.03707
Size	7.67041	7.41702	7.74403	7.76523	7.67532
Tangibility	0.43673	0.39946	0.41518	0.46310	0.45447
Growth	0.13573	0.20237	0.19188	0.07723	0.09735
EFITD	0.10751	0.06924	0.08645	0.12414	0.13690
EFILTD	0.04540	0.02514	0.03265	0.05493	0.06225
EFISTD	0.06435	0.06164	0.05698	0.06798	0.07269
Total observations	**1,666**	**306**	**423**	**463**	**474**

South Africa	**2003:2022**	**2003:2007**	**2008:2012**	**2013:2017**	**2018:2022**
Mean values					
Total Debt/Total Assets	0.17911	0.15871	0.16488	0.17445	0.21021
Long Term Debt/Total Assets	0.10879	0.08751	0.09721	0.10420	0.13772
Short Term Debt/Total Assets	0.06960	0.07273	0.06587	0.07053	0.07065
Return on Assets	0.05138	0.05984	0.07488	0.05106	0.02271
Economic Freedom Index	0.62045	0.64601	0.63065	0.62223	0.59232
Rule of Law	0.54136	0.54149	0.57228	0.56155	0.49556
Control of Corruption	0.57264	0.66820	0.58900	0.54616	0.51792
Regulatory Quality	0.61204	0.70768	0.66106	0.60951	0.50650
Legal Rights Index	0.56229	0.70000	0.70000	0.47055	0.41670
Investor Protection	0.80000	0.80000	0.80000	0.80000	0.80000
Private sector credit to GDP	1.19683	1.25039	1.23035	1.26873	1.06168
Stock market capitalisation to GDP	2.31856	1.98831	1.99806	2.62751	2.65124
GDP growth rate	0.01970	0.04802	0.02067	0.01392	0.00476

Interest	0.04028	0.05368	0.04009	0.03554	0.03571
Size	8.22535	7.86993	8.12020	8.30653	8.48031
Tangibility	0.30296	0.30249	0.30039	0.29783	0.31032
Growth	0.14572	0.30021	0.18223	0.12956	0.06175
EFITD	0.11070	0.10261	0.10400	0.10857	0.12428
EFILTD	0.06710	0.05659	0.06134	0.06486	0.08138
EFISTD	0.04319	0.04704	0.04153	0.04389	0.04183
Total observations	**2,558**	**507**	**617**	**705**	**729**

Zimbabwe	**2003:2022**	**2003:2007***	**2008:2012**	**2013:2017**	**2018:2022**
Mean values					
Total Debt/Total Assets	0.14010		0.14125	0.18233	0.10754
Long Term Debt/Total Assets	0.04766		0.02790	0.06804	0.04932
Short Term Debt/Total Assets	0.09245		0.11436	0.11132	0.05754
Return on Assets	0.06995		0.01325	0.00959	0.16051
Economic Freedom Index	0.33569	0.33775	0.23209	0.36421	0.40006
Rule of Law	0.05100	0.02063	0.0119	0.05286	0.08555
Control of Corruption	0.06279	0.05393	0.02597	0.06263	0.09695
Regulatory Quality	0.03977	0.01508	0.02145	0.03200	0.06549
Legal Rights Index	0.54862	0.70000	0.70000	0.47566	0.44396
Investor Protection	0.50406	0.46700	0.46700	0.51598	0.54000
Private sector credit to GDP	0.13430	0.35110	0.15261	0.18137	0.06457
Stock market capitalisation to GDP					
GDP growth rate	0.05956	-0.07528	0.15800	0.02272	0.01179
Interest	-0.20726		0.06430	0.05602	-0.5560
Size	7.37576		7.61220	7.81981	6.60797
Tangibility	0.44243		0.48262	0.45261	0.39757
Growth	1.75407		0.67689	0.05620	6.12269
EFITD	0.04663		0.03299	0.06678	0.04287
EFILTD	0.01691		0.00664	0.02533	0.01954
EFISTD	0.02967		0.02658	0.04020	0.02304
Total observations	**552**	**4**	**168**	**197**	**183**

*Insufficient data for this period. Country-level variables are, however, included for completeness.

Table A2: Results of specification tests

Model 1

2003:2022	Model 1a (EFI)	Model 1b (ROL)	Model 1c (CC)	Model 1d (RQ)	Model 1e (LRI)	Model 1f (IP)	Model 1g (PSCGDP)	Model 1h (SMCGDP)
Dependent Variable: Total Debt / Total Assets								
AR(1) (p-val)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
AR(2) (p-val)	0.5850	0.6099	0.5963	0.5931	0.0447	0.6360	0.6065	0.4455
Wald Test (p-val)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Sargan Test (p-val)	0.3321	0.1901	0.2585	0.1674	0.2169	0.3027	0.2134	0.2417
Dependent Variable: Long term Debt / Total Assets								
AR(1) (p-val)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
AR(2) (p-val)	0.4336	0.4290	0.4346	0.4339	0.5884	0.7598	0.4312	0.8749
Wald Test (p-val)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Sargan Test (p-val)	0.2049	0.1756	0.1991	0.2032	0.3038	0.2723	0.1925	0.1996
Dependent Variable: Short term Debt / Total Assets								
AR(1) (p-val)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
AR(2) (p-val)	0.2756	0.2725	0.2728	0.2715	0.5312	0.5431	0.2739	0.6947
Wald Test (p-val)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Sargan Test (p-val)	0.3353	0.4202	0.3855	0.4279	0.3636	0.3727	0.4347	0.2706

Table A2: Results of specification tests (continued)

Models 2 and 3

2003:2022	Model 2a (TD)	Model 2b (LTD)	Model 2c (STD)	Model 3a (TD)	Model 3b (LTD)	Model 3c (STD)
Dependent Variable: Return on Assets						
AR(1) (p-val)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
AR(2) (p-val)	0.6723	0.6754	0.7325	0.6696	0.6537	0.7284
Wald Test (p-val)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Sargan Test (p-val)	0.2730	0.3077	0.2838	0.2819	0.2759	0.2661
Dependent Variable: Tobin's Q						
AR(1) (p-val)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
AR(2) (p-val)	0.2670	0.2509	0.2584	0.2662	0.2511	0.2597
Wald Test (p-val)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Sargan Test (p-val)	0.0289	0.0144	0.0344	0.0288	0.0119	0.0361

Table A3: Impact of institutional quality on firm leverage over time

	Model 1a 2003:2007	Model 1a 2008:2012	Model 1a 2013:2017	Model 1a 2018:2022	Model 1a 2003:2007	Model 1a 2008:2012	Model 1a 2013:2017	Model 1a 2018:2022
	Coeff (SE)	Coeff (SE)	Coeff (SE)	Coeff (SE)	Coeff (SE)	Coeff (SE)	Coeff (SE)	Coeff (SE)
Dependent Variable: Total Debt / Total Assets					**Dependent Variable: Long term Debt / Total Assets**			
TD/TA (lagged)	0.40121** (0.16985)	0.35011*** (0.10866)	0.87425*** (0.08411)	0.34657* (0.19306)				
LTD/TA (lagged)					0.53551*** (0.14091)	0.43159*** (0.09852)	0.69288*** (0.14095)	0.67118*** (0.07142)
EFI	0.09349 (0.24933)	-0.77175 (1.10737)	-0.03335 (0.23633)	-0.59632* (0.32888)	0.00360 (0.14644)	1.77473** (0.77831)	0.16026 (0.22168)	-0.20430 (0.21982)
GDP growth	0.51367 (0.80068)	-0.87955*** (0.31012)	0.09231 (0.21025)	-0.17504* (0.10479)	-0.03320 (0.41337)	0.00672 (0.23277)	0.27895 (0.17016)	-0.24289*** (0.12072)
Interest	0.01665 (0.10377)	-0.00765 (0.12875)	0.15507 (0.17377)	0.02849 (0.06688)	-0.02182 (0.07902)	0.09701 (0.08627)	0.05307 (0.11744)	0.09207** (0.03803)
Size	0.08003 (0.05009)	0.05474 (0.04767)	-0.03231 (0.04052)	0.01578 (0.01308)	0.01819 (0.03336)	0.03422 (0.02856)	-0.02520 (0.03788)	-0.00144 (0.00993)
Tangibility	0.38314*** (0.14814)	0.12408 (0.10763)	-0.03842 (0.07997)	-0.02498 (0.08721)	0.06569 (0.08958)	0.15535** (0.07165)	0.01971 (0.05442)	0.08769 (0.06754)
Growth	0.00526 (0.01274)	0.01487 (0.01421)	0.05549* (0.03159)	-0.00209 (0.00557)	0.01538 (0.01103)	0.00822 (0.00857)	0.05230** (0.02305)	0.00062 (0.00404)
AR(1) (p-val)	0.0789	0.0015	0.0000	0.0065	0.0024	0.0025	0.0033	0.0011
AR(2) (p-val)	0.1558	0.0347	0.2664	0.3220	0.9336	0.1268	0.1737	0.2852
Wald Test (p-val)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Sargan Test (p-val)	0.4530	0.0859	0.4845	0.8965	0.8827	0.4269	0.0247	0.5972

This table represents the system-GMM two-step estimation results using Total Debt / Total Assets and Long-term Debt / Total Assets for 5,488 firm-year observations from five African countries for four periods of five years each, namely 2003 to 2007, 2008 to 2012, 2013 to 2017 and 2018 to 2022. Financial firms are excluded. Refer to Table 1 for the definition of variables and measurements. All firm-level variables are trimmed at their 1st and 99th percentiles. The models analyses the effect of the Economic Freedom

Index (EFI), after controlling for firm- and country-level variables. Asterix indicate significance (***p<0.01; **p<0.05; *p<0.1). The standard errors (in parenthesis) of the two-step system-GMM model are WC-robust.

Table A4: Direct impact of firm leverage on financial performance over time

	Model 2 2003:2007	Model 2 2008:2012	Model 2 2013:2017	Model 2 2018:2022	Model 2 2003:2007	Model 2 2008:2012	Model 2 2013:2017	Model 2 2018:2022
	Coeff (SE)	**Coeff (SE)**	**Coeff (SE)**	**Coeff (SE)**	**Coeff (SE)**	**Coeff (SE)**	**Coeff (SE)**	**Coeff (SE)**
Dependent Variable: Return on Assets								
	With Total Debt				**With Long-term debt**			
ROA (lagged)	0.13294 (0.35070)	0.17972 (0.11564)	0.22485** (0.10147)	-0.08235 (0.07104)	0.13458 (0.33288)	0.18603* (0.11066)	0.29185** (0.11688)	-0.09308 (0.08520)
TD	-0.11848* (0.07142)	-0.01288 (0.07708)	-0.21488** (0.09327)	-0.32586*** (0.12458)				
LTD					-0.17187* (0.08936)	0.08020 (0.11299)	-0.01352 (0.06880)	-0.11759 (0.13198)
GDP growth	0.97672*** (0.35932)	0.55306* (0.31075)	0.34170** (0.14474)	0.18322** (0.09108)	0.90759** (0.36793)	0.60729* (0.31176)	0.33006** (0.14771)	0.22835*** (0.08890)
Interest	-0.17629* (0.09817)	-0.16671*** (0.06376)	-0.01128 (0.13104)	-0.44365*** (0.12096)	-0.16308* (0.09458)	-0.17144*** (0.06442)	-0.02542 (0.14218)	-0.45518*** (0.12283)
Size	0.17328 (0.09695)	0.11986* (0.06285)	-0.08892** (0.04545)	0.00912 (0.04509)	0.16453 (0.10525)	0.12111* (0.06284)	-0.09197** (0.04127)	0.01100 (0.04499)
Tangibility	-0.13833 (0.11553)	0.09612 (0.16022)	-0.08586 (0.05807)	-0.10471 (0.17262)	-0.16860 (0.11603)	0.10058 (0.15239)	-0.12287** (0.05784)	-0.07570 (0.16026)
Growth	-0.00908 (0.01604)	-0.01266 (0.01841)	0.03637* (0.02081)	-0.00250 (0.01259)	-0.00717 (0.01606)	-0.01283 (0.01829)	0.03073 (0.02017)	-0.00473 (0.01244)
AR(1) (p-val)	0.2256	0.0218	0.0118	0.0107	0.2013	0.0211	0.0093	0.0170
AR(2) (p-val)	0.8981	0.2261	0.4866	0.3524	0.8931	0.2503	0.5717	0.2722
Wald Test (p-val)	0.0008	0.0427	0.0005	0.0000	0.0013	0.0683	0.0055	0.0000
Sargan Test (p-val)	0.7773	0.3511	0.3195	0.2808	0.8021	0.3746	0.2573	0.3002

This table represents the system-GMM two-step estimation results using Return on Assets for 5,488 firm-year observations from five African countries for four periods of five years, namely 2003 to 2007, 2008 to 2012, 2013 to 2017 and 2018 to 2022. Financial firms are excluded. Refer to Table 1 for the definition of variables and measurements. All

firm-level variables are trimmed at their 1st and 99th percentiles. The models analyse the effect of Total Debt / Total Assets and Long-term Debt / Total Assets respectively, after controlling for firm- and country-level variables. Asterix indicate significance (***p<0.01; **p<0.05; *p<0.1). The standard errors (in parenthesis) of the two-step system-GMM model are WC-robust.

Table A5: Indirect impact of institutional quality on financial performance over time

	Model 3 2003:2007	Model 3 2008:2012	Model 3 2013:2017	Model 3 2018:2022	Model 3 2003:2007	Model 3 2008:2012	Model 3 2013:2017	Model 3 2018:2022
	Coeff (SE)	**Coeff (SE)**	**Coeff (SE)**	**Coeff (SE)**	**Coeff (SE)**	**Coeff (SE)**	**Coeff (SE)**	**Coeff (SE)**
Dependent Variable: Return on Assets								
	With Total Debt				**With Long-term debt**			
ROA (lagged)	0.12153 (0.35892)	0.21201* (0.12701)	0.25359 (0.20503)	-0.08322 (0.06947)	0.13625 (0.34016)	0.21152* (0.11240)	0.27178 (0.18755)	-0.09320 (0.08228)
TD	0.37714 (0.47289)	-2.46027 (1.81235)	0.47349 (0.67300)	-0.34998 (1.12220)				
LTD					0.70563 (0.64408)	-2.07101 (2.0300)	0.35785 (0.31064)	-0.67674 (2.07899)
EFI*TD	-0.89612 (0.78790)	4.20541 (3.16863)	-1.16300 (1.14530)	0.01755 (2.09307)				
EFI*LTD					-1.46910 (1.06572)	3.67598 (3.57900)	-0.61869 (0.59298)	0.92725 (3.53210)
GDP growth	0.94365** (0.37341)	0.69341** (0.32966)	0.27225* (0.15587)	0.18066 (0.11750)	0.88569** (0.36293)	0.66391** (0.31103)	0.31145** (0.15074)	0.20257* (0.12129)
Interest	-0.12764 (0.10887)	-0.12359** (0.06237)	-0.03656 (0.13243)	-0.44569*** (0.12095)	-0.13690 (0.10016)	-0.15527** (0.06150)	-0.05201 (0.13798)	-0.44630*** (0.12492)
Size	0.17114 (0.10512)	0.13678** (0.06212)	-0.06492 (0.04397)	0.00234 (0.05188)	0.16323 (0.10767)	0.12194** (0.05984)	-0.06385 (0.04442)	-0.00006 (0.05626)
Tangibility	-0.14682 (0.11996)	0.12997 (0.13019)	-0.07789 (0.05937)	-0.11632 (0.18191)	-0.17781 (0.11598)	0.11607 (0.12236)	-0.11788* (0.06249)	-0.09718 (0.17122)
Growth	-0.00906 (0.01647)	-0.01626 (0.01866)	0.03894** (0.01836)	-0.00135 (0.01346)	-0.00682 (0.01629)	-0.01106 (0.01845)	0.03095* (0.01857)	-0.00291 (0.01510)
AR(1) (p-val)	0.2483	0.0240	0.0136	0.0102	0.2155	0.0211	0.0067	0.0149
AR(2) (p-val)	0.9149	0.3008	0.5037	0.3460	0.8614	0.2656	0.5441	0.2442
Wald Test (p-val)	0.0001	0.0359	0.0193	0.0000	0.0012	0.0546	0.0744	0.0000

Sargan Test (p-val)	0.7988	0.4795	0.2577	0.2646	0.8142	0.4497	0.2051	0.2592

This table represents the system-GMM two-step estimation results using Return on Assets for 5,488 firm-year observations from five African countries for four periods of five years, namely 2003 to 2007, 2008 to 2012, 2013 to 2017 and 2018 to 2022. Financial firms are excluded. Refer to Table 1 for the definition of variables and measurements. All firm-level variables are trimmed at their 1st and 99th percentiles. The models analyse the effect of Total Debt / Total Assets and Long-term Debt / Total Assets respectively, and include an interaction term, after controlling for firm- and country-level variables. Asterix indicate significance (***p<0.01; **p<0.05; *p<0.1). The standard errors (in parenthesis) of the two-step system-GMM model are WC-robust.