



**UNIVERSITY OF
KWAZULU-NATAL**

**INYUVESI
YAKWAZULU-NATALI**

**CAPITAL STRUCTURE AND FINANCIAL PERFORMANCE OF
SOUTH AFRICAN STATE-OWNED ENTITIES**

by

FERINA MARIMUTHU

200001774

A thesis submitted in fulfilment of the requirements for the degree

of

DOCTOR OF PHILOSOPHY IN FINANCE

COLLEGE OF LAW AND MANAGEMENT STUDIES

SCHOOL OF ACCOUNTING, ECONOMICS AND FINANCE

SUPERVISOR: Dr Farai Kwenda

2019

DECLARATION

I, FERINA MARIMUTHU, declare that:

- (i) The research reported in this thesis, except where otherwise indicated, is my original research.
- (ii) This thesis has not been submitted for any degree or examination at any other university.
- (iii) This thesis does not contain other persons' data, pictures, graphs or other information unless acknowledged explicitly as being sourced from other persons.
- (iv) This thesis does not contain other persons' writing unless specifically acknowledged as being sourced from other researchers. Where other written sources have been quoted, then:
 - a. Their words have been re-written, but the general information attributed to them has been referenced;
 - b. Where their exact words have been used, their writing has been placed inside quotation marks and referenced.
- (v) Where I have reproduced a publication of which I am an author, co-author or editor, I have indicated in detail which part of the publication was actually written by myself alone and have fully referenced such publications.
- (vi) This thesis does not contain text, graphics or tables copied and pasted from the internet, unless expressly acknowledged, and the source being detailed in the thesis and in references sections.

Signed _____



DEDICATION

This thesis is dedicated to the Almighty GOD, my husband Hayne, my daughters Senayshia and Camishka, my parents, my parents-in-law and the rest of my family.

ACKNOWLEDGEMENTS

My profound gratitude goes to the Almighty GOD; without Him, I would not have completed this thesis. I am grateful to Him for the intellect, strength and good health that He bestowed upon me, for bringing individuals into my life who have made invaluable contributions to this thesis, and for providing me with a loving and supportive family.

Special appreciation goes to my supervisor Dr Farai Kwenda for nurturing in me a desire to pursue research and academic enquiry. The clarity and direction that you have brought to this research project have been invaluable. Thank you for your constructive comments and criticism that were the impetus for a higher level of thinking. Your guidance, encouragement and patience throughout this study are appreciated.

A special thank you to Dr Joseph Akande and Dr Edson Vengesai for your assistance and for sharing your expertise whenever required during my research. I would also like to acknowledge Mr Sunday Adeyanju for assistance during the data collection stage.

To my parents Reena and Ishwar Sooknandan, who laid a solid foundation for my education and inculcated a culture of hard work, I am grateful for your nurturing in me an appreciation of education, excellence and determination and for your love and unwavering support throughout my life. I also want to express my gratitude to my parents-in-law, Vasantha and Leslie Marimuthu, for your love, encouragement and moral support throughout the years. Your constant motivation and belief in me have contributed to the successful completion of my studies.

To my sisters Suvina and Riyakshi, I am immensely appreciative of your support, advice and constant reassurance during this journey. Collectively, you provided me with the social reinforcements I needed to keep my enthusiasm at a high level during this learning process. A special thank you to Riyakshi for the technical assistance in the write up of this thesis.

My deepest gratitude and appreciation goes to my husband Hayne, whose faith and confidence in me continue to drive my quest for excellence and purpose. Thank you for providing me with unfailing support, continuous encouragement throughout my years of study and for taking on my responsibilities so that I could focus on my research. You have

been my pillar of strength, have never let me give up nor lose focus and always motivated me to see this journey through to completion.

Last but not least, I thank my amazing daughters Senayshia and Camishka, for all their love, support and patience in giving me time and space to research and write this thesis. I am grateful for your understanding when I needed to use valuable family time to focus on my studies. I hope to be an inspiration to you up to the point that you find the determination to achieve the highest level of education.

To the rest of my family and friends whom I have not mentioned, thank you for always being a source of support and for offering much-needed distractions and enriching my life with more than just research. My special apologies also go to anyone who might have directly or indirectly contributed to this study, but have, accidentally, not been explicitly acknowledged.

Thank you and May GOD bless you all abundantly...

ABSTRACT

Capital structure is one of the most researched areas in corporate finance, as it is believed to have an important influence on firm performance. However, despite the rich empirical and theoretical literature on the interplay between capital structure and financial performance, the findings remain inconclusive.

This study was motivated by the weak economic growth, fiscal consolidation, increased debt levels and poor financial performance of state-owned entities (SOEs) which were among the reasons for South Africa's downgrading by rating agencies. Given the public sector's vital role in economic growth, it aimed to determine how well traditional capital structure theories explain SOEs' financing behaviour, how capital structure and government guarantees are impacting on their performance and whether executives' remuneration levels are justified.

Static and dynamic panel data models were employed and estimated using the Fixed Effects, Random Effects, Ordinary Least Squares and Generalised Method of Moments (GMM) estimators. The data set comprised an unbalanced panel data of 33 commercial SOEs in South Africa that were listed under the Public Financial Management Act.

The findings provide strong evidence that South African SOEs follow the trade-off theory. This conclusion is based on the existence of a target capital structure and speed of adjustment of 21.5% per annum towards the target which is slower than other SOEs in developing economies. The findings also revealed that these SOEs take almost five years to close off two-thirds of the gap between the actual and optimal capital structures.

The findings revealed an inverse relationship between leverage and financial performance. This was consistent with literature that revealed excessively high debt levels and poor performance of several SOEs. The study found that government guarantees have a negative effect on the performance of these SOEs, suggesting that the government should review its financial assistance to these entities and implement stricter policies.

Furthermore, a negative relationship was established between executive remuneration and financial performance. This is of concern as executive remuneration is high despite

the SOEs' declining performance. The misalignment between pay and performance undermines the core principles of the agency theory, resulting in poor performance. These findings provide empirical support for public and media perceptions that executive remuneration is excessive and unmerited when measured against SOEs' performance.

The findings will be of interest to observers of the economy, as they measure the capacity of SOEs to play a leading role in investment and in improving the efficiency of the economy. They could also inform decision making and policy development on SOEs.

TABLE OF CONTENTS

DECLARATION.....	ii
DEDICATION.....	iii
ACKNOWLEDGEMENTS.....	iv
ABSTRACT.....	vi
TABLE OF CONTENTS.....	viii
LIST OF TABLES.....	xiv
LIST OF FIGURES.....	xvi
ACRONYMS.....	xvii
CHAPTER 1 INTRODUCTION TO THE STUDY.....	1
1.1 Introduction.....	1
1.2 Background.....	2
1.3 Problem statement.....	11
1.4 Research objectives.....	13
1.5 Research questions.....	13
1.6 Significance of the study.....	14
1.7 Organisation of the thesis.....	15
CHAPTER 2 OVERVIEW OF STATE-OWNED ENTITIES.....	16
2.1 Introduction.....	16
2.2 Defining state-owned entities.....	16
2.3 Framework of state-owned entities in South Africa.....	18
2.4 Legal frameworks governing state-owned entities.....	22
2.5 State-owned entities in South Africa.....	23

2.5.1	State-owned entities during the apartheid era	23
2.5.2	State-owned entities post-1994	24
2.5.3	A general overview of the issues in state-owned entities.....	26
2.6	Chapter summary.....	30
CHAPTER 3 LITERATURE REVIEW ON CAPITAL STRUCTURE.....		31
3.1	Introduction	31
3.2	Capital structure	32
3.3	Capital structure theories	32
3.3.1	Modigliani-Miller theorem.....	33
3.3.2	Trade-off theory	38
3.3.3	Pecking order theory	44
3.3.4	Agency cost theory	49
3.3.5	Signalling theory	50
3.3.6	Market timing theory	51
3.3.7	Summary of capital structure theories	52
3.4	Capital structure studies in South Africa	52
3.5	Chapter summary.....	53
CHAPTER 4 FINANCING OF SOES: PECKING ORDER OR TRADE-OFF THEORY		55
4.1	Introduction	55
4.2	The determinants of capital structure	56
4.2.1	Leverage.....	57
4.2.2	Profitability	58
4.2.3	Age	59
4.2.4	Size	59

4.2.5	Tangible assets	61
4.2.6	Growth	62
4.2.7	Firm risk.....	64
4.2.8	Taxation.....	64
4.2.9	Liquidity	65
4.2.10	Probability of bankruptcy	66
4.2.11	Non-debt tax shield.....	67
4.2.12	Summary of studies on the determinants of capital structure	68
4.2.13	Summary of theoretical predictions on leverage.....	72
4.3	Methodology.....	73
4.3.1	Research design.....	74
4.3.2	Research tools.....	76
4.3.3	Sample frame	77
4.3.4	Data collection	78
4.3.5	Data and variables.....	78
4.4	Testing the Trade-off theory	79
4.4.1	Variables and measures	79
4.4.2	Model specification	80
4.4.3	Estimation methods	83
4.4.4	Empirical results	91
4.5	Testing the pecking order theory.....	111
4.5.1	Variables and measures	111
4.5.2	Model specification	112
4.5.3	Estimation methods	116

4.5.4	Empirical results	117
4.5.5	Model specification tests.....	120
4.6	Chapter summary.....	121
CHAPTER 5 DETERMINANTS OF FIRM PERFORMANCE		124
5.1	Introduction	124
5.2	Literature review.....	125
5.2.1	Financial Performance of South African SOEs	125
5.2.2	Description and concepts	128
5.2.3	Theoretical framework	130
5.2.4	Review of empirical studies on the capital structure and firm performance	136
5.2.5	Other determinants of firm performance.....	145
5.3	Methodology.....	153
5.3.1	Variables and measures.....	153
5.3.2	Estimation methods	157
5.4	Empirical results.....	158
5.4.1	Descriptive analysis.....	158
5.4.2	Panel data unit root tests	159
5.4.3	Correlation analysis	161
5.4.4	Regression analysis	163
5.4.5	Model specification tests.....	173
5.5	Chapter summary.....	175
CHAPTER 6 THE RELATIONSHIP BETWEEN EXECUTIVE REMUNERATION AND FINANCIAL PERFORMANCE.....		178
6.1	Introduction	178

6.2	Literature review.....	179
6.2.1	Executive remuneration	179
6.2.2	Executive remuneration in South African SOEs	180
6.2.3	Agency theory.....	183
6.2.4	Remedies to the agency problem	185
6.2.5	The agency theory link with executive remuneration and firm performance	186
6.2.6	Empirical evidence on executive remuneration and firm performance	187
6.2.7	Determinants of executive remuneration	196
6.3	Methodology.....	199
6.3.1	Variables and measures	199
6.3.2	Model specification	201
6.3.3	Estimation methods	202
6.4	Empirical results.....	202
6.4.1	Descriptive statistics	202
6.4.2	Panel data unit root tests	203
6.4.3	Trend analysis	204
6.4.4	Correlation analysis	206
6.4.5	Econometric analysis.....	208
6.4.6	Economic impact of regression results	216
6.4.7	Model specification tests.....	218
6.5	Chapter summary.....	219
CHAPTER 7 SUMMARY, CONCLUSIONS AND RECOMMENDATIONS		221
7.1	Introduction	221

7.2	Summary of research findings.....	221
7.3	Conclusions.....	223
7.4	Policy recommendations	223
7.5	Contribution to knowledge.....	225
7.6	Limitations of the study	227
7.7	Suggestions for further research.....	228
	REFERENCES.....	229
	APPENDICES.....	245
	APPENDIX 1	245
	APPENDIX 2	253
	ETHICAL CLEARANCE	253

LIST OF TABLES

Table 1-1: Combined balance sheet items of Schedule 2 SOEs.....	4
Table 2-1: Schedule 3 entities as per the PFMA Act No. 1 of 1999	21
Table 4-1: Summary of empirical evidence on determinants of capital structure	68
Table 4-2: Summary of theoretical predictions on leverage	72
Table 4-3: Variables and measures: Trade-off Model	79
Table 4-4: Descriptive statistics.....	92
Table 4-5: Unit root tests.....	94
Table 4-6: Correlation analysis.....	99
Table 4-7: Regression analysis	100
Table 4-8: Specification tests for Trade-off Model.....	110
Table 4-9: Variables and measures: Pecking Order Model.....	112
Table 4-10: Differences between FE, RE and OLS estimators	116
Table 4-11: Regression results: Pecking order Model.....	118
Table 4-12: Hausman test results	120
Table 4-13: Breusch and Pagan Lagrangian multiplier test for random effects.....	121
Table 4-14: Comparison of results with theoretical predictions	122
Table 5-1: Summary of empirical studies of capital structure and other determinants on firm performance	137
Table 5-2: Summary of variables and measures.....	153
Table 5-3: credit ratings point values	155
Table 5-4: Descriptive statistics.....	159
Table 5-5: Panel unit root tests	160
Table 5-6: Correlation analysis.....	162

Table 5-7: GMM Regression results based on equation 5.2.	169
Table 5-8: GMM results based on equation 5.3.	172
Table 5-9: Specification tests for equation 5.2.	174
Table 5-10: Specification tests for equation 5.3.	174
Table 6-1: SOE Categorisation — assets and revenue.....	182
Table 6-2: Summary of empirical evidence on executive remuneration and firm performance	190
Table 6-3: Summary of variables and measures.....	199
Table 6-4: Descriptive statistics.....	203
Table 6-5: Panel unit root tests	204
Table 6-6: Correlation analysis.....	207
Table 6-7: Regression analysis	214
Table 6-8: Economic impact of regression results.....	217
Table 0-1: Final sample of state-owned entities	245
Table 0-2: Schedule 2 - Major public entities	247
Table 0-3: Schedule 3B – National government business enterprises	248
Table 0-4: Debt ratios of South African SOEs during the period 1995-2017	250
Table 0-5: Average ROE, ROA, ROI for period 1995-2017	251
Table 0-6: Average executive compensation for the period 1995-2017	252

LIST OF FIGURES

Figure 1-1: Average return on equity of major Schedule 2 SOEs.....	5
Figure 1-2: South Africa’s credit rating history.....	7
Figure 1-3: Government Guarantees to SOEs and Agencies.....	9
Figure 1-4: South Africa’s corruption index	10
Figure 2-1: Classification of state-owned entities in South Africa.....	19
Figure 3-1: MM proposition without taxes.....	34
Figure 3-2: The value of a levered firm under MM Proposition I with corporate taxes...	35
Figure 3-3: MM II Proposition with taxes	36
Figure 3-4: MM Propositions I and II with and without taxes	37
Figure 3-5: Trade-off theory model.....	39
Figure 3-6: Pecking Order Hierarchy.....	45
Figure 4-1: The research process	75
Figure 4-2: Trend of debt ratios.....	95
Figure 4-3: Debt ratios of sampled SOEs.....	96
Figure 4-4: South African SOEs capital structure adjustment towards the target capital structure	102
Figure 5-1: Schematic representation of agency theory and the relationship with capital structure and firm performance	134
Figure 6-1: Trend of executive remuneration from 1995-2017	205
Figure 6-2: Trend of financial performance measure from 1995-2017	206

ACRONYMS

ACSA	Airport Corporation of South Africa
CEF	Central Energy Fund
CEO	Chief executive officer
CIPC	Companies and Intellectual Property Commission
CPI	Corruption Perception Index
CR	Credit Rating
DBSA	Development Bank of South Africa
DPE	Department of Public Enterprises
FE	Fixed effects
GDP	Gross Domestic Product
GLC	Government-Linked Companies
GMM	Generalised Method of Moments
IDC	Industrial Development Corporation
IFWE	Irregular, fruitless and wasteful expenditure
LTD	Long-term debt
MM	Modigliani and Miller
NDP	National Development Plan
NRF	National Revenue Fund

OECD	Organisation for Economic Co-operation and Development
OLS	Ordinary least squares
PetroSA	Petroleum Agency of South Africa
PFMA	Public Financial Management Act
PLS	Partial Least Square
PRC	Presidential Review Committee
PSRC	Public Sector Research Centre
RE	Random effects
ROA	Return on assets
ROE	Return on equity
ROI	Return on investments
SARB	South African Reserve Bank
SAA	South African Airways
SABC	South African Broadcasting Corporation
SAFCOL	South African Forestry Company Limited
SANRAL	South African National Roads Agency
SAPO	South African Post Office
SEM	Structural Equation Modeling
STD	Short-term debt

SOA	Speed of Adjustment
SONA	State of the Nation Address
SOE	State-owned entity
TD	Total debt
TCTA	Trans-Caledon Tunnel Authority
WACC	Weighted average cost of capital

CHAPTER 1

INTRODUCTION TO THE STUDY

1.1 Introduction

This chapter presents a detailed background to the study, the problem statement, the study's significance, the research objectives and questions and the organisation of the thesis.

State-owned entities (SOEs) are important drivers of development, especially in developing economies (Mbo, 2017). South African SOEs have a constitutional duty to deliver services to citizens and play a developmental role in the country's economy. Since the birth of democracy in 1994, their role in driving socio-economic development and transformation has become more significant. However, in order to address the challenges of inadequate infrastructure, inequitable land and capital distribution, poverty, unemployment and the disparities between rich and poor, the highly publicised inefficiencies confronting several of these entities need to be addressed.

Reform of SOEs was highlighted in the State of the Nation Address (SONA) and the Budget Speech in 2018 and 2019. While their failure has been attributed in some quarters to rejection of privatisation, poor governance lies at the heart of the problem. Where the quality of ministers is substandard, lack of effective oversight and ill-considered board appointments could lead to underperformance of SOEs (Qobo, 2018).

Without compromising service delivery and financial performance, an improved performance monitoring system can enhance transparency, accountability and financing capacity, as well as promote professionalised boards and executive management, a streamlined legal, regulatory framework for governance and a reformed governmental ownership role. Many of these issues are empirically tested in this study.

1.2 Background

In this section, the rationale for the focus of this study is explained, capturing details of the background that led to the selection of the research topic. To understand the various elements to be investigated in this thesis and the reasoning behind the research focus, a detailed background on South African SOEs and issues surrounding them are provided.

SOEs in developing countries play a significant role in economic growth and delivery of critical public services, including health, education, energy, transport, water and sanitation. When these entities underperform, they can pose serious challenges to a country's growth and development and increase fiscal risks. Hence, improving SOEs' performance is a critical issue for all stakeholders.

In most developing and transition economies, SOEs are labelled as loss-making and inefficient enterprises that are a burden on governments' finances and scarce resources (Mbo, 2017). Their resulting poor financial performance affects service delivery and their ability to fulfil the government's growth and developmental objectives (Hailemariam, 2001).

South Africa has a long history of using SOEs as instruments of socio-economic advancement and they have made a significant contribution in this regard. However, almost two decades ago, Fourie (2001), noted that structural and operational problems had negatively affected SOEs' service delivery and infrastructural development and had caused irregular and unequal development patterns. The author added that, at the broader macroeconomic level, SOEs aimed to attract foreign direct investment in order to minimise public borrowing, and to enhance the economy in ways that encourage financial growth and industrial competitiveness. However, these problems have persisted and recent media reports highlight South African SOEs' poor performance. The reports note that SOEs find themselves in a precarious financial position. Unable to meet their financial obligations, they constantly call on government to bail them out. However, increased government guarantees have not remedied the situation.

Government recognises that the business models of some SOEs are unsustainable, and that their capital structures are too reliant on debt (National Treasury, 2018a). Attention thus needs to be paid to the variables that could improve their performance.

Given that South Africa's National Development Plan (NDP) 2030 regards SOEs as a driving force for service delivery and economic and infrastructural development, their underperformance is a severe threat. Notwithstanding the pressures that global markets have placed on borrowers in capital markets, South Africa remains committed to financing the infrastructure programmes outlined in the NDP in order to support economic growth (National Treasury, 2015a).

SOEs are large contributors to economic activity and well-managed public sector assets can promote economic growth and social development. However, when these entities do not perform well, they can materially affect broader public finances and become a drag on economic progress.

The financial and operational performance of many SOEs has weakened with capital expenditure representing approximately 42% of total public sector infrastructure expenditure, as outlined in the 2017 Budget Review (National Treasury, 2017b). Government's borrowing requirement for 2016/17 was R32.8 billion higher than projected due to higher borrowing estimates by SOEs.

Table 1.1 displays the combined balance sheet items of the major SOEs listed as Schedule 2 entities of the Public Financial Management Act. It is expected that capital expenditure should reduce profitability in cases where SOEs are making large investments in infrastructure; however in the case of several SOEs declining profitability reflects mismanagement, operational inefficiencies and rising financing costs.

There are concerns from lenders about governance failures at many SOEs with bond auctions being cancelled or undersubscribed in several of the major entities. This has caused severe liquidity shortages, and further dependence on government for assistance through guarantees or recapitalisation. (National Treasury, 2017b).

Table 1-1: Combined balance sheet items of Schedule 2 SOEs

	Combined balance sheets items of Schedule 2 SOEs							
R billion / % growth	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17
Total assets	R518	639	708	R794	R904	R1 042	R1 184	R1 225
	15.2%	25.5%	10.7%	12.1%	13.8%	14.4%	13.6%	3.5%
Total liabilities	R342	R423	R471	R542	R630	R740	R822	R869
	17.6%	23.8%	11.1%	15.1%	16.1%	16.6%	11.2%	5.7%
Net asset value	R176	R217	R238	R252	R275	R303	R362	R356
	10.5%	22.9%	9.7%	6.2%	8.9%	9.4%	19.3%	-1.5%
ROE (average)	3.8%	6.7%	7.6%	4.1%	3.1%	-2.9%	0.8%	0.3%

Source: National Treasury (2015a), National Treasury (2017b), National Treasury (2018b)

Despite SOEs having a developmental mandate, they are also required to be financially sustainable in terms of the legal frameworks that govern them. The combined return on equity of Schedule 2 entities as illustrated in Figure 1.1 depicted poor returns since the 2012/13 financial years. The return on equity, which measures how much profit is generated with shareholder funds, was 0.8 per cent. Using the R186 bond as a proxy, the government's average cost of borrowing is 8% during this period. When the government borrows at 8% and provides capital to SOEs that are generating a lower return on equity, it represents value lost to the public finances (National Treasury, 2017b).

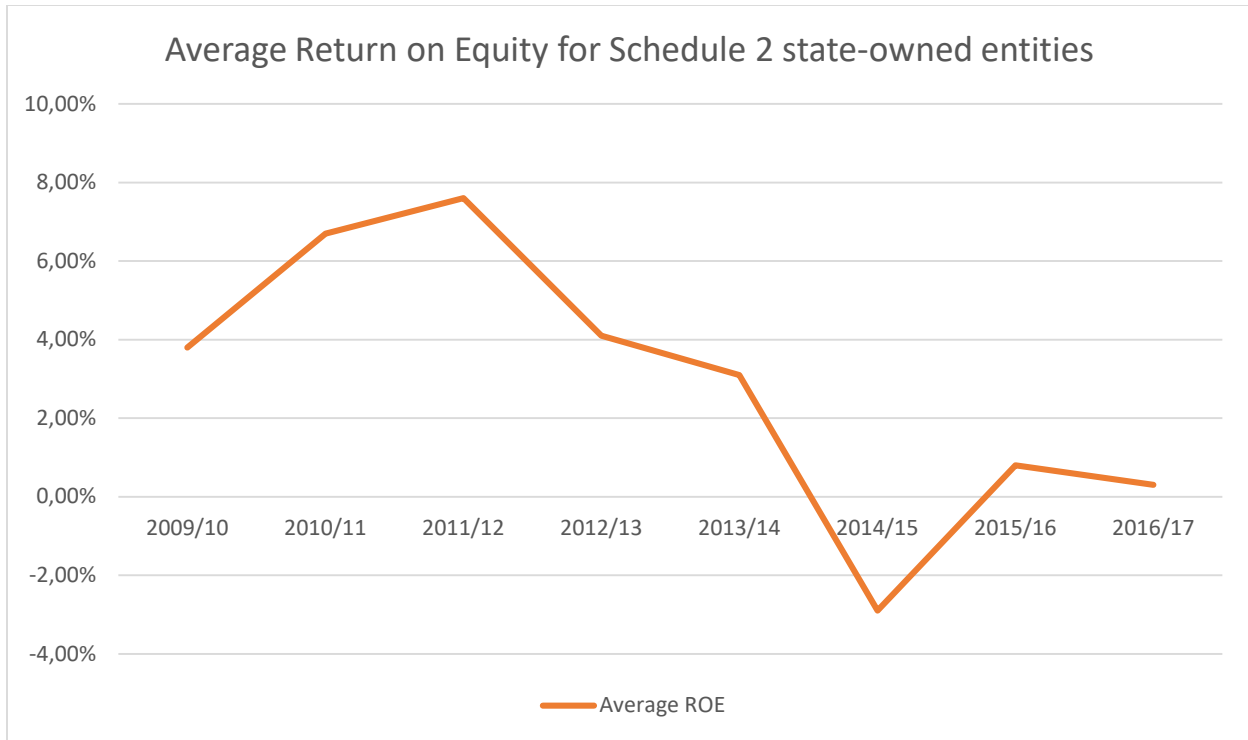


Figure 1-1: Average return on equity of major Schedule 2 SOEs

Source: National Treasury (2015a), National Treasury (2017b), National Treasury (2018b), own contribution

In 2013, recommendations were made by the Presidential Review Committee (PRC), tasked with investigating the SOEs to improve the performance of these entities:

“The Government should develop and adopt a policy shift towards a greater mix of debt finance and equity finance.”

“Private sector participation in partnering with state-owned enterprises to deliver on the provision of both economic and social infrastructure should be encouraged and expanded”(Presidential Review Committee, 2012: 9)

The 2018 Budget Review (National Treasury, 2018b) noted that government borrows money in order to finance the difference between revenue and expenses and debt payments that are due. In 2017/2018 the budget deficit increased to R217.3 billion from R170.5 billion in 2016/2017, bringing the total borrowing requirement to R246 billion in 2017/2018. In the 2017 Budget Speech, it was projected that gross loan debt would increase from 48.6% of Gross Domestic Product (GDP) in 2016-2017 to 49.4% in 2018-

2019. Concerns were also raised about the rate at which debt levels were increasing. Debt service costs, which include repayments and interest on the debt, were the fastest-growing expenditure item in the budget. Furthermore, South Africa's national debt stood at R2.2 trillion or 50.7 % of GDP (National Treasury, 2017a), far greater than other emerging economies. Debt servicing costs were projected at R162.4 billion, R180.7 billion and R197.3 billion in the 2017/18, 2018/19 and 2019/20 fiscal years, respectively (National Treasury, 2017a). This means that the country will spend around R540.4 billion over the next three years on debt servicing costs. In order for the government to fund the budget deficit, it will have to borrow at sustainable levels and the borrowing costs will depend on lenders' perceptions of its ability to repay the debt. Lenders in bond markets rely on sovereign credit ratings by rating agencies who consider the credibility of a government's macroeconomic framework, the integrity of SOEs, the political environment and the country's economic growth prospects when revising their ratings.

Rating agencies and international investors have raised concern with regard to South Africa's low economic growth, political risk, policy uncertainty, and the combination of governance failures and SOEs' weak balance sheets. In response to weak economic growth, fiscal consolidation, debt levels and SOEs' poor performance, in 2017, rating agencies, Standard & Poor Global and Fitch Ratings downgraded the country's credit ratings, which contributed to heightened volatility in domestic capital markets (Haden, 2017). Eskom and other SOEs contributed to the series of downgrades inflicted on the country while these downgrades caused their balance sheets to shrink even further, with further deterioration in their liquidity positions (Mutize, 2018). At the end of March 2018, Moody's affirmed the country's sovereign credit rating at investment grade and changed the outlook to stable. However, it warned that if risks at SOEs materialise and increase the government's debt burden, this could lead to downgrades (South African Reserve Bank, 2018).

The South African Reserve Bank (2018) warned that the likely inability of SOEs to roll over debt and achieve financial consolidation could render the government liable and possibly unable to finance the debt, placing a strain on public finances. SOEs' failure to roll over debt implies that the government would have to borrow more, which would result

in a deteriorating balance sheet. This could threaten the financial stability of the country and ultimately result in more credit-rating downgrades.

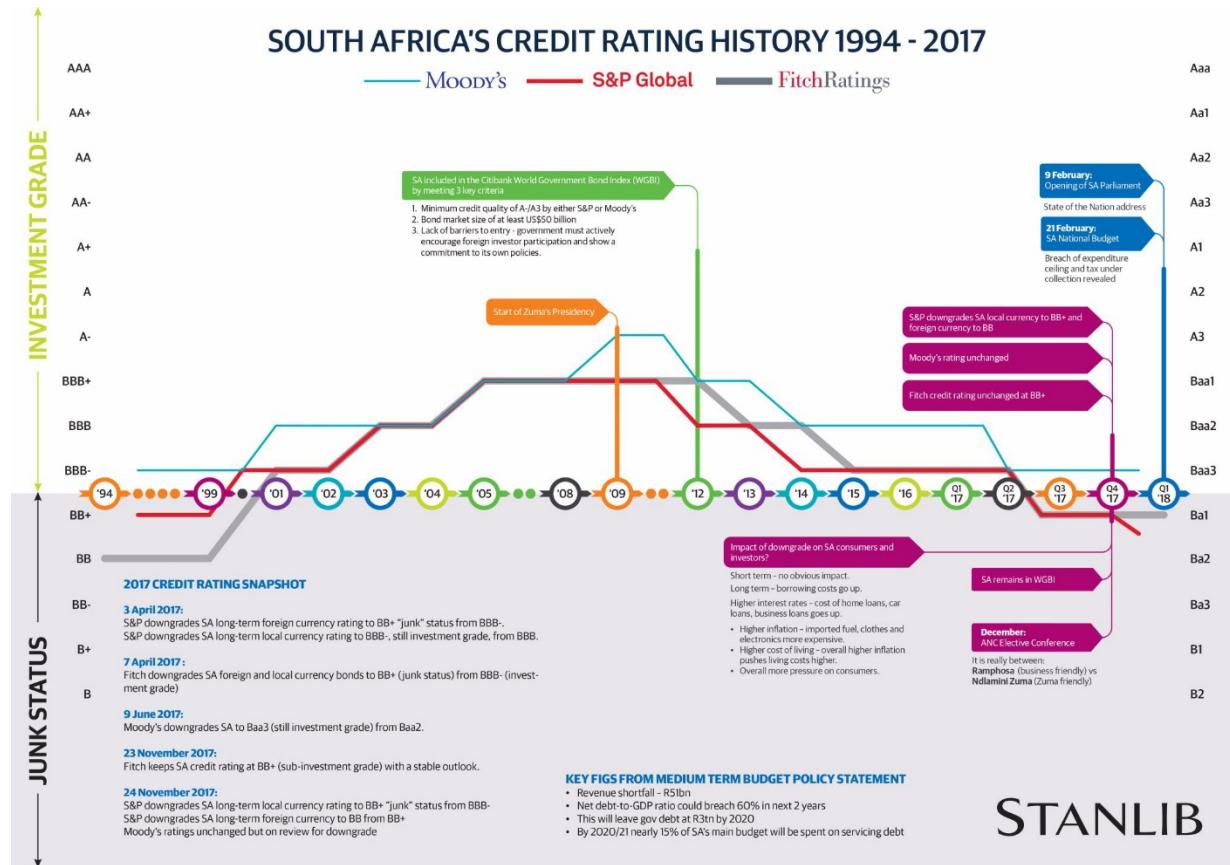


Figure 1-2: South Africa's credit rating history

Source: Stanlib (2017)

Figure 1.2 above shows that South Africa's credit rating improved between 1994 and 2009. However, since the onset of the global economic crisis, the economy has been on a steady downward path. Moody's has given the highest rating amongst the three ratings agencies and is the only agency that has not downgraded South Africa to full junk status (Business Tech, 2017, Mphaphuli, 2017). This has significant negative consequences for investment as policies prevent hedge funds, pension funds and asset managers from investing in a country with junk status. A sovereign ratings downgrade also increases the cost of borrowing for the government and the private sector, causes capital outflows,

weakens the currency and increases the cost of living. For SOEs, the downgrades limit funding options, since it deters investors with specific limitations to investing funds in entities that are sub-investment rated.

Government guarantees involve the government taking full responsibility for a financial obligation in the event of a default by an SOE. According to the NDP, guarantees should be used selectively to lower the cost of capital as well as secure long-term finance (National Planning Commission, 2010). The South African Reserve Bank's (2018) Financial Stability Review warned that governance issues at SOEs, rising contingent liabilities and inadequate liquidity could add pressure on government finances through the increased use of guarantees.

The National Revenue Fund (NRF) records the guarantees issued, and governments total exposure to the guarantees. Where SOEs default on their guaranteed liabilities, these are directly charged to the NRF. In 2016/2017, guarantees of R440,26 billion were issued to 12 SOEs and the government had exposure to a total liability of R243 billion (AGSA, 2017). The 2017/2018 auditor's report revealed that guarantees of R428 billion were issued to 10 SOEs with governments exposure increasing to R290 billion. In the past three years, the percentage exposure to guarantees increased from 47% in 2014/15 to 65% in 2016/17 (National Treasury, 2017b). The rising contingent liabilities of the government to SOEs is quite alarming, including Eskom Holdings SOC Ltd who is the single biggest recipient of guarantees. Of the total guarantees, 82% (R350 billion) was issued to Eskom, with a R245 billion exposure that was utilised to obtain loans from lenders. This exposure increased by 21% from the R203 billion exposure reported in the 2016/2017 financial year (AGSA, 2018). The guarantees and exposure pose a significant risk to the country's fiscal position. Government's exposure to guarantees has increased in the past fiscal year as SOEs drew on the guarantees and an increase in the use of guarantees will add pressure to the state finances. When lenders call on guarantees for SOEs, this would increase the budget deficit, government debt and borrowing costs, and result in credit ratings downgrades from rating agencies (AGSA, 2018). Eskom and SANRAL, two of the SOEs with the largest guarantee exposure, had their credit ratings downgraded to sub-investment grade in November 2017: Moody's Investors Service

adjusted Eskom’s long-term credit rating to B1 (highly speculative) and SANRAL’s rating to Ba1 (non-investment grade – speculative).

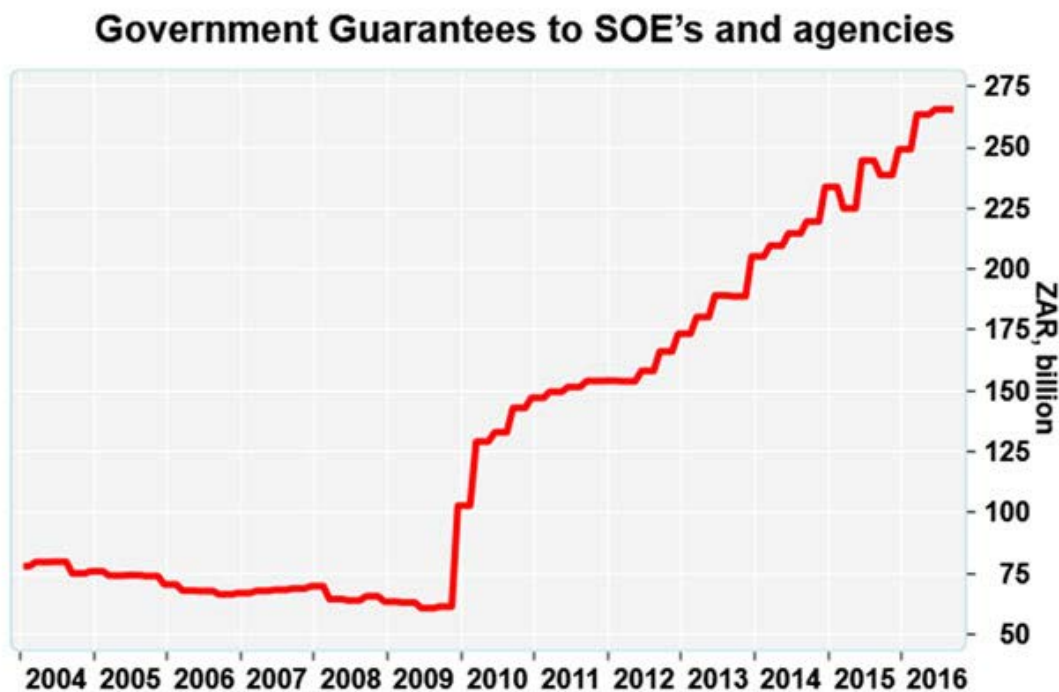


Figure 1-3: Government Guarantees to SOEs and Agencies

Source: Economists (2016)

Demands for additional guarantees or capital injections for SOEs since 2009 as depicted in Figure 1.3, combined with weak economic growth and a deterioration in the fiscal position would likely increase debt and borrowing costs (National Treasury, 2017b).

One of the keys risks to South Africa’s downgrade was the loss of control over the fiscal policy and the guarantees issued to SOEs pose an additional risk to the fiscal outlook (Department of National Treasury, 2016). Cordella et al. (2016) suggested that government guarantees lead to an increase in leverage, resulting in increased risk-taking. SOEs have performed at lower levels than private entities in their sectors; yet they continue to exist due to support received by government (Halkos, 2002).

It is thus clear that South African SOEs are in a critical state and in desperate need of reform. They have been constantly bailed out by the government which has not improved the situation; instead, it has increased pressure on the fiscus and threatened the financial

stability of the country (Mutize, 2018). There is a lack of commitment on the part of all levels of government to reform these entities and address the challenges affecting their performance. This is evident in the retention and recycling of corrupt executives involved in scandals (Mutize, 2018).

The corruption levels within government and SOEs is another serious factor that cannot be ignored. The Auditor General (2017: 10), noted that irregular expenditure increased by 55% and added that:

“As long as the political leadership, senior management and officials do not make accountability for transgressions a priority, irregular, unauthorised and fruitless and wasteful expenditure as well as fraud and misconduct will continue. An environment that is weak on consequence management is prone to corruption and fraud, and the country cannot allow money intended to serve the people to be lost”

The Corruption Perception Index measures the perceived level of corruption of countries’ public sector on a scale ranging from 0 which implies highly corrupt to 100 implying totally “clean” as reflected in Figure 1.4.



Figure 1-4: South Africa’s corruption index

Source: Transparency International (2018)

As reflected in Figure 1.4, the corruption index in South Africa has increased from 56.80 in 1996 (Transparency International, 2018) to 45 in 2016. The most recent score released was 43 in 2018. These were attributed to the country’s endurance of large scale bribery,

fraud and corruption scandals over the past two years from 2016 to 2018 (Business Tech, 2019).

Another serious concern is the excessive remuneration packages of executives that manage SOEs. These have been increasingly scrutinised by the media, especially in relation to large termination payments and the widening the gap between ordinary employees and these executives (Bezuidenhout, 2016). Executive remuneration is regarded as excessive and unmerited in light of the poor performance of these entities (Bussin and Ncube, 2017). Lack of transparency in disclosing remuneration packages adds to such perceptions (PWC, 2018). Furthermore, inconsistencies in remuneration amongst senior executives between SOEs is notably varying. There is no justification why CEOs in some SOEs are remunerated at considerably higher levels than in others, and furthermore, there are significant differences in the salary increases awarded to the CEOs of several SOEs (Bezuidenhout, 2016).

Morton and Blair (2016) found that the average total guaranteed remuneration package of SOEs was similar to the private sector. Remunerating SOE executives on par with the private sector is arguable as there is cause for concern when several SOEs are experiencing financial constraints and are underperforming. Furthermore, remuneration not linked to performance is inflationary and places a substantial burden on taxpayers as the percentage of tax revenue would increase to fund the remuneration of the public sector executives.

Despite their publicized inefficiencies and poor performance, SOEs are key to the development of the economy as they operate in what the government considers strategic sectors or sectors of national importance to the country. There is limited research on SOEs in South Africa, especially the factors that drive their performance and the impact of the government bailouts that they are in constant need of.

1.3 Problem statement

SOEs are central to achieving the developmental objectives set out in the NDP. This requires that, South Africa is served by a set of SOEs that are, amongst other things,

financially sound by 2030 (National Planning Commission, 2010). However, as outlined in the 2017 and 2018 Budget Reviews, the financial and operational performance of many SOEs and their financial distress pose risks to fiscal consolidation (National Treasury, 2017b, National Treasury, 2018b).

The use of debt to finance investments is a common feature of the balance sheets of SOEs. However, financing is a complex issue that poses a challenge in the development of rational theories as there are no clearly demarcated capital structure theories that are applicable to these entities (Nyamita, 2014). The capital structure of SOEs differs from that of private entities as well as from SOEs in other economies (Huang et al., 2018, Ahmad et al., 2017). SOEs are more likely to absorb socio-political benefits from the government; hence their risk-taking is far greater than private entities with regard to their decisions on capital structure. Furthermore, they are exposed to far greater moral hazards as a result of leverage where there are incentives to take on excessive risks (Ahmad et al., 2017). There is a rich empirical and theoretical literature on the factors that influence firms' capital structure in both developed and developing economies. These factors have been found to shape the financing policy of firms in developed economies and the private sector. However, they may not be fully transferable to emerging economies. Traditional capital structure theories may be applied to SOEs in South Africa that pursue commercial objectives; however, social and political influences may affect their pursuit of such objectives (Capalbo and Palumbo, 2012).

There has been ongoing negative media publicity on the poor performance of South African SOEs. These entities constantly find themselves in precarious financial positions where they are unable to meet their financial obligations, forcing them to call on government to bail them out. However, despite increased government guarantees, the financial performance of many SOEs is not improving and they are in a state of perpetual financial distress. The overall status of SOEs in South Africa is thus one of underperformance and constant dependence on the government. In a situation of weak overall economic growth, this has led to calls for government to sell some of the underperforming SOEs (Chilenga, 2016). Despite, government attempts at reforms to improve the performance of these SOEs, these interventions have yet to have any significant effect on their financial stability. These entities are bleeding the fiscus dry

through guarantees and bailouts. This raises the question of what explains SOEs' financial performance and capital structure as well as the capital structure policies they pursue.

Boards and executives should be held accountable for service delivery and the financial performance of the SOEs, and where poor performance and transgressions are found, there must be immediate and effective consequences (AGSA, 2017). However, the media and the public continue to scrutinise these SOEs for their high levels of corruption and excessive remuneration packages of executives that they believe to be unjustified by the poor performance of several SOEs. In addition to the issues of high debt levels, increased government guarantees, corruption, credit ratings downgrades and poor financial performance, the misalignment between executive remuneration and financial performance is becoming an area of increasing concern.

1.4 Research objectives

This study aimed to investigate the capital structure and firm performance nexus among South African SOEs. The following research objectives were formulated to achieve this aim:

1. Determine the capital structure theory that explains the financing behaviour of South African SOEs.
2. Analyse the determinants of the financial performance of South African SOEs.
3. Investigate the relationship between executive remuneration and the financial performance of South African SOEs.

1.5 Research questions

The following research questions were posed in order to achieve these objectives:

1. Are South African SOEs following the pecking order theory or the trade-off theory in their financing decisions?

2. How does the capital structure of South African SOEs affect their performance with and without government support?
3. Is there a relationship between executive remuneration and SOEs' financial performance and is it justified?

1.6 Significance of the study

Most studies in the area of capital structure and financial performance have focused on the private sector in developed economies. This study contributes to the literature by using public sector data from a developing economy. Few studies have been conducted on South African SOEs (Bezuidenhout, 2016, Chilenga, 2016, Ngwenya and Khumalo, 2012, Otieno, 2012). This study explicitly models capital structure, government guarantees, credit ratings and corruption as some of the factors influencing SOEs' financial performance, which is a marked departure from previous studies in this area.

The firm-specific and macroeconomic factors that affect SOEs' capital structure and financial performance vary and no single theory has been identified that conclusively explains them. This study introduces a new perspective by considering a range of variables in the context of capital structure theoretical predictions and their interplay in influencing the performance of SOEs in a developing economy. Application of these theories to an SOE structure in a developing economy tends to reveal tension amongst some of them. The combination of factors that affects SOE performance are different from other business entities as SOEs are exposed to political interference and also have to deal with vast and conflicting stakeholder interests.

This gap in the literature compounds the policy conundrum insofar as improving SOE financial performance is concerned. The findings of this study offer important insight to policy makers by highlighting key variables that can support improved financial performance.

1.7 Organisation of the thesis

This study is comprised of seven chapters. An essay approach is adopted, with chapters four, five and six separately dealing with each of the study's three objectives. The thesis is organised as follows:

Chapter one introduces the study by providing background information, the problem statement, the research objectives and questions, and the study's significance. Chapter two reviews the literature on SOEs, while chapter three reviews the theoretical and empirical literature on capital structure.

From this point, the thesis adopts an essay approach, with each chapter covering a research objective and hence employing its own research method, and presentation, interpretation and discussion of the results.

Chapter four covers the first objective on the capital structure theory that explains the financing decisions of SOEs in South Africa. Chapter four is twofold: firstly the trade-off theory is empirically tested and secondly the pecking order theory is empirically tested.

Chapter five addresses the second objective on the influence of capital structure and other determinants on financial performance. Chapter five is also twofold: firstly the effect of leverage and other control variables on the financial performance is empirically investigated. Secondly, government guarantees is incorporated into the model to examine its effect on financial performance.

Chapter six covers the third objective which seeks to determine if there is alignment between executive remuneration and firm performance.

Finally, chapter seven presents an overall summary, conclusions and recommendations. The chapter concludes with limitations of the study followed by suggestions for future research.

CHAPTER 2

OVERVIEW OF STATE-OWNED ENTITIES

2.1 Introduction

This chapter presents a detailed review of the literature on SOEs. It commences with the various definitions of SOEs, followed by a policy framework that details the types of SOEs and further identifies the current legislative mechanisms and policies in place to guide their operations.

The chapter explores SOEs in South Africa during the apartheid era and post-1994, highlighting the policy and legislative frameworks for these entities. The post-apartheid era has seen a major increase in the number of SOEs. Key challenges facing SOEs in terms of their performance, governance and reforms, amongst others are also identified and discussed.

2.2 Defining state-owned entities

SOEs are of great importance to the South African economy as they are regarded as the drivers of economic growth and significant vehicles in providing vital infrastructural services including transport, energy and water, hence enabling the economy to grow while ensuring equal access to quality services (Kikeri, 2018).

Depending on the rationale for their establishment, SOEs can be classified into commercial or non-commercial entities. Commercial SOEs are government business enterprises that carry out the functions of the government along commercial lines, with total or partial government ownership (Moeti, 2013). Commercial entities have a profit-maximisation objective and are also tasked with economic development; however, their focus should also be on improving service delivery. Non-commercial SOEs are formed by the government to carry out functions on their behalf with the main aim of providing goods and services to the public. They pursue specific objectives that are not financially driven, and they are legally barred from declaring dividends (OECD, 2015). SOEs can thus be

defined as entities that are controlled and publicly owned with a focus on financial activities and economic growth. Ferreira (1993) defined SOEs as legal entities that have been partially or wholly established as business organisations by the government to conduct some commercial activities. Ferreira adds that they generate revenue through the sale of the products, goods and services they trade and even though the government intervenes financially, it remains the duty of SOEs to generate revenue.

The government is not completely responsible for funding SOEs to improve operations; these entities are also expected to formulate innovative revenue generation strategies in line with their business activities (Ferreira, 1993). According to Turner et al. (2015), SOEs can be described as entities which sell output, are involved in market processes, and achieve clearly defined public purposes. Their activities are of a business nature and they are regarded as key drivers of social and economic growth throughout the world (Public Sector Research Centre, 2015).

The International Monetary Fund (2014) defines SOEs as public entities that are regarded as business enterprises, independent of their owners, namely government, through legislation and administrative regulations. They produce financial statements that clearly show the assets and liabilities that are used in their business operations. They include government agencies that are involved in trading commercial and industrial goods on a large scale to the public.

According to Bernier (2011), in the 20th century, SOEs were a fundamental tool to enable state involvement in the economy. He notes that defining the characteristics of ownership requires coordination among various stakeholders as the relationship between the entity and its environment is usually complex. SOEs are used to respond to global issues that emanated from the bureaucracy of traditional government that was unable to meet new objectives and demands (Mtshali, 2016).

The legal framework in which SOEs in any given country are situated enables them to operate as business enterprises or along commercial lines on behalf of the government (Ferreira, 1993). It is important that they are governed by a legal framework, especially those that operate on a commercial basis as they are expected to cater for the needs of the public and generate income and earn profits (Mtshali, 2016). Marrez (2015) suggests

that it is crucial to determine the extent to which government is involved and the distinctive legal frameworks that govern SOEs. The author adds that the government often sets the regulatory framework; however, this depends on whether government has complete ownership of the entities.

SOEs should aim to reduce the government's burden. They should hence not be totally reliant on state funding but should generate revenue from the sectors that they operate in and, indeed, are often mandated by regulations to do so (World Bank Group, 2014). Turner et al. (2015) note that in most countries, the government holds 50% or more of the ownership stake in SOEs. Majority ownership enables the state to protect the public's interests. Finally, specific systems of accountability are often adopted to guide SOEs (Mtshali, 2016).

2.3 Framework of state-owned entities in South Africa

The main legal framework that governs SOEs in South Africa is the Public Financial Management Act (PFMA), which defines an SOE as a public entity formed by the government to carry out its mandate. Entities that fall under this Act include national public entities, provincial public entities and municipal entities with their legal status varying from being a part of government to being wholly-owned, or listed stock corporations, with the government as the majority stockholder (National Treasury, 2015b).

SOEs are classified as per the PFMA into Schedule 1, 2, and 3 comprising of a total of 291 entities (National Treasury, 2015c). Figure 2.1 provides a breakdown of these entities in terms of their classification into constitutional institutions, major public entities, national public entities, national government business enterprises, provincial public entities and provincial government business enterprises.

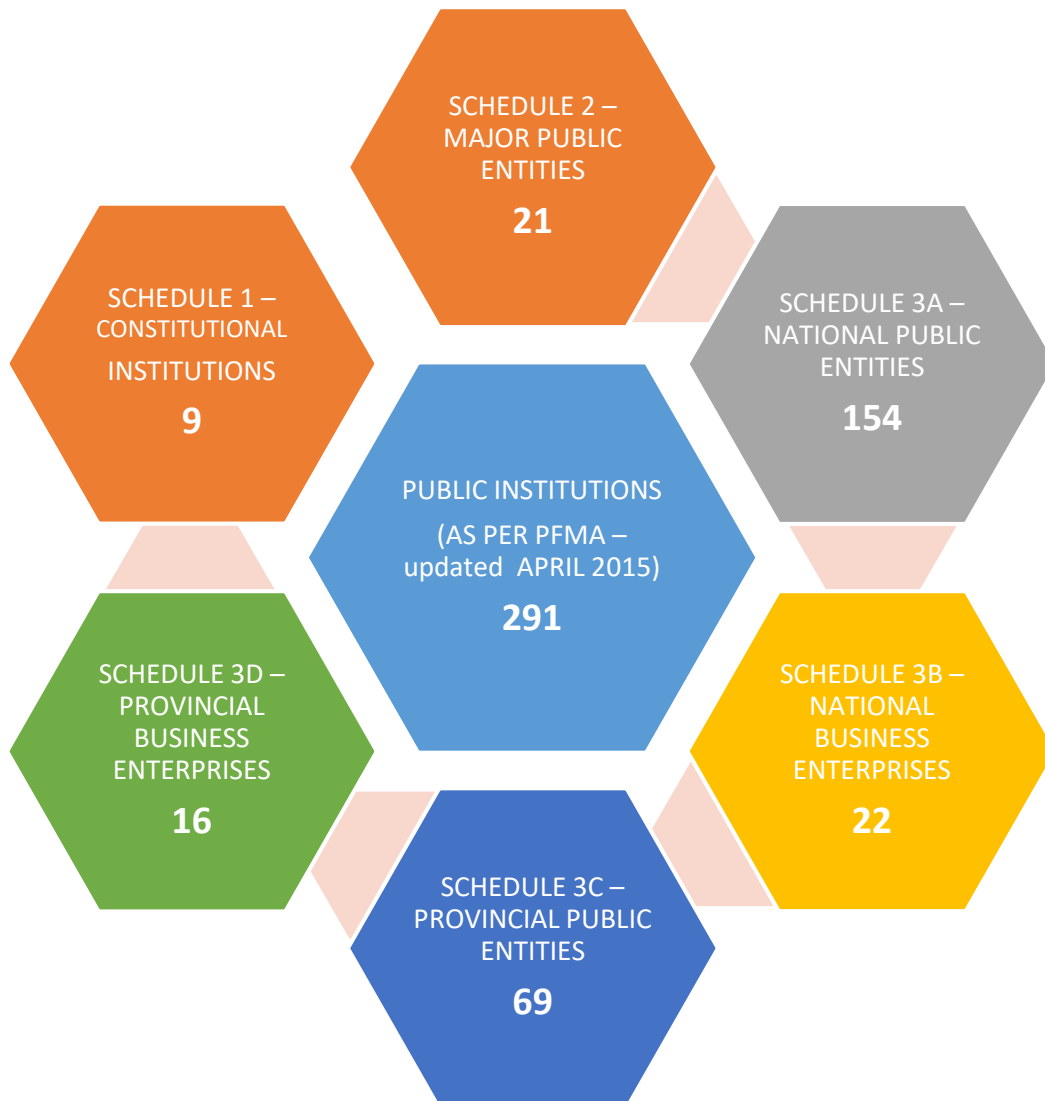


Figure 2-1: Classification of state-owned entities in South Africa

Source: Adapted from the National Treasury (2015c)

Schedule 1 consists of constitutional institutions established in terms of Chapter 9 of the South African Constitution to safeguard democracy. Schedule 2 consists of major public entities which have managerial autonomy to carry out business activities in accordance with ordinary business principles. Their principle business is to provide goods or services. Schedule 3 consists of other public entities including national and provincial business enterprises and public entities, classified as Schedule 3A, 3B, 3C and 3D. Table 2.1 outlines the differences between the Schedule 3 entities. Schedule 3A and 3C are

national and provincial public entities. Schedule 3B and 3D are national and provincial government business enterprises, respectively that carry out business activities according to ordinary business principles, in order to provide goods or services.

According to Kikeri (2018), the Schedule 2 and 3B SOEs at the national level are amongst the most important as they play a significant role in the economy by contributing more than 8.5% of South Africa's GDP. These entities also maintain networks and services in key sectors. SOEs based on infrastructure include Eskom, Transnet, Water Boards, the Airport Corporation of South Africa (ACSA), South African Airways (SAA), and the South African National Roads Agency (SANRAL). Financial SOEs include the Development Bank of South Africa (DBSA) and the Land and Agricultural Bank. SOEs operating in the national security sector include Denel, the Central Energy Fund (CEF), Petroleum Agency of South Africa (PetroSA), Armscor, and the Trans-Caledon Tunnel Authority (TCTA). Social and developmental SOEs include the South African Post Office (SAPO), South African Broadcasting Corporation (SABC) and South African Forestry Company Limited (SAFCOL).

The Department of Public Enterprises (DPE) is the shareholder representative of the South African Government that has oversight responsibility for key sector SOEs. The minister of the DPE has stated that these SOEs should advance economic transformation, industrialisation and import substitution (DPE, 2015). The DPE has oversight responsibility for seven of the SOEs at the national level, namely, Alexkor, Denel, Eskom, South African Express Airways, South African Forestry Company, the South African Broadcasting Corporation and Transnet.

Table 2-1: Schedule 3 entities as per the PFMA Act No. 1 of 1999

Schedule 3A: National public entity	Schedule 3B: National government business enterprise	Schedule 3C: Provincial public entity	Schedule 3D: Provincial government business enterprise
(a) These entities include a board, commission, company, corporation, fund or other entity except for the national government business enterprises.	(a) These are juristic persons controlled by the national executive.	(a) These entities include a board, commission, company, corporation, fund or other entity except for provincial government business enterprises.	(a) These are juristic persons controlled by the provincial executive.
(b) Their establishment is in terms of national legislation.	(b) They have the authority to carry out financial and operational business activities.	(b) Their establishment is in terms of provincial legislation.	(b) They have the authority to carry out financial and operational business activities.
(c) They may be wholly or substantially funded through the NRF, taxes, levies or other statutory funds.	(c) Their principle business is the provision of goods or services in accordance with ordinary business principles.	(c) They may be wholly or substantially funded through a Provincial Revenue Fund, taxes, levies or other statutory funds.	(c) Their principle business is the provision of goods or services in accordance with ordinary business principles.
(d) They are accountable to Parliament.	(d) They are financed entirely or substantially from sources other than the NRF, through taxes, levies or other statutory funds.	(d) They are accountable to their provincial legislature.	(d) They are financed fully or substantially from sources other than the Provincial Revenue Fund, through taxes, levies or other statutory funds.

Source: Adapted from National Treasury (2015c)

2.4 Legal frameworks governing state-owned entities

The Organisation for Economic Co-operation and Development (OECD) guidelines on the corporate governance of SOEs provide advice to countries on how to effectively manage their responsibilities as owners of SOEs in order to increase their competitiveness, efficiency and transparency (OECD, 2015). It is important for SOEs to be governed by a sound legal framework, especially those that have been established as commercial entities. This framework lays the foundation for sound corporate governance by providing clear guidelines in terms of policies, rules and regulations and striking the right balance between accountability and autonomy (OECD, 2015, Kikeri, 2018, Presidential Review Committee, 2012). In a properly functioning framework, expectations and good practices are communicated to the owners, boards, and management of SOEs and the public. However, contrary to good practice, the legal framework of SOEs in South Africa inhibits good governance as it consists of a myriad of overlapping laws and regulations (Presidential Review Committee, 2012).

The PFMA is the main legal framework that governs SOEs in South Africa. The main objective of the PFMA is to ensure transparency, accountability, and sound management of the assets, liabilities, income and expenditure of the entities to which the Act is applicable. However, according to Kikeri (2018), the PFMA does not address the appointment of SOE executives and boards, including government officials; developmental mandates and objectives; or the establishment, governance, and operations of SOE subsidiaries.

The South African Companies Act (Act 71 of 2008) also has implications for the operations of SOEs. While this Act applies to all SOEs, section 3(3) of the PFMA allows for the PFMA to prevail when there is a conflict between the PFMA and another Act. The PFMA is more pertinent in terms of SOEs as it is specific to the management of public finances, unlike the Companies Act that regulates private and public companies. One of the drawbacks of the Companies Act is that it does not distinguish between private companies and SOEs. Issues that differentiate SOEs from other companies include their developmental and social mandates, the need for a greater degree of accountability; delineation of the role of the government in directing the objectives and strategies of

SOEs; and the process to divest of shares in SOEs. Given the serious gaps between the PFMA and Companies Act, there is a need to strengthen the SOE legislative framework (Kikeri, 2018).

The King III and King IV Report on Corporate Governance is also applicable on a comply or explain basis to all commercial and non-commercial SOEs. The multiplicity of laws together with the lack of a regulatory framework dedicated to SOEs has had an adverse impact on SOE governance and undermined the government's role as owner (Presidential Review Committee, 2012).

The multiplicity of laws together with the absence of a regulatory framework dedicated to SOEs has had an adverse impact on SOE governance and undermined the Government's role as the owner (Presidential Review Committee, 2012).

2.5 State-owned entities in South Africa

2.5.1 State-owned entities during the apartheid era

South Africa has a long-standing history of using SOEs as a mechanism for socio-economic advancement. This dates back to the early decades of the 20th century when the state sought mechanisms to build a sustainable industrial economy (Fourie, 2001). From 1948, the apartheid regime used SOEs to advance the interests of the white minority, especially Afrikaners, at the expense of the black majority (Ritchken, 1997).

The Companies Act 61 of 1973 classified SOEs as either non-profit or profit organisations. The Act was the sole governing legislation for SOEs. The Industrial Development Corporation (IDC) was established in terms of this Act as a financial institution owned by the state to fund developments. Prior to the imposition of sanctions on South Africa, around 30% of the GDP and 95% of South African's exports were accounted for by the energy and rail sectors (Mtshali, 2016).

During the 1980s, the National Party (NP) led government faced international economic sanctions. Combined with SOEs' poor economic performance, this prompted the restructuring of these institutions (Mekwe, 2015). The 1987 White Paper on Deregulation

and Privatization aimed to decrease government expenditure, create opportunities for the private sector, reduce the size of the public sector and raise funds from selling state assets (White Paper, 1987). It pointed to the need to reform SOEs, including full or partial privatisation of some entities.

2.5.2 State-owned entities post-1994

The democratic government that came to power in 1994 inherited a large portfolio of SOEs from the apartheid bureaucracy that were fraught with inefficiencies and required government subsidisation for survival, with some showing little prospect of achieving their mandate (Kanyane, 2013). There has been an increase in the number of SOEs across all three spheres of government (Fourie, 2001). The NDP notes that they are the driving forces for socio-economic development to address historical imbalances and ensure transformation (Mtshali, 2016).

In the early years of democracy, the ruling party, the African National Congress (ANC), debated nationalisation versus privatisation. However, there was strong opposition to the privatisation of SOEs, as, despite their imperfections, it was recognised that they could play a key developmental role. Furthermore, it was felt that the provision of essential services, which many SOEs are involved in, should not be privatised (Presidential Review Committee, 2012).

The democratic government aimed to overcome the structural deficiencies of fragmentation, departmentalism and non-responsiveness of the apartheid bureaucracy (Wenzel, 2007). The first decade of democracy saw the formation and implementation of transformation approaches, strategies and plans, from the Reconstruction and Development Programme (RDP) to the Growth, Employment and Redistribution (GEAR) policy. The RDP, which was adopted by the new government, proposed the nationalisation of strategic sectors and called for reversal of privatisation. It noted that privatisation of SOEs reduced government's ability to mobilise essential resources for development (Wessels, 1999). The objective was to develop and rebuild the economy by ensuring that basic needs are met, human resources are increased and society is democratised (Fourie, 2001). Massive state funding was required to fund the substantial

debt inherited from the apartheid government as well as meet the basic needs of the historically disadvantaged population. Government considered the sale and restructuring of state assets to provide funds for this massive state expenditure.

The GEAR policy was implemented in 1996 to support the RDP. It aimed to improve the government's efforts to transform the ailing economy inherited from the apartheid government. The GEAR policy shifted the focus from developmental service delivery to cost reduction and consolidation of political power (Wenzel, 2007). In line with these objectives, the DPE (Fourie, 2001) proposed the restructuring of public sector assets, including guidelines for the regulation, governance and financing of SOEs (Cheteni and Khamfula, 2018, Chilenga, 2016).

In 2011, the President commissioned the Presidential Review Committee (PRC) to undertake a macro review of all SOEs and their environment. A list of 300 SOEs was provided by National Treasury which excluded municipal entities, trusts and section 21 companies. The PRC required a more comprehensive database and hence contracted the Human Sciences Research Council (HSRC) to provide data on the number of SOEs, performance data and any other information relevant to the review. The HSRC compiled a comprehensive national database that consisted of 715 SOEs including subsidiaries, trusts and Section 21 companies. With such a large portfolio of SOEs, particular attention was paid to the state's capacity and capability to effectively oversee these entities, and to identify the best options to manage them without compromising their service delivery and financial performance.

The PRC's report contained 31 recommendations on reforming SOEs and their environment so that they perform optimally and are able to respond to the current and future challenges confronting South Africa. It noted that, while SOEs are not the solution to all challenges, they are regarded as an additional government instrument to achieve growth, development and transformation through creating employment and delivering basic services (Presidential Review Committee, 2012). The report further stated that SOEs can make a significant contribution to the developmental state, but that effective and sustainable transformation will not occur without strong, committed management; a supportive regulatory environment; effective performance evaluation; and appropriate

competencies and capabilities. Key recommendations included the separation of roles by government; formulating a strategy for SOEs; creating an enabling environment; and ensuring adequate and effective monitoring and performance evaluation of SOEs.

The leadership of the ANC declared that public-sector management reforms were aimed at a responsive, accountable and transparent state; however, Wenzel (2007) argued that, as long as the public development debate and policy processes are driven by economic interpretations and hegemonic political ambitions, the laudable objectives of the RDP will not be realised.

2.5.3 A general overview of the issues in state-owned entities

As noted previously, South Africa has a long history of using SOEs as instruments of socio-economic advancement, and these entities have made a significant contribution to the country's development. Furthermore, the NDP stresses that the country should be served by efficient and financially sound SOEs that provide effective and efficient service delivery in order to achieve developmental objectives (National Planning Commission, 2010). However, SOEs' performance levels continue to decline, with adverse effects on fiscal consolidation and economic progress (National Treasury, 2017b). Many SOEs in developing and transition economies are loss-making and inefficient enterprises that are a burden on government finances and scarce resources. Their resulting poor financial performance affects service delivery and their ability to fulfil the government's growth and developmental objectives (Hailemariam, 2001).

When the government is the main shareholder, SOEs are protected from bankruptcy and takeovers. This weakens the incentive for financial viability as the government guarantees their financial survival through bailouts and subsidies (Chilenga, 2016). Government continues to support failing SOEs through explicit guarantees and grants, contributing to poor managerial decision making and inefficient resource allocation. Cheteni and Khamfula (2018) argue that this contributes to their declining performance, exacerbating the financial burden on the fiscal and banking system and causing inflationary pressure and macro-economic instability due to currency volatility in exchange markets.

The financial and operational performance of many SOEs has weakened, hence in 2013, the PRC was tasked with investigating the SOEs to improve the performance of these entities. One of the recommendations of the PRC was that SOEs should be encouraged to form partnerships with private sector companies, as this would enable them to deliver and expand on the provision of both economic and social infrastructure (Presidential Review Committee, 2012).

Many SOEs do not follow the DPE's 2007 remuneration guidelines that were revised in 2011 (Maloa and Bussin, 2016). Given these entities' poor performance, the issue of executive remuneration, particularly with regard to chief executive officers, has attracted the attention of various stakeholders. The lack of alignment between pay and performance has been under scrutiny by the media, members of the public and academic commentators for some time (Bezuidenhout et al., 2018).

SOEs have also been criticized for their high levels of corruption and cronyism which result in inefficiencies (Cheteni and Khamfula, 2018) and hamper the achievement of economic growth (Business Tech, 2018). It is alleged that some SOE directors are appointed due to their political affiliation and that they lack the skills and expertise required to manage these entities (Chilenga, 2016). Such patronage (Chilenga, 2016) makes it difficult for board members to deny the wishes of powerful political leaders. It has also been noted that some SOEs procure goods and services without using proper tender channels, and that reliance on government bailouts reduces the incentive to procure goods and services that offer value for money (Zvavahera and Ndoda, 2014). Kim and Chung (2007) argue that SOE managers are more interested in maximizing the resources under their control for their own power and prestige. Patronage and nepotism at management level can lower staff morale, resulting in poor performance.

Kanyane and Sausi (2015) pointed to abuse of the subsidiarity principle among SOEs. Many subsidiaries are not transparent, and their financial reporting is to the holding company, making auditing and monitoring difficult. Some Schedule 3 entities abuse the subsidiarity principle by creating subsidiaries from other subsidiaries, knowing that the reporting requirements of a subsidiary are less stringent, especially since the PFMA does not address the establishment, governance, and operations of SOE subsidiaries formed

from other subsidiaries. Furthermore, a haven for corruption is created when the parent entity is non-commercial while the subsidiary is established as a commercial entity.

SOEs are criticised for their poor performance in comparison with their private sector counterparts. The implication is that those that can afford to purchase goods and services from private sector entities, choose them over SOEs (Kim and Chung, 2007). The general public and the private sector are dissatisfied with SOEs' service delivery, especially since levies and fees continue to rise. Eskom is a case in point. The energy SOE, which is a vertically integrated utility, provides 96% of South Africa's energy. Its weakened financial position is the result of a decline in its energy capacity which is due to delayed construction and maintenance; costs not being completely covered by tariffs; high levels of borrowing and low liquidity; and downgrading of its credit rating, limiting its access to capital markets. The downgrade resulted from weakened corporate governance structures (Kikeri, 2018). Other examples include Transnet and SANRAL, who are the key players in the transport sector, but have not efficiently addressed the transport costs that are critical to successful exports. Inefficiencies, policies relating to access and pricing and delays in ports and rail networks have hurt trade and eroded exporters' competitiveness. These inefficiencies are the result of underinvestment; the disjointed regulatory framework; a lack of competitive pricing; weak firm structures; monopolies in the rail and port sector; and cross subsidisation between operating divisions at Transnet. There is no economic regulator for rail. Performance standards and tariffs are set by Transnet and monitored by the DPE; hence the competitive pricing inefficiency (Kikeri, 2018).

In assessing the financial performance of SOEs that have a social and developmental mandate, it is important not to always compare their financial performance and achievements with private sector firms. However, in the case of some SOEs that are competing with private entities, such as SAA, such comparison can be appropriate and questions can be raised as to why the government effectively subsidised such entities. Monopoly is another factor that should be taken into consideration when discussing SOEs such as Eskom, ACSA and Transnet as this enables them to survive in the market regardless of their poor performance. The literature and media reports note that the

quality of overall governance of most of these SOEs is poor. Moreover, concerns have been expressed that such inefficiency might extend to national financial management.

The democratic government has adopted various strategies, policies and programmes to promote economic equality, development and transformation. Poor performance on the part of SOEs undermines such efforts. Financial and resource constraints impede their performance despite their awareness of the role they play in achieving social, economic and political objectives. A weak corporate governance system has been identified as the root cause. These issues include: (i) multiple and competing objectives; (ii) the lack of a clearly defined SOE regulatory framework; (iii) rising levels of corruption at politicised boards and management; (iv) uncertainty with regard to funding strategies and tariff policies; and (v) the lack of a proper performance evaluation system and disclosure practices (Kikeri, 2018).

SOEs proffered various explanation to the Auditor General for their poor financial status in the last two reporting periods (2016/2017 and 2017/2018). These include the downturn in economic markets and volatile economic conditions; increased commodity prices that affect SOEs as infrastructure providers; weak commercial and financial decision-making where SOEs are involved in onerous contracts; deteriorating confidence by financial markets and lenders attributable to financial mismanagement; and lapses in governance processes (AGSA, 2017, AGSA, 2018).

According to the Auditor General (2017, 2018), the main factors contributing to the deteriorating financial status of SOEs include unstable leadership in key positions; poor decision-making; inadequate financial management controls and processes; ineffective oversight; poor governance and ineffective risk management processes. Addressing these factors would enhance their business models by improving their ability to implement adequate financial management controls and long-term strategic direction and thus restore financial sustainability.

The lack of technical skills, long-term planning and financing capacities to sustain operations as well as inadequate infrastructure hinder the performance of SOEs. However, according to Kikeri (2018), there is scope for SOEs to become more effective.

2.6 Chapter summary

This chapter presented an overview of SOEs in South Africa. SOEs were defined in terms of commercial and non-commercial entities and SOE classifications based on the PFMA were discussed. The key issues confronting SOEs were highlighted as well as the need for a regulatory framework for these entities.

Despite their publicised inefficiencies and poor performance, SOEs are key to the development of the economy as they operate in what the government considers strategic sectors or sectors of national importance. Issues pertaining to leadership, capital structure and governance thus need to be urgently addressed (Sikhakhane, 2018). There is a paucity of research on South African SOEs, particularly the factors that drive their performance and the impact of constant government bailouts.

The following chapter presents a detailed discussion on capital structure based on a review of the theoretical and empirical literature. The key theories identified in the literature are discussed in line with the study's objectives.

CHAPTER 3

LITERATURE REVIEW ON CAPITAL STRUCTURE

3.1 Introduction

This chapter presents an in-depth review of the literature on capital structure. The discussion commences with a review of the seminal work of Modigliani and Miller (1958, 1963), followed by that of other theorists in the field of capital structure. The determinants of capital structure commonly identified in the finance literature that influence firms' financing decisions are also discussed. This discussion is in line with their theoretical relationship to capital structure theories.

Using debt to finance investments is a common feature of the balance sheets of SOEs. However, financing is a complex issue that poses a challenge in the development of rational theories as there are no clearly demarcated capital structure theories that are applicable to these entities (Nyamita, 2014). The capital structure of SOEs differs from that of private entities as well as from SOEs in other economies (Huang et al., 2018, Ahmad et al., 2017). SOEs are more likely to absorb socio-political benefits from the government; hence their risk-taking is far greater than private entities with regard to their decisions on capital structure. Furthermore, they are exposed to far greater moral hazards as a result of leverage where there are incentives to take on excessive risks (Ahmad et al., 2017).

There is a rich empirical and theoretical literature on the factors that influence firms' capital structure in both developed and developing economies. These factors have been found to shape the financing policy of firms in developed economies and the private sector. However, they may not be fully transferable to emerging economies. Traditional capital structure theories may be applied to SOEs in South Africa that pursue commercial objectives; however, social and political influences may affect their pursuit of such objectives (Capalbo and Palumbo, 2012).

The chapter is structured as follows: Section 3.2 discusses the concept of capital structure. Section 3.3 presents a detailed theoretical and empirical review of capital structure theories. Section 3.4 reviews the literature on capital structure in South Africa. Section 3.5 concludes the chapter.

3.2 Capital structure

The capital structure of an organisation refers to the proportion of debt and equity used to finance its business operations (Correia et al., 2015). Financing is the process of raising the capital required for corporations' investments and operations and may be a mix of internal or external sources of finance. Internal financing is the use of funds generated within a corporation and includes undistributed profits, whereas external sources of finance include share capital and debt (Gitman and Zutter, 2014). Sources of finance are categorised into retained earnings (internal financing), debt (external financing) and equity (external financing) (Frank and Goyal, 2003).

The optimum capital structure is the proportion of debt and equity that minimises the firm's weighted average cost of capital and maximises shareholder value. Debt financing carries more risks, but is less costly for an organisation as payment of interest is a legal obligation and failure to do so can result in liquidation. On the other hand, equity financing costs more, but is less risky as the organisation does not have a legal obligation to pay dividends to shareholders if it is underperforming. The greater the degree of financial leverage, the higher the proportion of debt, resulting in bigger interest payments which negatively affect the earnings attributable to shareholders (Firer et al., 2012).

3.3 Capital structure theories

The capital structure debate began with the seminal work of Modigliani and Miller (1958, 1963) which laid the foundation for the capital structure puzzle to which various theorists have contributed. Researchers have sought to identify the best combination of debt and equity that maximizes the value of the firm. Management also seeks to maximise the firm's value by employing an optimal capital structure which has the ability to influence

the environment the firm operates in as well as the firm's long-term survival. Hence, several capital structure theories have been developed to provide a framework to understand the financing decisions and the capital structure of firms (De Vries, 2010, Johansson and Lundblad, 2011).

Capital structure theories can be categorised, firstly, into those that assume the existence of an optimal debt level. These include the trade-off theory; the agency theory and the free cash flow theory. The second category consists of theories which are not based on the existence of an optimal debt level and includes the pecking order theory and market timing theory. Both categories can be modelled into either a static or dynamic framework. The dynamic version of the first category of theories is associated with adjustment behaviour towards the target debt level while the second category of theories is not associated with targets; instead, the non-target factors include the cost of adverse selection for the pecking order theory and the mispricing of common stock relating to the market timing theory (Abdeljawad et al., 2013).

3.3.1 Modigliani-Miller theorem

The main theories that underlie this study stem from the work of Modigliani and Miller (1958, 1963), the originators of the capital structure theories, popularly referred to as the MM Propositions. Their contributions included the MM Proposition I and II.

3.3.1.1 MM Proposition without taxes

The MM capital structure irrelevance theory marked the beginning of the debate on capital structure. It hypothesises that in a perfect capital market, in the absence of corporate taxes, bankruptcy costs, transaction costs and information asymmetries, the capital structure does not affect the market value of the firm, that is, the capital structure is irrelevant. In other words, in the absence of the aforementioned costs, the value of the firm is determined by its earnings power and the value of its assets and not by the manner in which investments are financed.

The MM I theory without corporate taxes theorises that the value of an unlevered firm (a firm without debt in its capital structure) is equal to the value of a levered firm as the relative proportions of debt and equity in the capital structure are irrelevant. It thus concludes that the value of a levered firm is equal to that of an otherwise identical unlevered firm. The implication is that the value of the firm is constant and the weighted average cost of capital is also constant.

MM II deals with the cost of equity, whereby the return on equity is a linear function of the firm's leverage; therefore, an increase in leverage results in an increase in the cost of equity capital. The reason is that an increase in leverage makes investing in the firm riskier; therefore, shareholders will demand a higher rate of return on their investment. However, due to the initial assumption that the capital structure is irrelevant, the weighted average cost of capital (WACC) is not affected when the debt-equity ratio changes, that is, the WACC is not a function of the firm's capital structure, and remains constant at all levels of leverage.

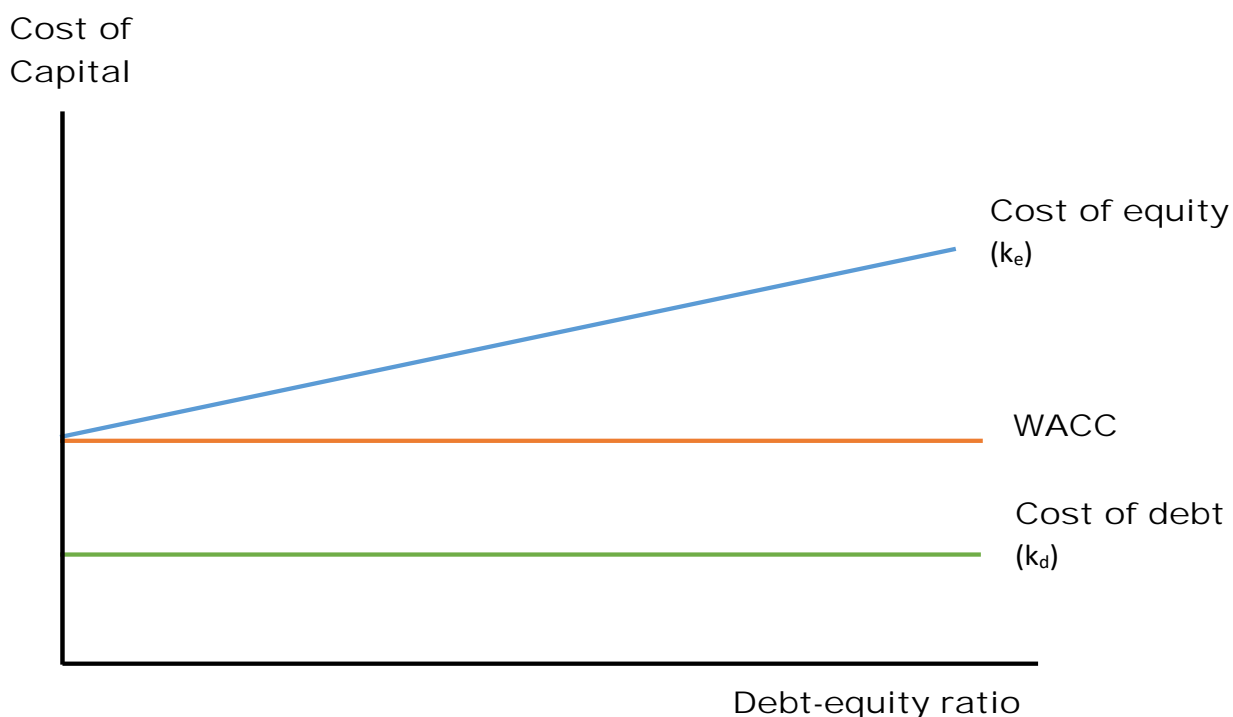


Figure 3-1: MM proposition without taxes

Source: De Wet (2006:5)

Figure 3.1. illustrates the MM proposition in the absence of corporate taxes. It shows that an increase in the debt to equity ratio would result in an increase in the cost of equity. However, the WACC would remain the same for all levels of debt due to the exclusion of tax. This model was criticised as it failed to incorporate real-world scenario such as taxes, transaction costs and information asymmetry.

3.3.1.2 MM Proposition with taxes

Where corporate taxes exist, the greater the proportion of debt in the capital structure, the more beneficial due to the interest tax shield. However, this increases the probability of incurring bankruptcy costs (Modigliani and Miller, 1958). Realising that there was no perfect market, and contrary to their earlier theory, Modigliani and Miller (1963) revised their original propositions to include corporate taxes in their model. They posited that firms that used debt financing have a tax shield benefit, with leveraged firms having a higher value. Furthermore, they found that by including corporate taxes in the existing model, capital structure becomes relevant as the firm's value increases.

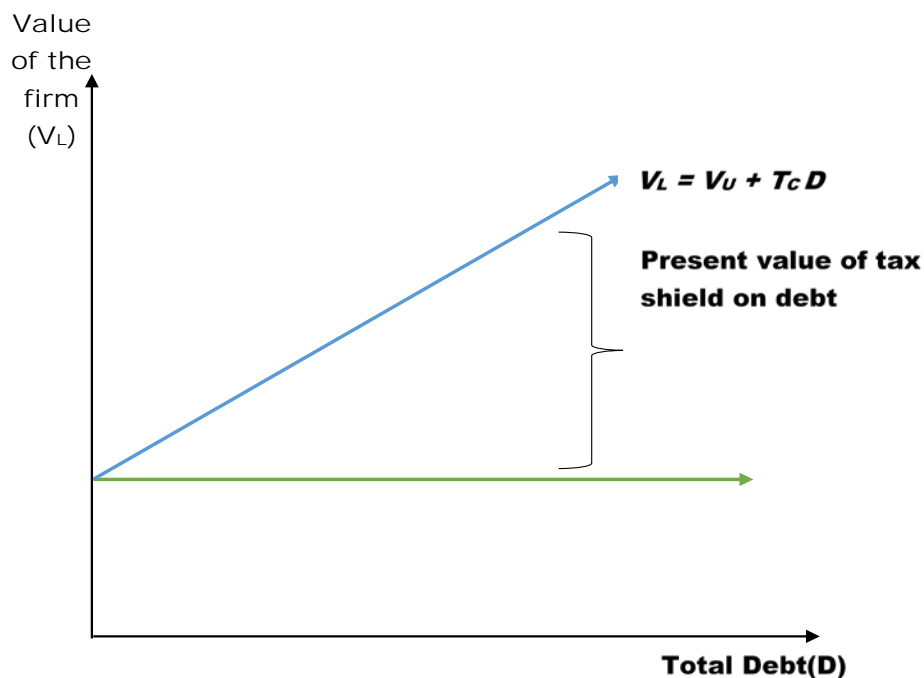


Figure 3-2: The value of a levered firm under MM Proposition I with corporate taxes

Source: SlidePlayer (2016:13)

Modigliani and Miller (1963) suggested that firms that used debt financing have a tax shield benefit and therefore leveraged firms having a higher value. Furthermore, they found that by including corporate taxes into the existing model, the capital structure becomes relevant as the firms value increases.

The conclusion arising from MM 1 with taxes was that the value of an unlevered firm plus the present value of the interest tax shield equals the value of the levered firm. The firm with a greater proportion of debt in its capital structure is more valuable due to the greater benefit of the interest tax shield. The implication of this proposition is that levered firms can deduct interest payments, with the advantage that leverage lowers tax payments.

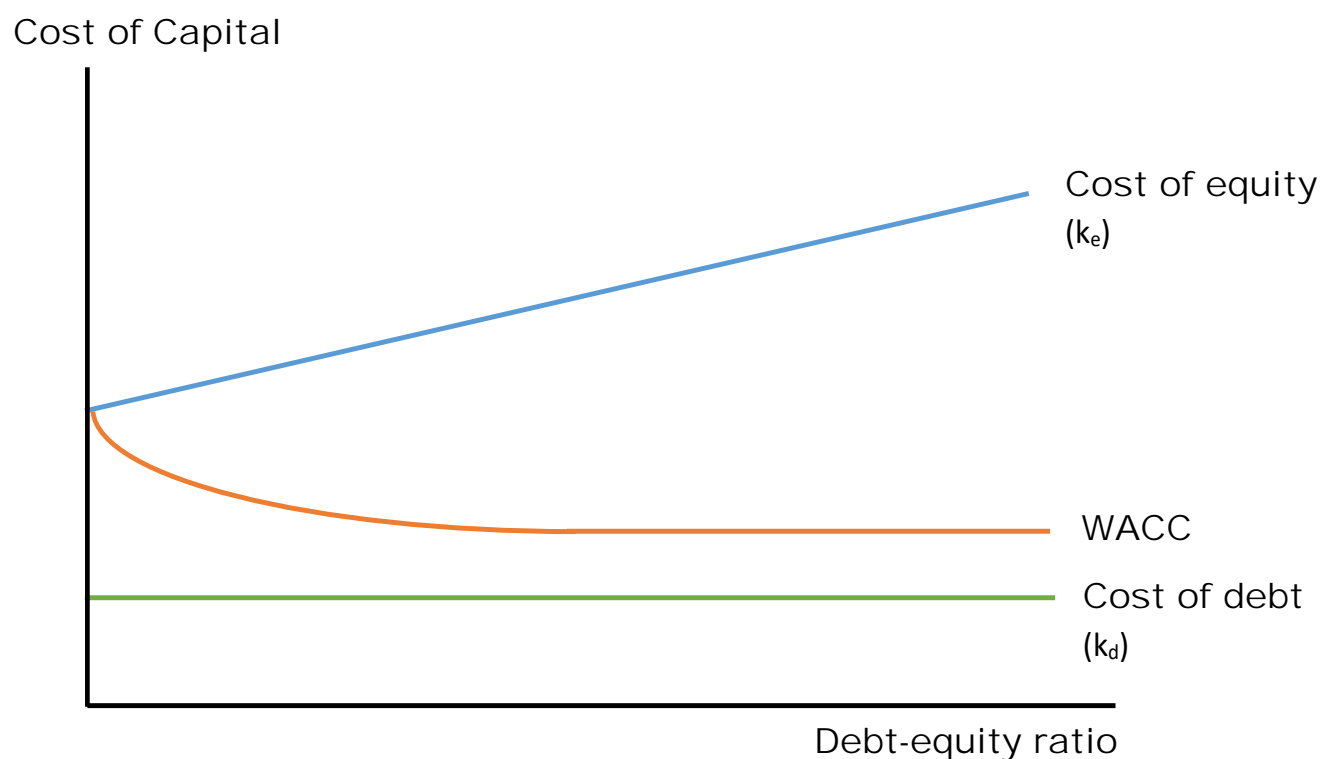


Figure 3-3: MM II Proposition with taxes

Source: De Wet (2006:6)

MM II with taxes recognises that the interest deduction provides tax savings and therefore concludes that the WACC is affected by changes in the debt-equity ratio. The theory implies that a greater proportion of debt would lower the firm's WACC as illustrated in

Figure 3.3. It also shows that an increase in the debt to equity ratio would result in an increase in the cost of equity and a decrease in WACC due to the inclusion of tax as it decreases the cost of debt.

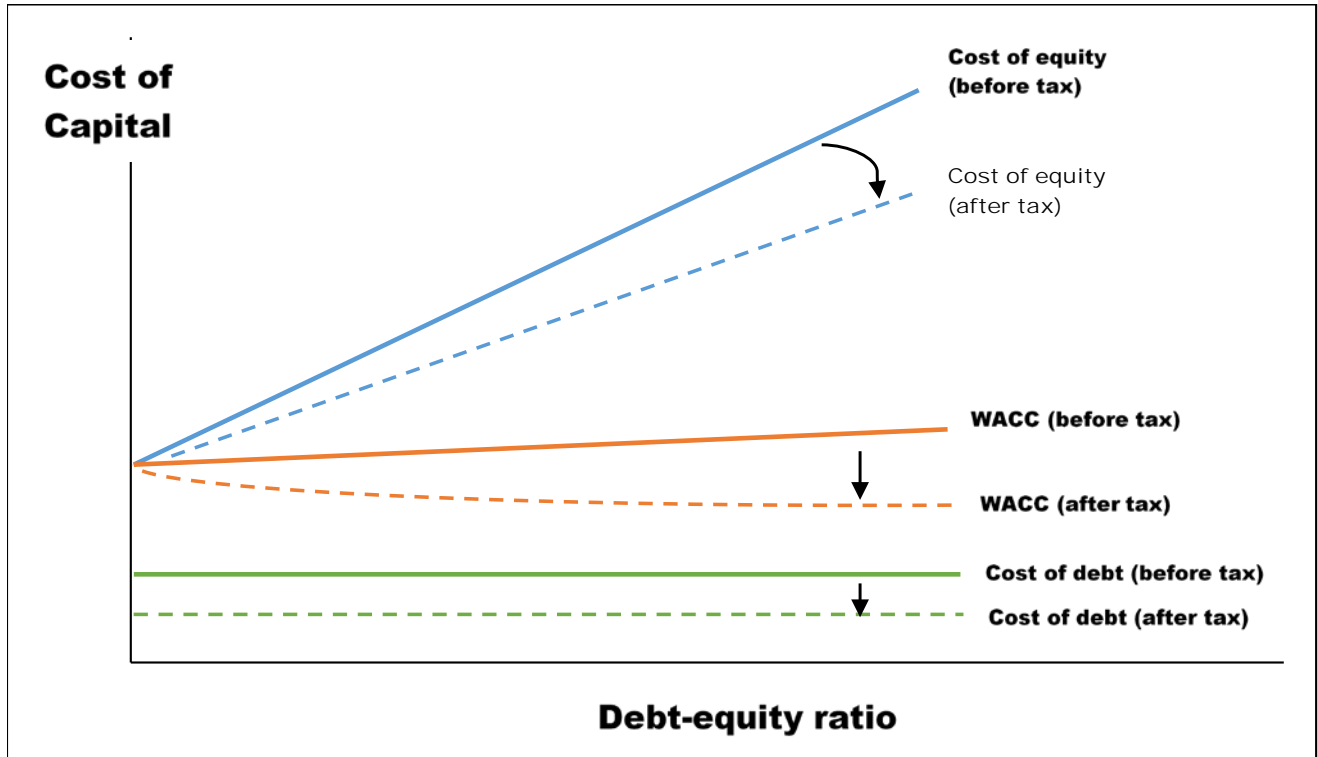


Figure 3-4: MM Propositions I and II with and without taxes

Source: Ryan (2007: 201)

The impact of taxes on the cost of equity, cost of debt and WACC is illustrated in Figure 3.4. The table also illustrates the MM propositions with and without taxes.

The conclusions from the MM Propositions is that when taxes and market imperfections are added into the analysis, then capital structure decisions becomes relevant and affects the firm value. The implication of this is that an optimal capital structure exists and when firms reach the optimal point, then the firm value is maximised.

Since the Modigliani and Miller propositions, several capital structure theories have been proposed that consider other factors affecting the market and corporations.

3.3.2 Trade-off theory

The trade-off theory grew out of the shortcomings of the Modigliani and Miller (1963) proposition when corporate taxes were added, resulting in a benefit of debt with the assumption that the firm earns its debt obligation with certainty. According to Frank and Goyal (2008), the implication of the firm's debt financing being 100% is a result of its market value being a linear function of debt used. For this extreme prediction to be avoided where any tax minimising attempt would increase the firm's value, there was a need to offset the cost of debt, which includes bankruptcy penalties. One of the criticisms of the MM theorem was that it did not take into account financial distress costs, which increase as more leverage is used. Hence, Kraus and Litzenberger (1973) introduced the tax advantage of debt and costs of bankruptcy into the framework, confirming the existence of an optimal capital structure in the trade-off theory. An optimal capital structure is the outcome of an optimisation process in which firms trade-off the costs and benefits of debt, including tax shields; agency costs and financial distress costs, which then maximises the value of the firm (Frank and Goyal, 2003).

One of the biggest benefits of debt is the interest tax deductibility; that is, the more debt a firm has in its capital structure, the less tax it pays. Other benefits include controlling agency problems, reducing free cash flow problems because debt payments are contractual obligations, and reducing poor consumption on the part of managers. When a firm has too much debt, it incurs financial distress costs. When firms borrow too much, they might go into bankruptcy and incur substantial legal and administrative costs as well as indirect costs that cause a huge reduction in firm value in the trade-off theory.

When a firm takes on debt financing, its value increases because of the interest tax shield. At some point, the value levels off because the firm may not have enough taxable income. As the firm takes on more debt, there is a likelihood that it will go into distress and incur the costs of financial distress. The value of the firm will then decrease at high levels of borrowing because of the financial distress costs associated with it. This is the trade-off between costs and benefits where firms have the optimal capital structure; that is, the marginal benefits of debt (through interest tax shield) just about equal the marginal costs of debt (through financial distress costs). There would be much variation in the debt ratio

of firms. Some may value the tax benefits that come with high levels of debt more than others. There would also be differences in the costs of distress that firms face, which may be costlier for some than others. This would result in cross-sectional differences in the leverage ratios across firms; that is, firms for which distress is less costly will be able to borrow more and vice versa. This implies large variations in firms' amount of optimal debt based on the firm characteristics that define the benefits and costs.

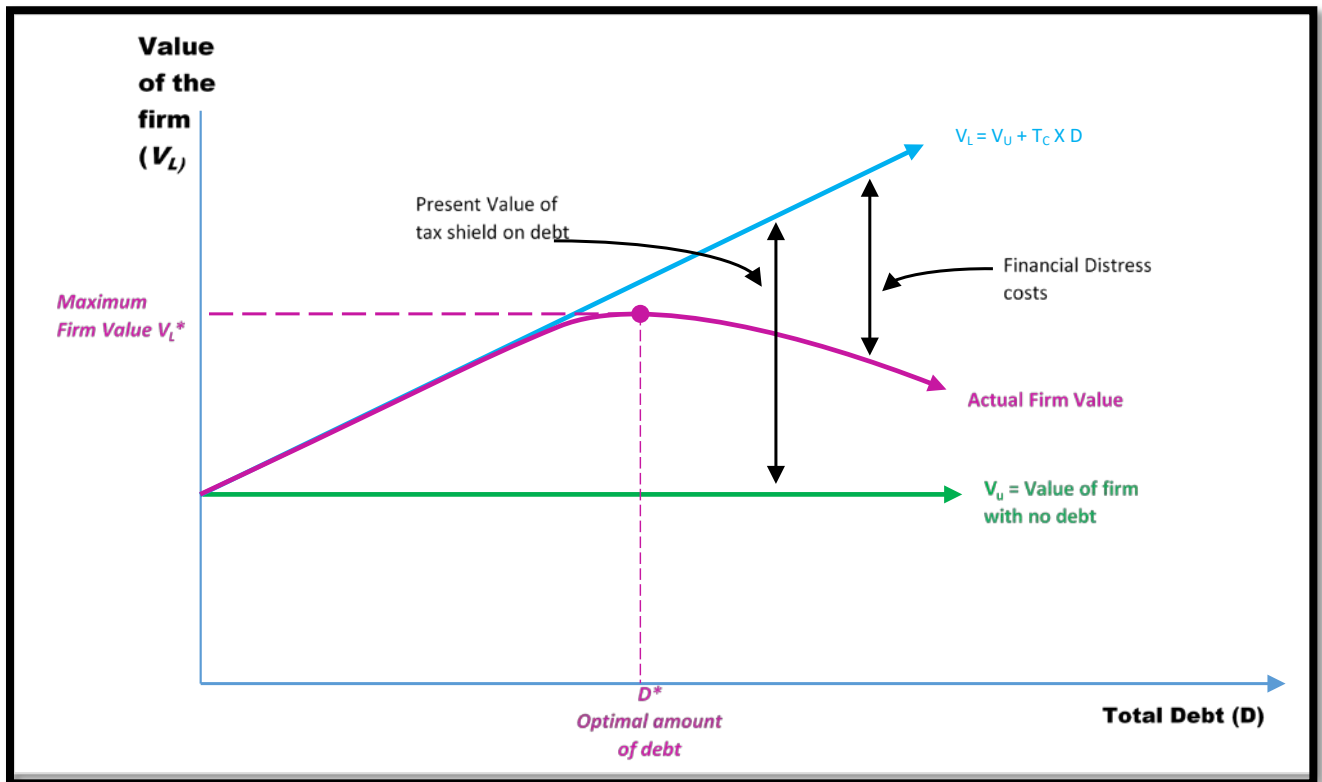


Figure 3-5: Trade-off theory model

Source: De Wet (2006:7)

Figure 3.5 illustrates that the optimal capital structure is reached when the marginal costs of debt equal the marginal benefits of debt. In other words, the optimal capital structure is reached when the tax shield from interest payments is offset by the financial distress costs. From the point of zero leverage up to the optimal point, the benefit of the tax shield dominates whereby the firm value increases. However, beyond this point, the value of

financial distress costs dominates and the firm value decreases. This implies that firm value can be destroyed by either too little or too much debt. The reason is that too little debt does not maximise the tax shield benefit, whereas too much would increase the likelihood of default and make the costs of financial distress a reality.

3.3.2.1 Static trade-off theory

The static version of the trade-off theory proposes that firms set a target debt ratio that maximizes the value of the firm which they aim to achieve. It further postulates that firms increase their leverage up to the optimal static point, referred to as the target capital structure, where an additional unit of debt is equal to the cost of debt due to a greater probability of bankruptcy (Shyam-Sunder and Myers, 1999, Bradley et al., 1984). Firms are said to follow the static trade-off theory when their leverage is determined by a single period trade-off between the benefits of debt and bankruptcy costs (Frank and Goyal, 2007).

3.3.2.2 Dynamic trade-off theory

The trade-off theory emphasises that firms have a target debt level that maximises their value. The observed debt gradually converges towards the target debt, due to deviations from the target being costly (Frank and Goyal, 2007). The dynamic version of the trade-off theory postulates that the financial structure adjusts gradually over time towards the target leverage at a certain speed of adjustment (SOA) (Abdeljawad et al., 2013, Frank and Goyal, 2007). Hence, firms that demonstrate dynamic behaviour, also referred to as target adjustment behaviour, are those that have a target debt level and deviations from that target are gradually removed over several time periods (Nyamita, 2014). Considering that debt is costly to issue and repurchase, the dynamic trade-off theory posits that firms whose actual debt level does not coincide with their target debt, will only make the adjustment towards the target when the benefits of doing so outweigh the costs (Dudley, 2007).

The existence of a target debt ratio and adjustment towards the target is a characteristic of the trade-off theory and hence this dynamic feature can be used as evidence in support

of firms pursuing this theory. This aspect of the trade-off theory is investigated in chapter four. The target debt ratio is not directly observable; hence, earlier scholars such as Shyam-Sunder and Myers (1999) used the average of long-term debt over the sample period as the target, with the assumption that firm characteristics which generally affect leverage remain unchanged over that period. Hovakimian et al. (2001), who adopted a two-stage approach, posited that when the target changes, firm characteristics are also likely to change. Their approach firstly determined the target leverage ratio by regressing the observed debt ratios on explanatory variables that were proven robust in the literature. Secondly, they compared the target debt ratio from the first stage with the actual debt ratio and control variables that cause a firm to deviate from its target, to be used as a predictor of the firm's financing choice. Other studies including Fama and French (2002), Flannery and Rangan (2006), Abdeljawad et al. (2013), Frank and Goyal (2007), Tamirat et al. (2017) computed an equation for the target and then substituted this equation into the partial adjustment equation to estimate the resulting structure.

Both the target and the adjustment behaviour to the target can be tested using the SOA which is the percentage deviation from the target debt ratio that is removed over time. The SOA is influenced by adjustment costs and the costs of deviating from the target. A high SOA would imply that the firm's adjustment to the target will dominate other considerations and hence the trade-off theory would be the first order determinant (Abdeljawad et al., 2013, Tamirat et al., 2017).

Flannery and Hankins (2007) argue that the adjustment costs (internal financial constraints and external financing costs) and benefits (potential savings from the costs of distress and tax benefits) associated with maintaining the target determine the SOA to the target capital structure. Financing constraints that include irregular and limited availability of free cash flow can affect the SOA. These constraints affect the firm's ability to retire debt or repurchase shares, restrict managers' ability to alter the capital structure with ease and decrease financial flexibility as a result of the use of external financing when cash flow is unavailable. Myers (1977) notes that internal constraints are affected by a change in profitability while Hovakimian et al. (2001) support this by stating that profitability has an effect on the SOA as it provides funding for the repurchase of shares and is an indication of financial stability that is used to issue securities at an attractive

rate. This in turn has an effect on the adjustment decision when the rebalancing of leverage requires an issue of securities. It also affects external financing costs which become expensive and would thus create a hurdle that may slow the SOA. The cost of external financing fluctuates based on the amount of asymmetric information and access to capital markets. These create frictions which increase difficulties with security issuances (Myers and Majluf, 1984, Myers, 1977). The capital structure adjustment process is affected by fluctuations in external financing costs. Firm size is used as a measure of the amount of asymmetric information where larger firms are expected to have lower information asymmetries, implying lower costs of external financing and a faster SOA. Furthermore, larger firms should have less volatile cash flows which reduces the potential costs of financial distress and therefore increases the SOA (Flannery and Rangan, 2006). Firms with increased growth opportunities have been found to have a faster SOA. Mahakud and Mukherjee (2011) identify growth opportunities as another variable that affects the SOA. They argue that growing firms have more opportunities to raise funds and will be able to adjust their capital structure at a faster rate due to increased access to capital markets. Hence, they will be able to swap debt for equity and equity for debt.

When deviations from the optimal capital structure emanate from above, the costs of bankruptcy increase at a faster rate, while tax savings rise at a slower rate. When deviations from the optimal capital structure come from below, the foregone tax savings rise at a faster rate, while the reduced bankruptcy costs rise at a slower rate. Both these situations render the SOA an increasing function of the deviation by providing strong incentives for firms to rebalance their capital structure and move towards the target. A high SOA implies that adjustment costs are low, while a low SOA implies that they are high (Mukherjee and Wang, 2013).

3.3.2.3 Empirical evidence: Trade of theory and speed of adjustment

Flannery and Rangan (2006) used a partial adjustment model and found strong evidence of non-financial firms that pursued target capital structures and closed the gap between their actual and target debt ratios at a fast SOA of 30%. Cross (2010) found evidence

that, contrary to the trade-off theory, firms that are not constrained by debt capacity or do not have excess capital expenditure do not adjust towards the target debt level, but rather decrease leverage.

Estimating the SOA as the basis to support the dynamic trade-off theory, Abdeljawad et al. (2013) found that Malaysian firms that are far from the target and those that are over-levered exhibit a higher adjustment speed than firms that are closer to the target or under levered. Tamirat et al. (2017) found that Dutch firms exhibit some evidence of dynamics in the capital structure decision as there is a target debt ratio, and they adjust to this target. However, depending on the size and type of firm, SOA varies from 8.88% to 65.28%.

Antoniou et al. (2008) confirmed that French firms have target leverage ratios and are faster in adjusting their capital structure toward their target level than firms in Japan. Their results were based on the System-GMM. Lemmon and Zender (2010) found that the SOA was 25% with 2.4 years to reach the target amongst non-financial firms listed on the Compustat database from 1965 to 2003. These results are based on the System-GMM. Other estimators used included FE and Ordinary Least Squares (OLS).

Huang and Ritter (2009) used the firm fixed effects and long differencing estimator to deal with biases in estimates of the SOA towards the target. The results, based on listed US firms, revealed a moderate SOA of 17% with 3.7 years to reach the target based on book leverage and SOA of 23% with 2.6 years to reach target based on market leverage. This moderate speed was computed after controlling for the traditional determinants of capital structure.

Syed Muhammad Javed et al. (2012) investigated the adjustment behaviour towards target level of leverage of 760 Chinese SOEs and non-SOEs and found that Chinese SOEs have a higher adjustment rate than non-SOEs and an aggressive leverage policy. Other factors, including size, growth, and GDP were found to have a positive impact, while liquidity and lending rates had a negative impact on the leverage policy.

Soekarno et al. (2016) investigated the SOA amongst Indonesian SOEs to reach target from 1995 to 2013. The results were based on static and dynamic models with Generalised Least Squares estimation. They found that Indonesian SOEs have a target

capital structure with a SOA of 46% per annum. Their analysis further revealed that the number of years to reach the target is 7.55, with most of the gap being closed within two years.

Mirza and XianZhi (2016) investigated the SOA of 867 Chinese SOEs and non-SOEs from 2003 to 2012. In addition to adjustment behaviour, the study investigated the effect of firm-specific and macroeconomic factors on leverage. Regression was done using GMM and reported positive and significant adjustment coefficients, implying that Chinese firms follow the trade-off theory in their financing behaviour by adjusting their current leverage towards the target leverage. The SOA was much higher at 70% for SOEs compared to 36% for non-SOEs, implying that the latter take longer to reach their target. Zhou and Xie (2016) found conflicting results in a similar study during the period 1999–2009 where the results indicated that Chinese SOEs have higher debt ratios and slower SOA towards the target capital structure. The results were based on the OLS and IV estimators. They suggested that SOEs' political resources can lead to higher persistence and a slower SOA when compared to non-SOEs.

Yinusa (2015) reported that Nigerian firms have a SOA of 32% based on short-term debt, 33% based on long-term debt and 50% based on total debt. This relatively fast SOA was the result of low adjustment costs in Nigeria as debt from commercial banks is a cheaper source of finance than public debt.

3.3.3 Pecking order theory

The pecking order theory suggests that firms follow a particular financing hierarchy where internal funding is preferred over external funding and debt is preferred over equity (Myers and Majluf, 1984, Myers, 1984). Hence, the main assumption is that there is a pecking order of corporate financing, whereby investments are financed first through retained earnings, and thereafter debt and lastly external equity, as firms would rather use debt financing when internal sources of finance are inadequate to finance expenditure as indicated in Figure 3.6.

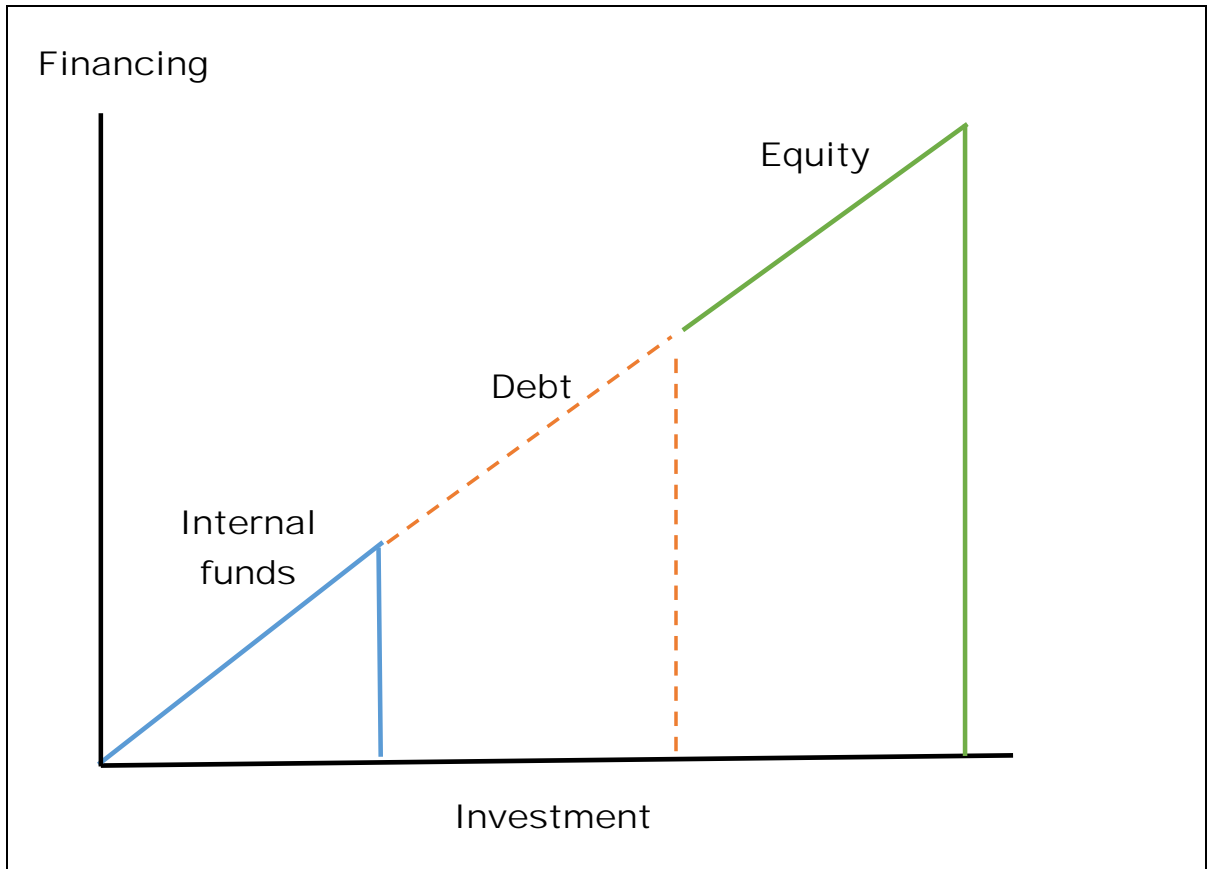


Figure 3-6: Pecking Order Hierarchy

Source: Leary and Roberts (2010: 334)

The theory suggests that a target debt ratio does not exist and the observed debt ratio reflects the firm's cumulative requirements for external financing. The pecking order suggests that management will consider all financing sources and then the cheapest source will then be used (De Vries, 2010). Unlike the trade-off theory, under the pecking order theory firms do not have an optimal debt level, because there are two kinds of equity, internal (retained earnings) and external, one at the top of the pecking order and one at the bottom (Myers 1984: 581).

The theory suggests that a target debt ratio does not exist and the observed debt ratio reflects the firm's cumulative requirements for external financing. It posits that management will consider all financing sources and then use the cheapest one (De Vries,

2010). Unlike the trade-off theory, firms do not have an optimal debt level, because there are two kinds of equity, internal (retained earnings) and external, one at the top of the pecking order and the other at the bottom (Myers 1984: 581).

This theory rests on the assumption of information asymmetry between well-informed managers and less-informed investors, whereby managers possess more information about the firm than outside investors. This results in managers obtaining finance in the following order: retained earnings, debt, convertible debt, preference shares and lastly, new equity issues (De Wet, 2006). When information asymmetries are high, this tends to increase risk for outside investors who would demand a premium, resulting in the high cost of equity (Elomo, 2014).

The financing deficit was introduced by Shyam-Sunder and Myers (1999) to test the pecking order theory. It can be defined as the use of external debt financing to cover the inadequacy of the internal financing deficit on a one-to-one basis. Shyam-Sunder and Myers (1999) suggested that the financing deficit is equal to the net long-term debt and equity issues. Over the years, researchers have measured the financing deficit using various components, including dividends, investments, working capital, cash flows and long-term debt, amongst others. These are discussed further in other sections of this chapter.

3.3.3.1 Empirical evidence: Pecking order theory

Empirical tests of the pecking order theory follow two approaches. The first determines whether certain firm-specific factors behave in a certain manner when debt levels change, while the second examines the impact of financing deficit on debt levels.

Shyam-Sunder and Myers (1999) tested the theory by modelling debt using net debt, gross debt and change in debt against the financing deficit using a sample of 157 American firms from 1971-1989. The results of the simple pecking order model showed strong support for the pecking order theory, with regression coefficients of 0.75 and R^2 of 0.68 which can be interpreted as, for every dollar of external funds required, 75c of debt would finance it. However, these results could not be generalised across a more

representative sample as the sample was reduced due to the requirements for continuous data on the flow of funds, resulting in serious drawbacks.

Frank and Goyal (2003) expanded the sample to include all firms (768) during the same period after suggesting that the empirical findings of Shyam-Sunder and Myers (1999) in support of the pecking order theory do not hold for a larger sample of firms for a longer period. Their findings supported those of Shyam-Sunder and Myers (1999) when net debt was used as the dependent variable and no gaps were permitted in the data, with a deficit coefficient of 0.75 and R^2 of 0.71. However, they showed weak support for the pecking order theory when gaps were permitted in the reporting, with coefficients of 0.28 for the deficit variable and R^2 of 0.27. In later periods, under the same restrictions, they found weaker support for the pecking order theory, where external equity became more popular. The authors went on to illustrate that size does affect the performance of the pecking order model, with smaller firms relying more frequently on equity financing. According to Fama and French (2002), this is contrary to the predictions of the pecking order theory, whereby smaller firms face higher information asymmetries and hence, should use more debt financing.

Chirinko and Singha (2000) pointed out that firms that face debt capacity constraints cannot finance the financing deficit purely with debt, which would result in a financial deficit coefficient of less than one even though the firm may be following a pecking order. They added that firms that have debt capacity constraints would finance only small financing deficits with debt and large deficits with equity financing.

Lemmon and Zender (2010) extended Shyam-Sunder and Myers (1999) study and found that by incorporating debt capacity, the theory is a better predictor of the financing behaviour of large firms studied over a longer period. Their results indicated that the model works best for firms that do not have debt issuing constraints with a financial deficit coefficient of 0.79 (compared to 0.75 that Shyam-Sunder and Myers (1999) found using the same sample) after controlling for the effects of larger deficits by including a quadratic term of the deficit. They also modelled debt capacity in terms of whether firms had access to public debt markets. The authors further argued that credit ratings relate to firms' debt capacity, where a firm has fewer restrictions in issuing debt if their debt outstanding is

rated, whereas one that has no rated debt outstanding does not portray pecking order behaviour due to the debt issuing constraints imposed by their debt capacity. This is supported by the results of their study using a logit model where the firm's credit ratings are the dependent variable, and firm-specific factors are the independent variable, hence controlling for excluded firms that have high credit ratings but do not access public debt. They concluded that if debt capacity is controlled, the pecking order theory is a good descriptor of the firm's financing behaviour.

Cross (2010) study on 702 Australian firms from 1995 to 2009 found that when applying the Frank and Goyal (2003) model, lower coefficients of 0.553 (compared to 0.75) and R^2 of 0.402 (compared to 0.71) were found with restrictions placed. When no restrictions were placed as in Frank and Goyal (2003), a higher coefficient of 0.450 (compared to 0.28) and better explanatory power with R^2 of 0.364 (compared to 0.27) was found. The findings on firm size also supported the pecking order theory, however, to a lesser consistent degree. Coefficients from small to large firms ranged between 0.413 (R^2 of 0.348) and 0.510 (R^2 of 0.342). Small firms are expected to face higher costs related to asymmetries and would, therefore, be more reluctant to issue equity and would prefer debt. The author concluded that Australian firms finance most of their deficit with debt. However, the static trade-off theory is also not supported as firms that are constrained by debt and not facing significant capital expenditure do not increase leverage towards the optimum level but instead decrease the leverage level. The result is that the trade-off model is unsupported and the pecking order model has lower explanatory power. The reason is that Australia relaxed the tax advantage of debt and there is greater use of warrants and rights that has lower asymmetric information costs. Cross (2010) used a quadratic term that allows for the non-linear relationship between the financing deficit and the debt issuance debt in the model, in addition to using dummy variables to differentiate between financial surplus and financial deficit. Ağca et al. (2010) study produced similar findings although it used a piecewise linear specification.

Verwijmeren (2008) suggested that when a quadratic term of the financing deficit is used, a negative deficit becomes positive when squared. The model considered the effect of surpluses when testing the relationship between the financing deficit, debt capacity, and firms' financing decisions. The results indicated that firms with rated debt outstanding with

small financing deficits had a higher coefficient (0.802) than those with no rated debt outstanding (0.649). On the other hand, firms with rated debt outstanding with large financing deficits had a lower coefficient of 0.297 and an even lower coefficient of 0.093 was found for firms with no rated debt outstanding. The findings confirmed those of Lemmon and Zender (2010) that concluded that rated firms have higher pecking order coefficients for financing deficits than non-rated firms.

According to Cross (2010), studies have shown that subject to debt capacity constraints; firms prefer to issue debt when external funds are required; hence the vast support for the pecking order theory.

3.3.4 Agency cost theory

The agency theory assumption is that the separation between owners, managers and debt holders can create conflicts of interest and information asymmetries amongst the principal and agent (Jensen and Meckling, 1976). Furthermore, the relationship between the firm's management and the owners is analogous to the principal-agent relationship where the firm's management represents the agent and the owners represent the principal.

Myers (1977) points to another potential agency cost of debt that is incurred when firms are on the verge of bankruptcy. In this case, shareholders have no incentive to invest more equity capital, even if projects with positive net-present values are available. The reason is that the debt holders will mainly benefit from any values derived from the projects. This implies that value increasing projects may be rejected in the case of high debt level. In the case of debt financing, managers are required to explain their investment decisions to investors, placing them under constant monitoring which they abhor; they would thus prefer internal financing such as retained earnings (Frank and Goyal, 2007).

Information asymmetry and conflicts of interest that arise as a result of agency problems result in an increase in the cost of raising both internal and external finance for investment projects (Greenwald et al., 1984; Myers, 1984; Myers and Masjuf, 1984). Consequently, taking agency problems into account, a firm's capital structure decision has an impact on both its financing and investment decisions.

The use of debt in the capital structure is often employed by shareholders as a measure to ensure that their wealth is maximised. From an agency theory perspective, debt financing disciplines managers and reduces agency costs by mitigating agency problems which can be seen as a trade-off between the costs and benefits of debt in the trade-off theory, as managers have to pay off debt in order to avoid bankruptcy (Jensen, 1986). The use of debt creates debt obligations that can often minimise the potential for opportunistic behaviour by agents, as it reduces free cash flow which can be used by executives to pursue their own goals in the form of perks and perquisites, empire-building, or investment in projects that yield a negative net present value (Jensen, 1986).

According to Panda and Leepsa (2017), the agency problem is one of the oldest issues facing firms, especially with advances in technology and easy access to evidence. This problem has taken various forms and cannot be ignored as it affects all organisations except those that are managed by owners. The authors' literature review found that a number of factors, including ownership structure, managerial ownership, board size, independent board members, executive compensation and different monitoring committees can minimise the agency cost and hence the agency problem.

Perrow (1986) criticised advocates of the agency theory on the grounds that they focus purely on the agent side of the agency problem when the principal can also be the cause of the problem. He added that insufficient attention has been paid to principals who mislead, evade and exploit agents, who are unknowingly dragged into working in a perilous working environment with no possibility of intervening when principals' behavior is opportunistic. His argument that humans are noble and work ethically for the betterment of the firm persisted in the finance literature to develop into the stewardship theory (Donaldson, 1990).

3.3.5 Signalling theory

The concept of market signaling was first proposed by Spence (1974) who presented a model in which signaling is implicitly defined and its usefulness explained in the job market. One of the key constructs in this theory is information asymmetry, whereby the holders of information (managers) possess more information than those who could

potentially make better decisions (investors) if they possessed the same information, which affects the decision-making process (Connelly et al., 2011). When managers issue debt or equity, external investors will interpret this to mean that they have insufficient internal funds. Furthermore, they would only issue equity if, based on their inside information, they are of the view that the current share price is less than the true share price. These signals can have significant effects on the capital structure (Brigham Eugene and Erhardt Michael, 2010).

Ross' (1977) model posits that good quality firms usually increase leverage to signal quality. This was not supported by Miglo (2017), who found that debt does not necessarily signal good quality and further found a negative correlation between debt and profitability, thereby contradicting the signaling theory.

3.3.6 Market timing theory

The market timing theory suggests that capital structure is the outcome of attempts to time the market (Baker and Wurgler (2002)). The theory is an important aspect of financing decisions, whereby leverage arises out of several attempts to time the equity market. The model predicts that equity issues arise less frequently when the economy is performing poorly, but come to the fore when it is booming; that is, firms wait until market conditions improve to issue equity. Managers observe the debt and equity markets and, depending on which is more favourable, they pursue that form of financing irrespective of whether there is a need for funds. However, if the markets are unfavourable, they defer the issuance (Frank and Goyal, 2009).

Frank and Goyal (2009) found that the market timing theory makes correct predictions for the mark-to-book assets ratio and the expected effects of inflation, but fails to support predictions in the data patterns made by the trade-off theory if used as a standalone theory. Furthermore, they found that the theory requires additional theoretical development to prove the empirical evidence found in the data.

The pecking order and market timing theories are both based on asymmetric information. However, they are on the opposite ends of the continuum, with the market timing theory overestimating a firm's value while the pecking order theory underestimates its value in

the presence of highly asymmetric information. It for this reason that these theories do not appear simultaneously (Yuan, 2005).

3.3.7 Summary of capital structure theories

In summarising the literature on the capital structure theories that explain financing behaviour, frictions that were omitted in the MM model, namely the agency costs of financial distress and the tax-deductibility of debt were incorporated into the trade-off model by Myers (1977), which help to generate the optimal capital structure. On the other hand, frictions due to information asymmetries were incorporated into Myers and Majluf (1984) pecking order model that results in the financing hierarchy descending from internal funds to external debt and finally external equity. Studies that examined whether firms follow the pecking order hierarchy used regressions of debt financing and the financing deficit. The results support the pecking order theory if the findings reveal a slope coefficient close to unity (one) when the financing deficit is matched cent-for-cent by a change in debt. Studies that examined whether firms support the trade-off theory identified whether a target capital structure exists in a firm and if so, the SOA at which the gap is closed between the actual leverage and the target leverage.

In conclusion, over the past few decades, the trade-off, pecking-order and agency theories have been extensively tested to explain firms' financing behaviour. Compared with the more prominent theories, the signalling and market-timing theories are limited in terms of theoretical development and empirical evidence. Given that the current study focuses on SOEs, these two theories are not covered beyond this point.

3.4 Capital structure studies in South Africa

Research has been conducted using various determinants of capital structure within the context of different sectors and countries. Firms' activities are determined by the unique characteristics of the country in which they operate and by individual firms. Several scholars have conducted research on the determinants of capital structure in the South African context. De Vries (2010) analysed the effect of firm-specific and macroeconomic

factors on listed industrial firms on the JSE; while Elomo (2014) examined the determinants of the capital structure of start-up firms in South Africa; Fosu (2013b) analysed the capital structure, market competition and firm performance of firms listed on the JSE; and Gwatidzo et al. (2016) examined the capital structure determinants of firms listed on the JSE.

A survey of the literature revealed that, existing South African studies only sampled listed firms, creating a gap in the body of knowledge on SOEs in this country. While capital structure decisions are influenced by firm-specific, industry-specific and institutional factors in both developed and developing economies, distinctive institutional features in developing economies will influence of how these factors affect a firm's capital structure (Huang et al., 2018). Debt financing is a common feature of the balance sheets of SOEs. However, financing is a complex issue that poses a challenge to the development of rational theories as no clearly demarcated capital structure theories are applicable to these entities (Nyamita, 2014). The capital structure of SOEs differs from that of private entities as well as from SOEs in other economies. SOEs are more likely to absorb socio-political benefits from the government. Hence their risk-taking is far greater than private entities with regard to their decisions on capital structure. Furthermore, they are exposed to far more moral hazards as a result of leverage where there are incentives to take on excessive risks (Ahmad et al., 2017). It is against this background that the current study investigated the capital structure of South African SOEs.

3.5 Chapter summary

This chapter presented a review of the literature on capital structure. It highlighted that the empirical evidence regarding the determinants of capital structure is mixed. While different theories have been proposed to explain the capital structure of firms, there is a lack of consensus on the factors that have an impact on capital structure decisions. The literature review revealed several gaps and directions for further research, especially in the context of SOEs. It also revealed that no single theory best explains a firm's capital structure practices and how it chooses its debt to equity levels.

While numerous empirical studies have been conducted on capital structure in developed economies and the private sector, there is a paucity of research on the public sector. To promote generalisability and applicability of the proposed capital structure theories and findings on the determinants of capital structure, more empirical research is required on the public sectors of developing economies.

The next chapter presents the first objective of the study by empirically testing the pecking order and trade-off theories to determine which theory explains the financing behavior of SOEs in South Africa.

CHAPTER 4

FINANCING OF SOEs:

PECKING ORDER OR TRADE-OFF THEORY

4.1 Introduction

This chapter addresses the first objective of the study, that is, which capital structure theory best explains the financing behaviour of South African SOEs, by testing the pecking order and trade-off theories. Capital structure theories and determinants of the capital structure were discussed extensively in the previous chapter. An essay approach has been adopted in addressing this objective by presenting the method, followed by the results and a discussion of the key findings.

Capital structure theories tested within the context of developing countries enable examination of these theories in a different environment from developed economies. If similar results are found to those in developed countries, this confirms that these theories can be applied to different environments. However, if the opposite is the case, the theories may need to be amended to suit the African environment (Gwatidzo et al., 2016).

Previously researched methods are applied in order to examine the models within the public sector of a developing economy. The tests aim to determine whether South African SOEs follow the pecking order or the trade-off theory in determining their financing. In addition to traditional methods of testing the theoretical predictions of the factors that affect a firm's capital structure, this chapter tests the pecking order theory based on the financing deficit model by Shyam-Sunder and Myers (1999), while the trade-off theory is tested by applying the partial adjustment model by Flannery and Rangan (2006).

The chapter is structured as follows: Section 4.2 discusses the literature relating to the research constructs on the determinants of capital structure and the theoretical predictions of the signs on the determinants. Section 4.3 describes the methodology employed. Section 4.4 investigates the trade-off theory by observing if SOEs have a target capital structure and if so, the speed at which they adjust towards the capital

structure. Section 4.5 investigates the pecking order theory by observing debt issuances for a pattern in the financing hierarchy when firms require funds, be it for new investments or an increase in working capital. Section 4.6 concludes with a summary of the findings and the most suitable theory to explain the financing behaviour of SOEs.

4.2 The determinants of capital structure

Over and above agency problems and information asymmetries, empirical evidence reveals that there are various determinants of capital structure, with mixed empirical findings. The literature shows that a firm's choice of capital structure is dependent on its characteristics as well as the economic and legal traditions of the country in which it operates.

This section discusses the various determinants of capital structure suggested by different theories as well as those found to be empirically significant in other studies. The majority of studies have identified common factors that affect capital structure, including age; size; asset tangibility; profitability; growth; corporation risk; tax rate; GDP; inflation and interest rate.

Several studies have categorised the factors influencing the capital structure into firm-specific factors and macroeconomic factors. Firm-specific factors include age, size, asset structure, profitability, growth, firm risk and liquidity. Macroeconomic factors include economic growth, inflation and interest rate (Taddese Lemma and Negash, 2013, Elomo, 2014, Drobetz et al., 2007, De Vries, 2010). Frank and Goyal (2007) showed that despite the fact that studies have identified a large number of cross-sectional variables relating to firms' debt ratios, only a few are empirically robust and financially significant. Harris and Raviv (1991) concluded that several firm-specific factors, including size, growth opportunities, tangibility and profitability influence a firm's capital structure.

Changes in firm-specific factors that influence the firm's capital structure require attention from policymakers and decision-makers as they can affect the optimal capital structure and hence the firm's value and investors' perceptions of the firm. The firm-specific and

macroeconomic determinants of capital structure selected and presented in this section are based on consensus in previous empirical studies.

4.2.1 Leverage

Leverage refers to the amount of borrowed funds used by a firm to finance its investments. The financial literature has employed different approaches to measure leverage, including market or book value, total debt, long-term debt or short-term debt.

Myers (1977) argued that book value is more appropriate as it is based on assets already in place while market values are based on future growth opportunities. Book leverage is also preferred because financial markets fluctuate a great deal and managers are said to believe that market leverage numbers are unreliable to guide corporate financial policy (Frank and Goyal, 2009). Theoretically, book value ratios and market value ratios would differ as book values are perceived as backwards-looking while market values are forward-looking (Frank and Goyal, 2007). Advocates of market values such as Chen (2013) have argued that the values obtained from financial statements may not provide an accurate value of the firm's equity as they are based on historical information and the book values may differ significantly from the true market values. Hence, using book values make not accurately compute the true value of leverage. However, Rajan and Zingales (1995) argued that using book values to compute leverage is not a serious limitation.

Book values are emphasised by ratings agencies such as Standard and Poor as market values are based on growth prospects, have a short time horizon, are influenced by changes in alternative investment opportunities and can be very volatile (Standard & Poor's Ratings Services, 2001). However, they note that there are shortcomings in both methods. Considering that debt is more supported by assets already in place rather than growth opportunities and that computation of market values for unlisted firms may prove problematic, book values to compute leverage are preferred.

4.2.2 Profitability

There are mixed theoretical and empirical findings on the relationship between profitability and leverage, corresponding with the trade-off, pecking order or agency theories. The pecking order theory predicts that more profitable firms prefer to use more internal finance to finance their activities, and access debt financing only after retained earnings reach near exhaustion. This results in a lower debt ratio. Furthermore, external finance is more costly due to information asymmetries and bankruptcy costs (Cheng, 2015). Hence, the pecking order theory predicts a negative relationship between profitability and leverage. This is supported by De Vries (2010), Frank and Goyal (2009), Chen and Chen (2011), Taddese Lemma and Negash (2013), Baltacı and Ayaydın (2014), Alzomaia (2014), Nyamita et al. (2014b), Gwatidzo et al. (2016). On the other hand, the static trade-off theory illustrates a positive relationship between leverage and profitability as more profitable firms finance their activities with external finance since the risks of bankruptcy are lower, resulting in a benefit from the tax shield (Frank and Goyal, 2003, Cheng, 2015). The trade-off theory predicts that more profitable firms have higher target debt levels as a result of higher tax shield benefits and may therefore have more valuable assets (Hovakimian et al., 2001, Hovakimian et al., 2004). Other studies that support this relationship include Drobetz et al. (2007), Elomo (2014). The dynamic trade-off theory predicts a negative relationship as firms accumulate cash flows in the capital structure to finance investments (Leary and Roberts, 2005, Hovakimian et al., 2004) and therefore decrease their debt levels. Accumulation of earnings continues while there is deviation from the optimal debt level as long as the adjustment costs exceed the costs of having a target debt level. This negative relationship between profitability and leverage occurs as a result of its effect on deviation from the target capital structure and not as a result of its effect on the target (Hovakimian et al., 2004).

The agency theory predicts a positive relationship between leverage and profitability due to fewer agency problems between shareholders and managers. This finding is supported by Chen and Strange (2005) who established that more profitable firms prefer to issue debt to minimise conflict between managers and shareholders.

Hypothesis

H_0 : Profitability is positively related to leverage

H_1 : There is a negative association between profitability and leverage

4.2.3 Age

This variable has been found to follow the life cycle of the firm with firms that are starting up using less leverage due to limited availability. As the firm becomes more mature, more capital is needed and this is sourced through external debt or equity. The trade-off theory suggests a positive relationship between age and leverage as older firms are more established, and have fewer bankruptcy issues and lower agency costs (Frank and Goyal, 2009). Mat Nawi (2015) found that younger firms that have been operating for one to three years prefer to use internal funds, supporting the predictions of the trade-off theory. The pecking order theory suggests that there is a negative relationship between age and leverage as older firms have higher cash flows that are generated internally and therefore have a lower debt level. Gwatidzo et al. (2016) found a negative relationship between age and leverage and explained that over time, firms acquire a reputation which they use to acquire alternate, cheaper sources of finance, other than debt.

Chen and Strange (2005) found contradictory evidence in their study, with age being negatively and insignificantly correlated with the market value of leverage but significantly and positively correlated with book value leverage. These results indicate that older firms have a longer track record and are better monitored by creditors; hence a reduction in the agency costs associated with debt financing.

Hypothesis

H_0 : Firm age is positively related to leverage

H_1 : There is a negative association between firm age and leverage

4.2.4 Size

It has been widely established that larger firms have more stable cash flows and are able to sustain more debt, enabling greater access to various sources of finance during periods

of financial distress (Titman, 1984). A positive prediction is supported by the trade-off theory as larger firms prefer to issue more debt due to the possibility of lower bankruptcy costs and the full benefit of the tax shield. They also have easier access to the credit market (Cheng, 2015). Studies that have shown a positive relationship between size and leverage include Frank and Goyal (2004), Ramjee and Gwatidzo (2012), Taddese Lemma and Negash (2013), Al-Najjar (2011), Cheng (2015), Baltacı and Ayaydın (2014) and Sibindi (2017). Huang and Song (2006) also found that leverage increases with size but this was unexpected, firstly due to the state holding 38% of shares in the Chinese firms understudy and secondly because state-owned firms have fewer budget constraints and are thus less likely to go bankrupt.

Rajan and Zingales (1995) argued that the influence of size on leverage is more ambiguous where size can be seen as a reverse proxy for bankruptcy. Larger firms are more diversified and have slimmer chances of failure; hence the positive effect of size on leverage. Their findings are supported by Soekarno et al. (2016) who concluded that size has a strong positive effect on leverage. However, this should not have been the case due to size being a reverse proxy for bankruptcy, implying that in countries where the costs of financial distress are low, size should be negatively correlated with leverage. The reason provided by (Soekarno et al., 2016) was that larger SOEs have higher leverage due to their higher borrowing capacity. Chen and Strange (2005) also found a weak negative influence among Chinese SOEs. Deesomsak et al. (2004) findings supported a negative effect, suggesting that government-owned firms in Singapore face less risk of financial distress irrespective of their size due to the support they receive from government.

Size can be seen as a proxy for the amount of information available to outside investors, such that there is less asymmetrical information in larger firms, which reduces the undervaluation of shares. In this case, equity financing is preferable, which supports the pecking order theory that suggests a negative relationship between size and leverage. Bharath et al. (2008) and Frank and Goyal (2003) found that support for the modified pecking order theory increased with firm size, with a positive effect noted due to severe adverse selection. The size of the firm cannot measure the severity of the adverse selection as it is also likely to capture other firm characteristics such as their reputation in

debt markets or the extent to which their assets are diversified. Huang and Song (2006) found contradictory evidence of a weak negative relationship when using book values of leverage, but a strong, significantly positive relationship was found that was attributed to reliable support for the government from Chinese state-owned banks, who for political reasons favour larger firms that can grow the labour market.

Hypothesis

H_0 : Firm size is positively related to leverage

H_1 : There is a negative association between firm size and leverage

4.2.5 Tangible assets

In a world of information asymmetries, a firm's asset structure would directly influence its capital structure, considering that tangible assets act as sources of collateral to lenders for borrowing and securing debt. The trade-off theory predicts a positive relationship between tangible assets and leverage. This is supported empirically by Titman (1984), Rajan and Zingales (1995), De Vries (2010), Shah and Khan (2007) who show that tangible assets are associated with higher leverage as they provide higher security for loans at a lower interest rate. This is because the agency costs of debt are reduced for the lender and the tangible asset value of the firm at liquidation is higher. Other studies that have found a positive effect of asset tangibility on leverage include Ramjee and Gwatidzo (2012), Frank and Goyal (2009), Huang and Song (2006) and Fosu (2013b). Gwatidzo et al. (2016) suggested that collateral plays a significant role in mitigating the effects of information asymmetry in South African debt markets despite the fact that the country has more developed capital markets than its African counterparts.

Studies have produced varying results on the relationship between tangible assets and leverage depending on whether short- or long-term debt was considered. Nyamita et al. (2014b), Taddese Lemma and Negash (2013) reported statistically significant findings where tangibility negatively influenced leverage measured by total debt and short-term debt. However, a weak positive result was found with long-term debt, implying that firms that have more tangible assets use them for collateral to access long-term debt.

Tangible assets are easier for outsiders to value, implying less information asymmetries. They are therefore linked to reduced agency costs as firms can collateralise their debt (Jensen and Meckling, 1976, Frank and Goyal, 2009). Less asymmetric information would make it cheaper to issue equity; therefore, firms with higher levels of tangible assets should have lower debt levels. This negative prediction supports the pecking order theory (Harris and Raviv, 1991). Bharath et al. (2008) and Frank and Goyal (2003) suggested that tangibility is a proxy for a firm's information asymmetry problems; therefore, the modified pecking order theory predicts that leverage increases with an increase intangible assets due to the severe adverse selection associated with lesser tangible assets. Frank and Goyal (2003) attribute this to the firm's intrinsically greater debt capacity. Other studies that support this negative relationship include Baltacı and Ayaydın (2014) and Soekarno et al. (2016) who found that Indonesian SOEs do not have to use their assets as collateral as they have sufficient retained earnings to finance their capital expenditure. The agency theory postulates that firms with high debt levels invest below the optimal level and shift wealth from creditors to shareholders, resulting in creditors requiring increased collateral to alleviate this issue. The liquidation value of the firm increases in the presence of tangible assets and the probability of mispricing decreases in the case of bankruptcy. Considering that tangibility makes it difficult for shareholders to substitute more risky assets with less risky ones, the agency costs of debt are lower among firms with more tangible assets; hence a positive prediction between tangibility and leverage is posited by the agency theory (Frank and Goyal, 2009).

Hypothesis

H_0 : Tangible assets is positively related to leverage

H_1 : There is a negative association between tangible assets and leverage

4.2.6 Growth

As a firm's growth opportunities increase, so too do the costs of financial distress and debt related agency problems. However, the free cash flow problem is reduced. In light of this, the trade-off theory predicts a negative relationship between a firm's growth

opportunities and leverage. Soekarno et al. (2016) found that growth negatively affected leverage using both the static and dynamic models. They noted that since Indonesian SOEs' equity levels are high, there is no need for them to issue debt. Taddese Lemma and Negash (2013) also found a negative prediction using short-term debt and attributed this to a steady increase in growth opportunities during the study period. Frank and Goyal (2009) used four measures of leverage and found a strong negative relationship between growth and leverage. Other studies that found a negative influence include Fama and French (2002), Rajan and Zingales (1995) and Titman and Wessels (1988).

The predictions of the agency theory indicate a dual relationship between growth opportunities and leverage. A negative prediction is also supported as increased growth is associated with increased risk that leads to moral hazard effects (Dasilas and Papasyriopoulos, 2015). Growth opportunities are intangible and can therefore not be used as collateral for debt security; therefore, firms tend to employ less debt in order to enjoy the full benefit of growth opportunities in the future that may be eroded by commitments associated with debt. The agency theory also predicts a positive effect, given that when firms grow, this creates room for opportunistic behaviour among managers which can be mitigated by employing more debt in the capital structure (Yinusa, 2015).

The pecking order theory predicts a positive relationship as growth implies more investments. With profitability remaining constant, firms should accumulate more debt to finance investments (Frank and Goyal, 2009). Firms with increased growth opportunities are likely to raise new funds externally as internal funds would be insufficient (Dasilas and Papasyriopoulos, 2015, Alzomaia, 2014).

Hypothesis

H_0 : Firm growth is positively related to leverage

H_1 : There is a negative association between firm growth and leverage

4.2.7 Firm risk

Firms with volatile cash flows would be expected to incur increased costs of financial distress due to the difficulty of honouring interest payments. There is also increased probability that the tax shield benefit will not be fully utilised; hence, they should use less debt (Frank and Goyal, 2009, Alzomaia, 2014). An increase in risk is detrimental to shareholders; therefore, the trade-off theory states that riskier firms should use less debt. This negative relationship between risk and leverage is supported by Mouton and Smith (2016), Alzomaia (2014). Mixed findings have been reported by Vatavu (2013) among different industries, with some accessing short-term debt when there is reduced business risk, while others access debt when risk increases. Disagreeing with the predictions of the trade-off and pecking order theories, Chen and Strange (2005) found statistically significant evidence that risk positively influenced the market value of leverage, suggesting that debt is not a major constraint among Chinese firms compared to those in other economies. A positive finding is also supported by Gwatidzo et al. (2016) who suggested that since banks are the main source of debt finance in South Africa, and they compete for clients, they might offer finance to riskier firms who may avoid issuing equity as their risk levels may make this a more expensive source of finance.

Hypothesis

H_0 : Firm risk is positively related to leverage

H_1 : There is a negative association between firm risk and leverage

4.2.8 Taxation

One of the key benefits of debt is the interest tax deductibility. Thus, the more debt a firm has in its capital structure, the less tax it pays. Hence, the trade-off theory predicts a positive relationship between the tax rate and leverage, with a higher tax rate implying a higher interest tax shield and hence higher debt. Vătavu (2012) concluded that taxation significantly and directly impacts debt maturity and leverage among larger firms. Chen and Strange (2005) found contradictory evidence when using market values and book values but this was not statistically significant. The authors thus noted that Chinese firms

did not find the tax advantage attractive. Mouton and Smith (2016), Vatavu (2013) also found the tax shield to be an insignificant variable in their studies on Romanian and South African listed firms, respectively. Gwatidzo et al. (2016), Ramjee and Gwatidzo (2012), De Jong et al. (2008) found a negative relationship between tax and leverage, contradicting the trade-off theory.

Hypothesis

H_0 : Tax rate is positively related to leverage

H_1 : There is a negative association between tax rate and leverage

4.2.9 Liquidity

The pecking order theory predicts that an increase in liquidity levels results in a decrease in debt levels; therefore, an indirect relationship is predicted. The reason is that liquid assets serve as internal sources of funds and will be used initially instead of debt. The trade-off theory predicts a positive relationship between liquidity and leverage. This prediction is supported by Gungoraydinoglu and Öztekin (2011).

From an agency theory viewpoint, liquid assets can be manipulated by managers in favour of shareholders and against debtholders. This reduces debt levels while increasing the agency costs of debt financing (Deesomsak et al., 2004). Nyamita et al. (2014b) concurred and suggested that politically appointed managers of Kenyan SOEs would use liquid assets in government's favour by avoiding debt financing which increases the adverse selection costs of external debt. The authors also suggested that the negative relationship with liquidity and leverage could be attributed to the debt overhang issue, where existing debt levels are so high that the firm is not able to borrow more despite additional new debt being beneficial.

Mouton and Smith (2016) found liquidity to be an insignificant variable in their study of South African firms listed on the stock exchange. Companies with abundant liquidity tend to use less debt. Thus, a statistically significant negative relationship is predicted between liquidity and leverage by Vatavu (2013) who suggested that high levels of liquidity are not necessarily beneficial and can imply that the firm's ability to commit to investments is

reduced. De Jong et al. (2008) found significant negative coefficients for liquidity and leverage in advanced economies.

Hypothesis

H_0 : Firm liquidity is positively related to leverage

H_1 : There is a negative association between firm liquidity and leverage

4.2.10 Probability of bankruptcy

The trade-off theory predicts a negative relationship between leverage and the probability of bankruptcy due to the higher bankruptcy costs expected when the probability of bankruptcy increases. Firms reduce their debt levels in order to reduce bankruptcy costs. The probability of bankruptcy can be reduced if managers perceive bankruptcy to be costly and debt can offer an incentive for them to reduce this probability by working harder, consuming less perquisites and making better investment decisions (Harris and Raviv, 1991). A decrease in profitability causes a rise in bankruptcy costs and the threat of bankruptcy forces firms with lower profitability to reduce their target debt levels. On a similar note, more volatile earnings imply lower tax rates and higher bankruptcy costs which should push firms that are smaller and less-diversified towards reducing their target leverage (Fama and French, 2002).

The pecking order theory predicts a negative relationship between the probability of bankruptcy and leverage. When there is an increase in the probability of bankruptcy, firms prefer to use internal funds; therefore, their debt levels are reduced. This is the case in larger, more profitable firms where the probability of bankruptcy is much lower; hence, their debt levels are much higher (Nyamita, 2014).

Hypothesis

H_0 : Probability of bankruptcy is positively related to leverage

H_1 : There is a negative association between probability of bankruptcy and leverage

4.2.11 Non-debt tax shield

Non-debt tax shields which exclude the debt tax shield of interest expense but include, for example, depreciation allowances and provision for doubtful debts, are generally seen as a substitute for the tax shield benefit from debt financing. This results in a negative influence on leverage because they reduce the incentive to issue external debt. In other words, firms that have sufficient non-debt tax shields are more likely to issue less debt. This negative predication supports the trade-off theory and was confirmed by Ferrarini et al. (2017) who found a statistically significant negative effect on long-term debt. In contrast, Taddese Lemma and Negash (2013) established that the effect depends on the measure used for leverage and found a negative effect on short-term debt and total debt, but a positive effect on long-term debt. The pecking order theory predicts a positive relationship between non-debt tax shields and leverage as supported by Bradley et al. (1984) who found a positive influence, suggesting that firms with higher investments in tangible assets would have higher depreciation levels and tax credits.

Hypothesis

H_0 : Non-debt tax shield is positively related to leverage

H_1 : There is a negative association between non-debt tax shield and leverage

4.2.12 Summary of studies on the determinants of capital structure

Table 4-1: Summary of empirical evidence on determinants of capital structure

AUTHOR	SUMMARY	GAP
Chen and Strange (2005)	Investigated the determinants of capital structure of 972 Chinese listed firms in 2003 using the Ordinary Least Squares (OLS) estimation technique. Significant findings indicate that profitability and ownership structure, in terms of institutional shareholdings are negatively related to leverage, whereas size, risk and age, measured by years of listing, are positively related to leverage.	Findings can't be applied to unlisted firms.
Frank and Goyal (2009)	Analysed the importance of several factors of capital structure for publicly traded American firms from 1990 to 2003 using four measures of leverage. The findings indicated there were six core factors. Assets, median industry leverage, tangibility and inflation had a positive relationship with market value leverage, whereas market-to-book assets ratio and profits had a negative effect. The findings on book value leverage were similar, except that firm size, market-to-book ratio, and inflation reflected unreliable effects.	Findings can't be applied to the public sector of a developing economy.

<p>Ramjee and Gwatidzo (2012)</p>	<p>Investigated the determinants of capital structure of 178 firms listed on the JSE from 1998-2008 using a dynamic model and found that size, asset tangibility, growth and risk positively influence leverage, whereas profitability and tax negatively influence leverage. The GMM technique was applied in this study.</p>	<p>The results cannot credibly be generalised to South African SOEs as the sample was based on listed firms.</p>
<p>Elomo (2014)</p>	<p>Determinants of the capital structure of 32 South African non-financial start-up firms. Cross-sectional OLS multiple regression analysis was employed and the findings indicated that risk and growth were the only variables that had a significant effect on the capital structure of these firms.</p>	<p>Findings can't be applied to unlisted SOEs in South Africa as they are not in the start-up stage.</p>
<p>Alzomaia (2014)</p>	<p>Investigated the capital structure determinants of 93 listed firms in Saudi Arabia for the period 2000 – 2010. The findings reflect that risk and profitability are the major determinants of the capital structure. Size and growth were found to have a positive influence on the book value of total debt, whereas profitability, asset tangibility and risk had a negative effect.</p>	<p>The findings cannot be generalised to unlisted state-owned firms in South Africa.</p>
<p>Nyamita et al. (2014b)</p>	<p>Investigated the factors influencing the debt financing of 40 Kenyan income-generating SOEs using Fixed Effects (FE), Random Effects (RE) and System Generalised Methods of Moments (GMM) estimation methods. The findings indicated that profitability, asset tangibility and</p>	<p>Although the study was on the public sector of a developing economy, the Kenyan economy is very</p>

	growth were the only significant determinants of the capital structure of Kenyan SOEs.	different from the South African economy; therefore the findings can't be applied to South African SOEs.
Jardine (2014)	The study examined the financing patterns of 104 JSE listed firms during 1999-2011 in order to test the trade-off and pecking order theories. The findings supported a negative relationship between profitability and leverage and positive relationships between size, asset tangibility, and growth with leverage. The FE method was employed to analyse the effect of firm-specific factors on leverage.	The results cannot credibly be generalised to South African SOEs as the sample was based on listed firms. Furthermore only a few firm-specific factors were tested.
Gwatidzo et al. (2016)	Investigated the capital structure determinants of leverage of 239 listed firms in South Africa for the period 1996 – 2010 using a quantile regression approach. A positive relationship was found between leverage and asset tangibility, and size and risk. However, a negative relationship was found with age, profitability and taxation.	The results cannot credibly be generalised to South African SOEs as the sample was based on listed firms.
Mouton and Smith (2016)	Investigated the effects of the 2008 financial crisis on the determinants of the capital structure of the top 40 JSE Ltd listed firms for the period 2002 – 2013. Prior to the financial crisis, risk, asset tangibility and profitability were found to be significant, whereas post-crisis, risk and asset tangibility had a more significant influence on capital structure.	Findings can't be applied to SOEs in South Africa as the majority are unlisted.

	FE, RE and pooled OLS methods were applied to determine the most suitable variation of the panel regression model.	
Ahmad et al. (2017)	Investigated the factors influencing the capital structure of Malaysian Government-Linked Companies (GLCs) and non-GLCs for the period 1993 to 2013 using the RE method. The findings indicated that profitability negatively influenced leverage in both types of firms. This is due to their outstanding performance which makes them less dependent on debt financing and they use more internal funds. Asset tangibility and firm size had a positive influence. This was due to their high levels of tangible assets that were used as collaterals to access debt financing. Furthermore, larger GLCs have more diversified and stable cash flows which also allows them easier access to debt financing. Growth opportunities had different effects on GLCs and non-GLCs.	Although the study was on the public sector of a developing economy, the Malaysian economy is very different from the South African economy. Therefore, the findings can't be applied to South African SOEs. Furthermore, the study used a static model to test the determinants.

Source: own construction

In summary, this review of the empirical evidence has shown the even though capital structure and its determinants are widely researched, there are few studies on the public sector. Furthermore, to the best of the researcher's knowledge, no studies have been conducted on the determinants of the capital structure of South African SOEs.

4.2.13 Summary of theoretical predictions on leverage

In terms of the theories discussed earlier in this chapter, the empirical findings of previous studies have explained the significance and predicted the signs of the various determinants of capital structure on firms' debt ratios. Some of the determinants have the same predicted sign under the same theory as authors have different opinions on the effect that the determinant has on the firm's capital structure. These predictions are summarised in Table 4.2:

Table 4-2: Summary of theoretical predictions on leverage

	Trade-off theory		Pecking order theory	
Profitability	+	Fama and French (2002), Donaldson (1961); Hovakimian et al. (2004), Hovakimian et al. (2001)	-	Myers (1984); Baker and Wurgler (2002); Fama and French (2002); Jöeveer (2013); Nyamita (2014); Alzomaia (2014); Booth et al. (2001)
	-	Dynamic trade-off theory: Hovakimian et al. (2004); Gaud et al. (2005)		
Age	+	Frank and Goyal (2009)	-	Gwatidzo et al. (2016) Chen and Strange (2005)
Size	+	Hovakimian et al. (2001), Frank and Goyal (2009); Alzomaia (2014); Booth et al. (2001); Gaud et al. (2005)	-	Frank and Goyal (2003), Fama and French (2002) Frank and Goyal (2009)
			+	Bharath et al. (2008)
Tangibility	+	Jensen and Meckling (1976), Fama and French (2002), Taddese Lemma and Negash (2013); Booth et al. (2001); Gaud et al. (2005)	-	Frank and Goyal (2009), Nyamita (2014) Baltacı and Ayaydin (2014); Alzomaia (2014)
			+	Bharath et al. (2008)

Growth opportunities	-	Hovakimian et al. (2004); Frank and Goyal (2009); Nyamita et al. (2014b)	+	Frank and Goyal (2003), Fama and French (2002); Alzomaia (2014)
Business risk	-	Frank and Goyal (2009); Mouton and Smith (2016), Alzomaia (2014)	-	Alzomaia (2014)
Tax rate	+	DeAngelo and Masulis (1980) Huizinga et al. (2008) Hovakimian et al. (2001)		
Liquidity	+	Gungoraydinoglu and Öztekin (2011)	-	De Jong et al. (2008), Nyamita et al. (2014a)
Probability of bankruptcy	-	DeAngelo and Masulis (1980), Hovakimian et al. (2001) Bradley et al. (1984)	-	Fama and French (2002)
Non-debt tax shield	-	Ferrarini et al. (2017)	+	Bradley et al. (1984)

Source: own construction

The determinants discussed thus far in this chapter are investigated under the partial adjustment dynamic model where the trade-off theory is tested.

4.3 Methodology

The main aim of this chapter is to determine if the financing behaviour of South African SOEs follows a pecking order hierarchy or if they have a target capital structure which they adjust towards, in line with the trade-off theory. This is achieved by following the methodology set out in this section.

4.3.1 Research design

The research process was designed and based on Saunders et al. (2012) onion diagram as illustrated by Figure 4.1. This process involves peeling one layer at a time until the centre is reached, which is the research question that the researcher aims to answer.

Layer one contains the research philosophies that provide structure, direction and restrictions to the decisions that follow and how data is collected and analysed to create reliable findings. In this study, the positivist paradigm was adopted. It is a paradigm of inquiry that searches for scientifically verified facts about reality, whereby the hypothesis generated is testable and measurable against accepted knowledge. The positivist philosophy is a belief in the existence of an objective and a constant reality that can be objectively measured, with emphasis on results that can be quantified. It thus lends itself to statistical analysis (Sekaran, 2015, Trochim, 2006).

The second layer is the research approach which follows from the philosophy, whereby the scientific enquiry process involves an approach that is deductive, inductive, or both. The deductive approach is based on the application of a theory upon which hypotheses are formed and tested, with results that either confirm or contradict the theory. This approach is used when the relationship between variables is studied (Sekaran, 2015, Trochim, 2006). After considering the research aim and limitations and conducting a literature review, this study was based on the deductive approach. The applicable theories were identified, hypotheses were developed and the results were compared to the theories.

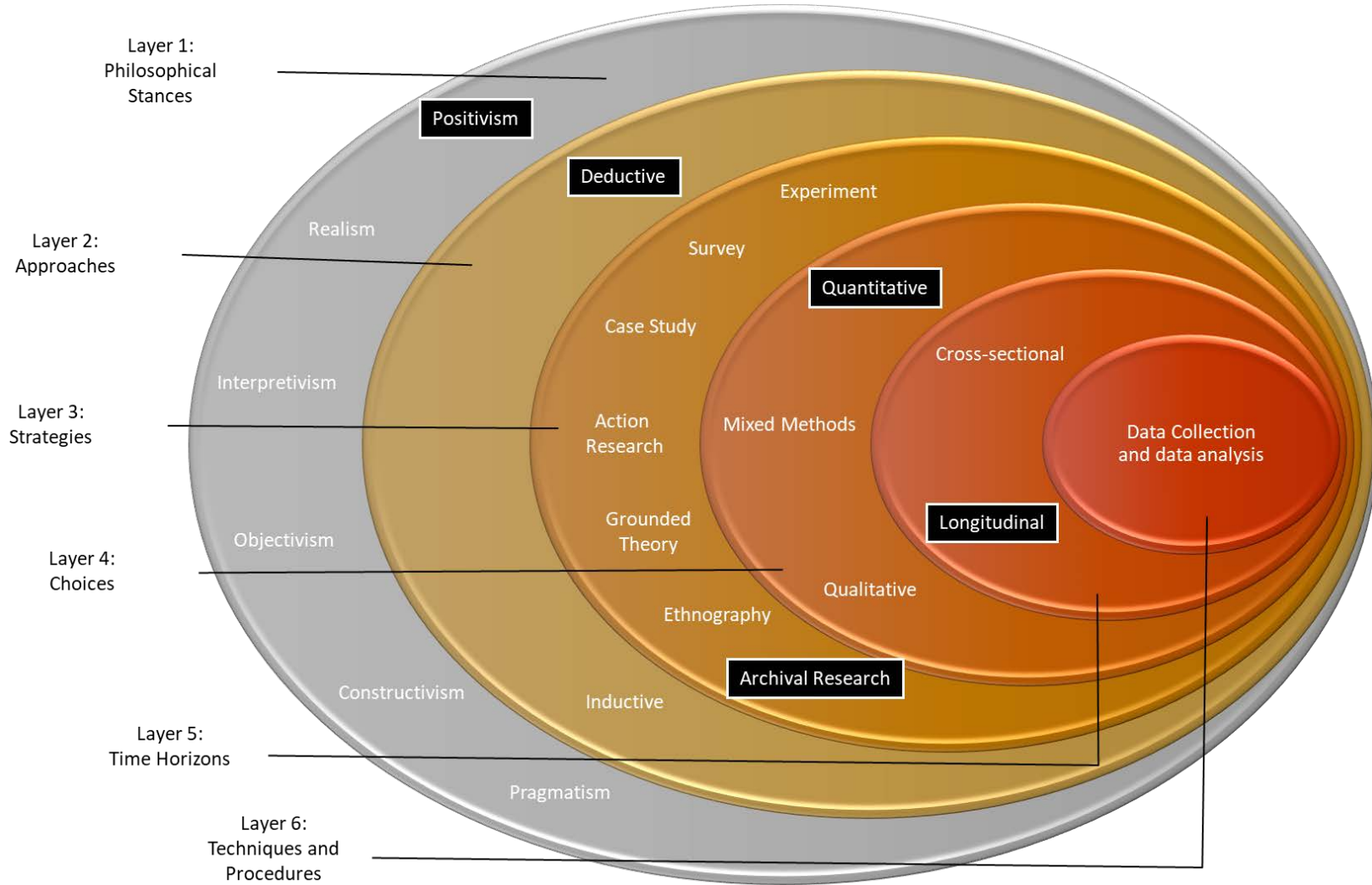


Figure 4-1: The research process

Source: Saunders et al. (2012)

The third layer is the research strategy that is commonly associated with different philosophies, where the choice depends on the research style used for data collection and analysis. This study was archival and data collection centred on existing datasets and archived documents. This type of strategy is suited to exploratory, explanatory or descriptive analysis where variations are tracked over time. A desktop approach was used where secondary data was gathered from government and company websites as well as company annual reports. The focus of an approach of this nature is on reporting the characteristics of variables instead of manipulating them.

The fourth layer defines the choice of method between quantitative, qualitative or both. Quantitative research can be described as a method to explain phenomena through collection of numerical data that is analysed using mathematical methods (Creswell, 2013). The quantitative method uses numbers to describe, infer and resolve problems, enabling the researcher to describe the observed values, trends, and relationships. The choice of research method is based on the underlying research paradigm which is positivism is the case of this study. Hence the quantitative method is adopted.

The fifth layer refers to the time horizon for the study. Observations can be made in a single period or over a period of time, with the former referred to as cross-sectional and the latter as longitudinal. Cross-sectional designs focus on the datasets of a sample over a single period, whereas longitudinal designs focus on the datasets of a sample over a period of time. This is also referred to as panel data which allows for the study of cross-sections and time-series data (Sekaran, 2015).

With the final layer, the research design is moved into the practicalities of data collection methods and type of analysis that need to be decided by the researcher. The decisions taken must fit with the other layers so that valid results can be obtained. This stage of the research process is discussed in the following sections.

4.3.2 Research tools

The study's research questions were answered through the use of structured observations from secondary data. These were obtained from external sources including

the McGregor BFA Library and Bloomberg online databases as well as the SARB website. These databases provide financial data feeds and analysis tools, covering JSE and global share prices as well as entity information, including annual reports and standardised financial statements.

4.3.3 Sample frame

The target population was SOEs as listed under the Public Finance Management Act (PFMA). The mandate covers different types of SOEs. The sample frame consisted of the SOEs listed according to their schedule in the Act:

Schedule 1	9 Constitutional Institutions
Schedule 2	21 Major Public Entities
Schedule 3a	154 National Public Entities
Schedule 3b	22 National Business Enterprises
Schedule 3c	69 Provincial Public Entities
Schedule 3d	16 Provincial Business Enterprises

Due to the nature of the main research question, which was to analyse the effect that the capital structure has on financial performance, all non-commercial SOEs were excluded from the sample, namely, Schedule 1; 3a and 3c. A non-probability sampling design was selected as the data required for the study could only be obtained from commercial entities. Non-probability sampling designs can be used if the study requires information relevant to and available only in relation to certain groups (Sekaran, 2015).

A stratified sampling technique was used as the SOEs have been classified into different schedules as per the PFMA. Stratified sampling is used when the population can be divided into a number of homogenous, non-overlapping groups (Kobus, 2012). The selected sample included all commercial SOEs. A census was then used within the selected stratum.

Entities that were excluded were all non-commercial entities, entities where the financial data required for key variables was missing for the period of analysis and those whose

data was presented in an unstandardised format. The final sample consisted of 33 SOEs (see appendix).

4.3.4 Data collection

This was a quantitative research project based on secondary data collected at the firm level. Due to the fact that numerical data was collected, a quantitative approach which uses numbers to describe, infer and resolve problems, was most appropriate to achieve the study's research objectives. Data for this study was obtained from the audited financial statements of the SOEs and economic indicators of the country, which were used to construct the necessary variables.

Financial statements were obtained from the McGregor BFA Library and Bloomberg online database and economic indicators were obtained from the South African Reserve Bank website. The data was for the period 1995 to 2017 as some SOEs were only formed after the new democratic government came to power in 1994.

The data set for this study contains cross-sectional dimensions (several SOEs) and longitudinal dimensions (several periods from 1995-2017). The combination of cross-sectional and longitudinal quantitative surveys enabled investigation of the constructs of the study.

4.3.5 Data and variables

This study uses unbalanced panel data to achieve the research objectives. Panel data is referred to as unbalanced when consecutive observations on a sampling unit are available; however, the number of time periods varies from one sampling unit to another (Arellano and Bond, 1991). The advantages of panel data are that it increases the degrees of freedom and reduces co-linearity among variables, which improves the efficiency and consistency of the model.

Furthermore, balanced panel data creates survivorship bias that arises from only including firms that have the same periods of observations. This type of bias is reduced

in unbalanced panels, and the sample size is also not further reduced as in the case of balanced panel datasets.

The variables selected were based on previous empirical studies and the predictions of the capital structure theories. These variables are covered under the theoretical models to which they are applicable.

4.4 Testing the Trade-off theory

4.4.1 Variables and measures

This section discusses the measure of leverage and capital structure determinants. The variables selected were based on previous empirical studies and the predictions of the capital structure theories. The independent variables included only firm-specific factors that have been proven in the literature to affect the target leverage level and the SOA towards reaching this target.

Table 4-3: Variables and measures: Trade-off Model

VARIABLE	MEASUREMENT	FORMULAE / PROXY
Profitability	PROF	Operating profit / Sales
Age	AGE	No of years in existence
Size	SIZE	Natural logarithm of total assets
Asset tangibility	TANG	Tangible assets / Total assets
Growth	GROW	% change in total assets
Business Risk	RISK	Standard deviation of operating profit / total assets
Tax rate	TAX	Tax charge / profit before tax
Liquidity	LIQ	Current assets / current liabilities

Probability of bankruptcy	BKCY	Interest expense / operating profit
Non-debt tax shield	NDTS	Depreciation / total assets
Total debt	TD	Total debt / Total assets

Source: own construction

4.4.1.1 Dependent variables

Leverage is the most common measure of a firm’s capital structure; hence, this section employs the total debt ratio (TD) as the firm's measure of leverage using proxies as presented in Table 4.3. Book values were selected as the basis to measure leverage as most of the sample are unlisted firms.

4.4.1.2 Independent variables

The purpose of the independent variable is to explain the behaviour of the dependent variable. When several variables are predicted to have explanatory power in determining the dependent variable, this results in a multiple regression. In order to test the SOA, only variables found significant in the literature as affecting the adjustment behaviour were included. These include firm-specific variables: profitability (PROF), age (AGE), size (SIZE), asset tangibility (TANG), growth (GROW), risk (RISK), tax rate (TAX), liquidity (LIQ), probability of bankruptcy (BKCY), and non-debt tax shield (NDTS).

4.4.2 Model specification

This section tests whether an optimal level of debt exists for South African SOEs and how fast they adjust to this target level. Measuring the speed at which firms adjust towards the target indicates how important that target is which, in turn, tests a central tenet of the trade-off theory.

According to the trade-off theory, capital structure is determined by a trade-off between the benefits and costs of debt. In a perfect world, in the absence of transaction and adjustment costs, firms will immediately move towards the optimal debt level. However,

in an imperfect world where there exist adjustment costs which are too high, firms may not immediately adjust towards the target debt ratio in the short-run. A dynamic capital structure adjustment incorporated through a partial-adjustment process which includes a lagged dependent variable in the empirical model would solve this issue. A standard partial adjustment model developed by Marc Nerlove, that would determine if there is adjustment towards the target debt level and at what adjustment speed, is presented as follows:

$$DR_{it} - DR_{it-1} = \lambda(DR_{it}^* - DR_{it-1}) + e_{it} \quad (4.1)$$

Where DR_{it}^* is the target debt ratio. This target is difficult to measure, making it difficult to estimate the above model. A solution would be to make a reasonable estimate of the target debt using variables that influence the firm's capital structure. The trade-off theory posits that an optimal debt ratio exists for firms, which may vary between different firms and across time, based on firm characteristics. This can be specified by the following equation:

$$DR_{it}^* = \alpha + \beta X_{it-1} + e_{it} \quad (4.2)$$

Where DR_{it}^* is the target debt ratio, β the coefficient vector that must be > 0 and ≤ 1 ; and X_{it} a vector of firm characteristics (PROF, AGE, SIZE, TANG, GROW, RISK, TAX, LIQ, BKCY, NDTs). These capital structure determinants were selected based on research by Rajan and Zingales (1995), Flannery and Rangan (2006) and Kythreotis et al. (2017).

The SOA can be determined using the two-stage procedure (Dang et al., 2012) of equations 4.1 and 4.2 where the actual leverage is regressed on the capital structure determinants in equation 4.2 and the fitted values to be used as the proxy for target leverage is obtained. Thereafter, using the target leverage, the SOA is estimated using equation 4.1.

Other authors have used a one-stage estimation by substituting equation 4.2 into the partial adjustment equation 4.1, which results in the following reduced form specification

adapted by Flannery and Rangan (2006), Fama and French (2002), Wiagustini et al. (2017) and Qian et al. (2009):

$$DR_{it} = \lambda\alpha + (\lambda\beta)X_{it-1} + (1 - \lambda)DR_{it-1} + \lambda e_{it} \quad (4.3)$$

Where λ (lambda) is the firm's SOA to close the gap between actual debt and the targeted debt level. $(1 - \lambda)$ is the adjustment parameter that measures the adjustment speed.

When $\lambda = 0$, the SOA is zero, implying no adjustment and when $\lambda = 1$, the SOA is one, which is very high, implying that the firm is always at its target debt level. The λ is expected between 0 and 1, where 0 or a very small SOA implies that the firm does not have a target capital structure and 1 implies that the firm is always on target.

By substituting the lagged firm-specific variables into equation 4.3, the final model specification for investigating the SOA is as follows:

$$\begin{aligned} DR_{it} = & \alpha_0 + \alpha_1 PROF_{it-1} + \alpha_2 AGE_{it-1} + \alpha_3 SIZE_{it-1} + \alpha_4 TANG_{it-1} + \\ & \alpha_5 GROW_{it-1} + \alpha_6 RISK_{it-1} + \alpha_7 TAX_{it-1} + \alpha_8 LIQ_{it-1} + \alpha_9 BKCY_{it-1} + \\ & \alpha_{10} NDT S_{it-1} + (1 - \lambda)DR_{it-1} + e_{it} \end{aligned} \quad (4.4)$$

This dynamic model is developed from the trade-off theory hypothesis where target leverage is difficult to observe but can be estimated and is a function of the lag variables of its determinants (Soekarno et al., 2016).

After the SOA has been calculated, the number of years to reach the target can be computed. According to Soekarno et al. (2016), this can be done using the equation 4.5 where Y_n is the target capital structure and λ is the SOA to reach the target.

$$n = \frac{\log(1 - Y_n)}{\log(1 - \lambda)} \quad (4.5)$$

4.4.3 Estimation methods

Using traditional estimation methods would result in serious econometric issues in terms of estimating our models. These issues include:

1. Dynamic panel data models include a lagged dependent variable as a regressor; therefore, strict exogeneity is violated because the lagged variable may be correlated with the idiosyncratic error, resulting in endogeneity.
2. Leverage, proxied by LTD, STD and TD may be correlated with profitability and vice versa, resulting in reverse causality.
3. Time invariant and firm fixed effects may be correlated with the dependent variable leverage. The fixed effects are confined to the error term in equation 4.3 which comprise of u_i the unobserved firm-specific effects and ε_{it} the observed firm effects.

Endogeneity arises from cases of reverse causality, simultaneity and variable omission. The OLS and FE estimators cannot be used, considering that they are based on strict exogeneity and would be subject to a simultaneous equation bias from the endogeneity between the lagged dependent variable and the error term. When non-spherical errors, namely heteroskedasticity across firms and autocorrelation within firms are present, the OLS estimator yields consistent but inefficient parameter estimates. Inefficiency in the sense that, in repeated sampling, the parameter estimates would equal the true values, but the variance will not be minimised as the estimation procedure does not incorporate information about the nature of non-spherical errors. This would result in the OLS estimator producing parameter estimates that have a large probability of a Type I error (Canarella and Gasparyan, 2008).

The IV approach can be used in the case of endogeneity; however, when the disturbance is heteroskedastic and when one or more regressors are endogenous, or when there are additional moment conditions, i.e., additional variables that do not appear in the regression but that are known to be exogenous, the standard IV estimates of the standard errors are inconsistent, preventing valid inference.

In the presence of heteroskedasticity, endogenous explanatory variables and serial correlation from idiosyncratic disturbances with the error term, there is a need to introduce stochastic variation into the model.

4.4.3.1 Generalised Method of Moments

A commonly applied technique developed by Arellano and Bond (1991) and referred to as the Generalised Method of Moments (GMM) estimator was used to estimate the specified models. GMM using the Arellano-Bond conditions is the most robust method that uses only the moment conditions implied by the AR(1) model, and it properly removes the heterogeneity. The application of GMM as an estimating technique in econometrics is predominantly due to its ability to account for endogeneity in regression models arising from cases of reverse causality, simultaneity and variable omission, amongst others. GMM utilises the appropriate lag instruments, which is usually that of the first difference required to resolve the issues that would have made the regressions rather invalid. Ideally, in regression, the independent variables and the error terms are not supposed to be correlated. Where this is the case, it is a case of endogeneity and renders the regression results invalid. Instruments are variables that correlate with the independent variables but are uncorrelated with the error terms. They are used by GMM to correct such a problem when it arises, as it does in most regressions.

The system GMM approach is expected to treat the likely endogeneity of the regressors (Nyamita et al., 2014b).

Mechanics of GMM

Following Arellano and Bond (1991), Arellano and Bover (1995), Blundell and Bond (1998), a first-order autoregressive panel data model with an additional regressor as shown below will be considered to illustrate the GMM estimators:

$$Y_{it} = \alpha Y_{it-1} + \beta X_{it} + \eta_i + \mathcal{U}_{it} \quad (4.6)$$

For $i = 1, \dots, N$ and $t=2, \dots, T$, with $|\alpha| < 1$

The disturbances η_i (fixed effects) and u_{it} (time-varying idiosyncratic shock) have the standard properties with the error component structure:

$$E(\eta_i) = 0, E(u_{it}) = 0, E(\eta_i u_{it}) = 0 \text{ for } i = 1, \dots, N \text{ and } t = 2, \dots, T \quad (4.7)$$

Additionally, the time-varying errors are assumed uncorrelated:

$$E(u_{is} u_{it}) = 0 \text{ For } i = 1, \dots, N \text{ and } t \neq s \quad (4.8)$$

Note that no condition is imposed on the variance of u_{it} ; hence the moment conditions used below do not require homoskedasticity.

The variable X_{it} is also assumed to follow an autoregressive process:

$$X_{it} = \rho X_{it-1} + \tau \eta_i + \theta u_{it} + \epsilon_{it} \quad (4.9)$$

For $i = 1, \dots, N$ and $t = 2, \dots, T$, with $|\rho| < 1$

The standard properties of the disturbance ϵ_{it} are analogous to those of u_{it} where

$$E(\epsilon_{it}) = 0, E(\eta_i \epsilon_{it}) = 0 \text{ for } i = 1, \dots, N \text{ and } t = 2, \dots, T \quad (4.10)$$

Two sources of endogeneity are present in the X_{it} process. Firstly, the fixed-effect component η_i has an effect on X_{it} through a parameter τ implying that Y_{it} and X_{it} both have a steady state determined only by η_i . Secondly, the time-varying disturbance u_{it} impacts X_{it} with a parameter θ , a situation in which the attenuation bias due to measurement error predominates over the upward bias due to simultaneity determination, may be simulated with $\theta < 0$.

For simplicity, it is useful to express Y_{it} and X_{it} as deviations from their steady state values. Under the additional hypothesis that (4.9) is a valid representation of X_{it} for $t = 1, \dots, -\infty$, X_{it} may be written as a deviation from its steady state:

$$X_{it} = \frac{\tau\eta_i}{1-\rho} + \xi_{it} \quad (4.11)$$

where the deviation from steady state ξ_{it} is equal to

$$\xi_{it} \equiv (1 - \rho L)^{-1}(\theta u_{it} + \mathbf{e}_{it})$$

In this last expression L is the lag operator and so, for any variable W_{it} and parameter λ , $(1 - \lambda L)^{-1}W_{it}$ is defined as:

$$(1 - \lambda L)^{-1}W_{it} \equiv W_{it} + \lambda W_{it-1} + \lambda^2 W_{it-2} \dots$$

Similarly, assuming that (4.6) is a valid representation of Y_{it} for $t = 1, \dots, -\infty$, Y_{it} may be written as:

$$Y_{it} = \frac{\eta_i}{1-\alpha} + \beta (1 - \lambda L)^{-1}X_{it} + (1 - \lambda L)^{-1}u_{it}$$

Substituting X_{it} by (4.11) in this last expression, Y_{it} may be written as a deviation from its steady state:

$$Y_{it} = \frac{(1 - \rho + \beta\tau)}{(1-\alpha)(1-\rho)}\eta_i + \zeta_{it} \quad (4.12)$$

Where the deviation from steady state, ζ_{it} is equal to:

$$\zeta_{it} \equiv \beta(1-\alpha L)^{-1}(1 - \rho L)^{-1}[\theta u_{it} + \mathbf{e}_{it}] + (1-\alpha L)^{-1} u_{it}$$

Hence, the deviation ζ_{it} from the steady state is the sum of two independent AR(2) processes and one AR(1) process.

In the case of a linear dynamic panel data model, the Differenced-GMM estimator shows sample bias and low precision in simulation studies (Lew, 2013). The reason for this is weak instruments which occurs when instruments become less informative due to the

following reasons. Firstly, the autoregressive parameter α goes towards unity and secondly, the variance of the firm-specific effects η_i increases relative to the variance of the idiosyncratic error term u_{it} (Blundell et al., 2001). The System-GMM proposed by Blundell and Bond (1998) estimates a system of equations based on the equations in first difference from the Differenced-GMM of Arellano and Bond (1991) and the equations in levels from the Level-GMM of Arellano and Bover (1995) by using an extra moment condition referred to as ‘initial condition’. The additional instruments exploited in the system-GMM estimator appear to be useful in reducing sample biases associated with the differenced-GMM and it outperforms in terms of accuracy and efficiency (Soto, 2009); it is hence used as the preferred estimator in this study.

The orthogonal condition of the Difference-GMM (Z_d) by Arellano and Bond (1991) is:

$$E[Z'_{d,i} \Delta u_i] = 0 \quad (4.13)$$

Where Z_d is the $(T - 2) \times Z_d$ matrix given by:

$$Z_{d,i} = \begin{bmatrix} y_{i1} & 0 & 0 & \dots & 0 \\ 0 & y_{i1} & y_{i2} & \dots & 0 \\ 0 & 0 & 0 & \dots & 0 \\ \vdots & \vdots & \vdots & \ddots & \vdots \\ 0 & 0 & 0 & \dots & \Delta y_{i,T-2} \end{bmatrix}; \Delta u_i = \begin{bmatrix} \Delta u_{i3} \\ \Delta u_{i4} \\ \vdots \\ \Delta u_{iT} \end{bmatrix} \quad (4.14)$$

and Δu_i is the $(T - 2)$ vector $(\Delta u_{i3}, \Delta u_{i4}, \dots, \Delta u_{iT})$

The GMM estimation for α based on these conditions is:

$$\widehat{\alpha}_d = (\Delta y'_{-1} Z_d W_N Z'_d \Delta y_{-1})^{-1} \Delta y'_{-1} Z_d W_N Z'_d \Delta y \quad (4.15)$$

Where $\Delta y'_i$ is the $(T - 2)$ vector $(\Delta y_{i3}, \Delta y_{i4}, \dots, \Delta y_{iT})$,

$\Delta y'_{i,-1}$ is the $(T - 2)$ vector $(\Delta y_{i2}, \Delta y_{i3}, \dots, \Delta y_{i,T-1})$ and

Δy and Δy_{-1} are stacked across individuals in the same way as Δu_i .

W_N , the optimal weight matrix, determining the efficiency properties of the GMM estimator, are given by:

$$W_N = (N^{-1} \sum_{i=1}^N Z'_{di} \widehat{\Delta u}_i \widehat{\Delta u}'_i Z_{di})^{-1} \quad (4.16)$$

where $\widehat{\Delta u}_i$ are the first-differenced residuals from a preliminary consistent estimator. Hence, this is referred to as the two-step GMM estimator (Arellano and Bond, 1991). The one-step estimator can be obtained by using:

$$W_{1N} = (N^{-1} \sum_{i=1}^N Z'_{di} G Z_{di})^{-1} \quad (4.17)$$

where G is the $(T - 2) \times (T - 2)$ matrix, with 2's on the main diagonal, -1's on the first off-diagonals and 0's everywhere else, as given by:

$$G = \begin{bmatrix} 2 & -1 & 0 & \cdots & 0 \\ -1 & 2 & -1 & \cdots & 0 \\ 0 & -1 & 2 & \cdots & 0 \\ \cdots & \cdots & \cdots & \cdots & \cdot \\ 0 & 0 & 0 & \cdots & 2 \end{bmatrix}$$

The two-step estimator can be obtained through substitution of Δu_i by the residuals obtained from the one-step estimator. Considering that the one-step estimator is not dependent on any estimated parameters, it is a reasonable choice used when computing the two-step estimator (Bond, 2002).

The orthogonal condition of the Level-GMM (Z_l) Arellano and Bover (1995) is:

$$E[Z'_{l,i} \mathcal{U}_i] = 0 \quad (4.18)$$

Where Z_l is the $(T - 2) \times Z_l$ matrix given by:

$$Z_{l,i} = \begin{bmatrix} \Delta y_{i2} & 0 & 0 & \dots & 0 & \dots & 0 \\ 0 & \Delta y_{i2} & \Delta y_{i3} & \dots & 0 & \dots & 0 \\ \vdots & \vdots & \vdots & \dots & \cdot & \dots & \cdot \\ 0 & 0 & 0 & \dots & \Delta y_{i2} & \dots & \Delta y_{i,T-1} \end{bmatrix}; u_i = \begin{bmatrix} u_{i3} \\ u_{i4} \\ \vdots \\ u_{iT} \end{bmatrix} \quad (4.19)$$

The GMM estimation for α based on these conditions is:

$$\widehat{\alpha}_l = (y'_{-1} Z_l (Z'_l Z_l)^{-1} Z'_l y_{-1})^{-1} y'_{-1} Z_l (Z'_l Z_l)^{-1} Z'_l y \quad (4.20)$$

The advantage of the Levels-GMM is that even if α goes towards unity, the lagged differences will still be informative (Soto, 2009); however, this estimator can also be affected by weak instruments in the case of persistent time series data (Lew, 2013).

The System-GMM estimator combines the standard differenced estimator and equation for levels (with the corresponding $T - 1$ moment conditions); hence, the System-GMM estimator is a weighted average of the Differenced-GMM and the Levels-GMM estimators. The orthogonal condition of the System-GMM (Z_s) (Blundell and Bond, 1998) is:

$$E[Z'_{s,i} q_i] = 0 \quad (4.21)$$

Where Z_s is the $2N(T - 2) \times (Z_d + Z_l)$ matrix given by:

$$Z_{s,i} = \begin{bmatrix} Z_{d,i} & 0 \\ 0 & Z_{l,i} \end{bmatrix} = \begin{bmatrix} Z_d & 0 & 0 & \dots & 0 \\ 0 & \Delta y_{i2} & 0 & \dots & 0 \\ 0 & 0 & \Delta y_{i3} & \dots & 0 \\ \vdots & \vdots & \vdots & \ddots & \vdots \\ 0 & 0 & 0 & \dots & \Delta y_{i,T-1} \end{bmatrix}; \text{ and } p_i = \begin{bmatrix} \Delta u_i \\ u_i \end{bmatrix} \quad (4.22)$$

The GMM estimation for α based on these conditions is:

$$\widehat{\alpha}_s = (p'_{-1} Z_s (Z'_s Z_s)^{-1} Z'_s p_{-1})^{-1} p'_{-1} Z_s (Z'_s Z_s)^{-1} Z'_s p \quad (4.23)$$

When these additional moment conditions are valid, then the System-GMM estimator can both increase the precision and reduce finite sample bias (Blundell and Bond, 2000).

Based on first differences, equation 4.2 will be transformed to:

$$\Delta Y_{it} = \alpha + \rho \Delta Y_{it-1} + \beta \Delta X_{it} + \Delta \varepsilon_{it} \quad (4.24)$$

The fixed effect does not vary over time and it is removed by differencing the regressors and is reflected as:

$$\Delta \varepsilon_{it} = \Delta \eta_i + \Delta \mathcal{U}_{it} \quad (4.25)$$

Which follows:

$$\varepsilon_{it} - \varepsilon_{it-1} = (\eta_i - \eta_i) + (\mathcal{U}_{it} - \mathcal{U}_{it-1}) = \mathcal{U}_{it} - \mathcal{U}_{it-1} \quad (4.26)$$

Initial conditions satisfy $E[\text{Lev}_i \mathcal{U}_{it}] = 0$ for $t > 2$

The presence of a lagged dependent variable, which is leverage in this case, is a source for autocorrelation. This is controlled for through instrumentation with past leverage levels and further through differenced instruments in System-GMM. Considering that the number of available instruments increases with T, then $T > 2$ for differencing to be applicable which is not an issue in this case as $T = 23$.

4.4.3.2 Econometric issues

4.4.3.2.1 Multicollinearity

Multicollinearity arises when there are high inter-correlations among the explanatory variables. Checking for multicollinearity should be a routine part of every multiple regression analysis as this has an effect on the estimation of partial regression coefficients and also increases the number of standard errors.

The Pearson correlation test was utilised in this study to assess the degree of multicollinearity. The pairwise correlation coefficient was estimated between the independent variables to identify if any of the correlation coefficients were above 0.80 which would indicate serious multi-collinearity issues.

4.4.3.2.2 Heteroskedasticity

Heteroskedasticity occurs when the calculated error variance correlates with values of the explanatory variables, thereby affecting statistical inference. The chances of heteroscedasticity are greater when the dependent variable is measured with error and furthermore when the sample size is very small as larger samples sizes reduce the measurement error.

4.4.3.2.3 Endogeneity

Endogeneity arises from cases of reverse causality, simultaneity and omitted variables. Including the lagged dependent variable leverage introduces endogeneity; however, the System-GMM estimator would resolve this endogeneity problem.

4.4.4 Empirical results

4.4.4.1 Descriptive statistics

A summary of the descriptive statistics for all variables used in the trade-off model is presented in Table 4.4. These statistics are based on a sample of 33 South African SOEs analysed over the period 1995 to 2017. The financial data presented includes book leverage as measured by the book values of total debt and firm-specific factors of the sampled SOEs. The numerical descriptive measures comprising mean (average), standard deviation, minimum and maximum (range) of the panel data across the variables, provide a better understanding of the nature of the data.

The average total debt ratio for the sample firms is 56.3% which is higher in comparison to other studies in developing economies including Yinusa (2015) where total leverage amongst Nigerian firms was 50.5% and Soekarno et al. (2016) who found total leverage to be 46% amongst Indonesian SOEs and Kyalo and Lishenga (2017) who reported 14.9% in Kenyan SOEs. This high average debt ratio confirms that South African SOEs are over-levered in comparison to other SOEs in emerging economies.

The average profitability (PROF), measured by operating profit as a ratio of sales is 7% which is an indication of the poor performance of SA SOEs. The average liquidity (LIQ) measured by the ratio of current assets to current liabilities is 2 which is equal to the general norm of 2 for this ratio. This high liquidity is an indication that internal debt financing is greater than external debt financing which supports the pecking order theory (Frank and Goyal, 2008).

Table 4-4: Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
TD	493	0.56300	0.28439	0.04734	1.53682
SIZE	493	15.0661	1.73456	11.6975	19.1331
PROF	469	0.07010	0.24821	-1.3985	0.80301
AGE	495	10.5616	6.04133	1.00000	23.0000
TANG	493	0.99135	0.02861	0.46711	1.00000
GROW	475	0.10816	0.18083	-0.26491	1.25891
RISK	493	0.11062	0.11379	0.01178	0.77778
TAX	490	0.09339	0.17506	-0.58869	1.00412
LIQ	493	2.00384	1.83950	0.20575	13.0053
BKCY	484	0.02369	0.96507	-5.9137	2.59025
NDTS	493	0.03243	0.02334	0.00000	0.10719

Source: own construction

The overall growth, as measured by a percentage change in total assets was 10.8%, which is low compared to other developing economies such as Kenya where their SOEs

report a growth rate of 15.65% (Nyamita, 2014). Most of the variables have a relatively low standard deviation which indicates that there is a small deviation of the actual data from the mean or expected values. All the variables indicate a high level of consistency as their mean values and standard deviation fall within the minimum and maximum range.

4.4.4.2 Panel data unit root tests

Prior to data analysis, it is necessary to conduct a stationarity test to detect the order of integration between variables and avoid spurious analysis. Stata implements an assortment of tests for unit roots or stationarity in panel datasets.

Options include the inclusion of fixed effects and time trends in the model of the data-generating process. The assorted tests make different asymptotic assumptions regarding the number of panels and time periods per panel. These tests are appropriate for datasets with large panels and few time periods, few panels and many time periods, and large panels and many time periods. The majority of the tests assume that the dataset is a balanced panel; however, the Im–Pesaran–Shin and Fisher-type tests make provision for unbalanced panels (STATA, 2019).

Considering that none of the unit root tests are free from shortcomings, more than one test was conducted to ensure authentic evidence on the order of integration. Table 4.5 displays selected tests used which included the Levin–Lin–Chu, Im–Pesaran–Shin, and Fisher-type tests with the null hypothesis as all the panels contain a unit root.

All variables were stationary at all levels $I(0)$ except for TDL and SIZE that were stationary at first difference $I(1)$. The probability of the statistical values for each of the variables were all less than the probability of the allowed error margin of 5%; therefore, we can reject the null hypothesis and accept the alternative to conclude that the panel is stationary.

Table 4-5: Unit root tests

Variable	Order	ADF – Fisher		Levin, Lin & Chu t*		Im, Pesaran and Shin W-stat	
		ADF Chi-square	Prob	statistic	Prob	W-stat	Prob
PROF	I(0)	226.791	0.0000	-17.4089	0.0000	-9.96136	0.0000
SIZE	I(1)	194.225	0.0000	-6.28377	0.0000	-6.18163	0.0000
TANG	I(0)	86.7290	0.0136	-17.2045	0.0000	-12.8970	0.0000
GROW	I(0)	303.088	0.0000	-1155.03	0.0000	-176.491	0.0000
RISK	I(0)	158.906	0.0000	-459.364	0.0000	-291.082	0.0000
TAX	I(0)	280.787	0.0000	-19.1870	0.0000	-14.3711	0.0000
LIQ	I(0)	145.496	0.0001	-11.8196	0.0000	-6.26783	0.0000
BKCY	I(0)	248.911	0.0000	-137.857	0.0000	-32.7511	0.0000
NDTS	I(0)	146.954	0.0000	-6.39271	0.0000	-5.22889	0.0000
TD	I(1)	284.297	0.0000	-14.8777	0.0000	-11.4404	0.0000

Ho: Panels contain unit roots Ha: Panels are stationary

Source: own construction

The panel root tests results revealed that there was a short run equilibrium relationship between the variables; therefore, further analysis continued.

4.4.4.3 Trend analysis

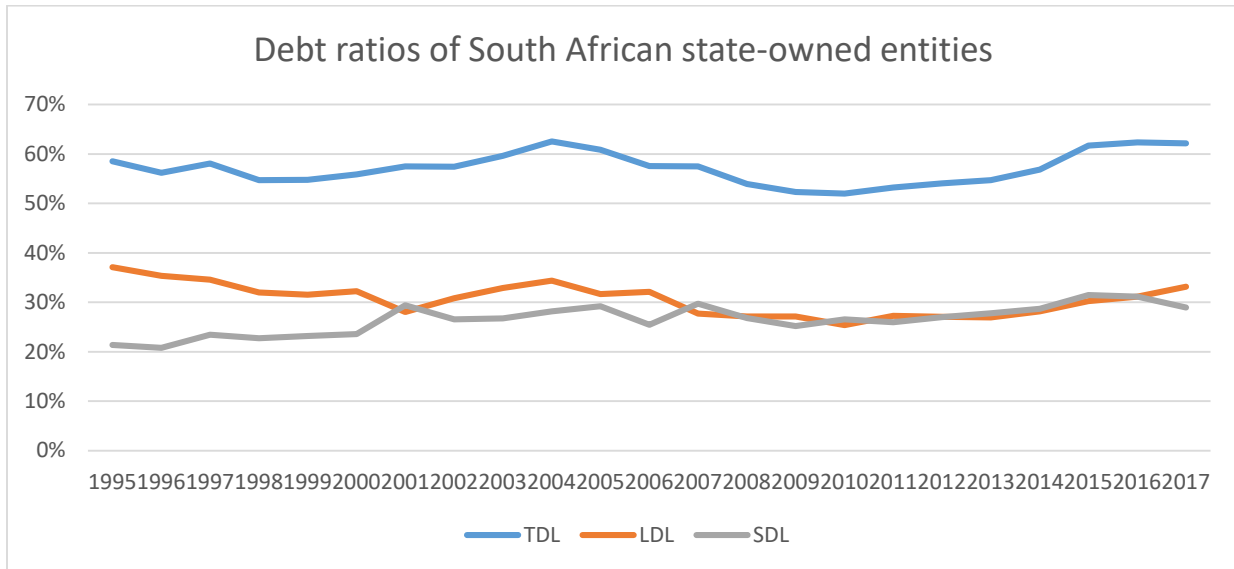


Figure 4-2: Trend of debt ratios

Source: own construction

As shown in Figure 4.2, debt ratios have remained fairly constant over the past two decades with earlier years reporting higher long-term debt and the gap between long-term and short-term debt being closed in recent years as SOEs accessed more short-term debt. Long-term financing helps to position firms for longer-term initiatives such as capital investments, and the fixed interest rate helps to better manage financial risk should interest rates rise. Short-term financing is more suited to managing operations and supporting working capital requirements. This decline in long-term debt and increase in short-term debt could be an indication of SOEs being unable to access long-term debt, possibly due to their poor performance and already high debt levels.

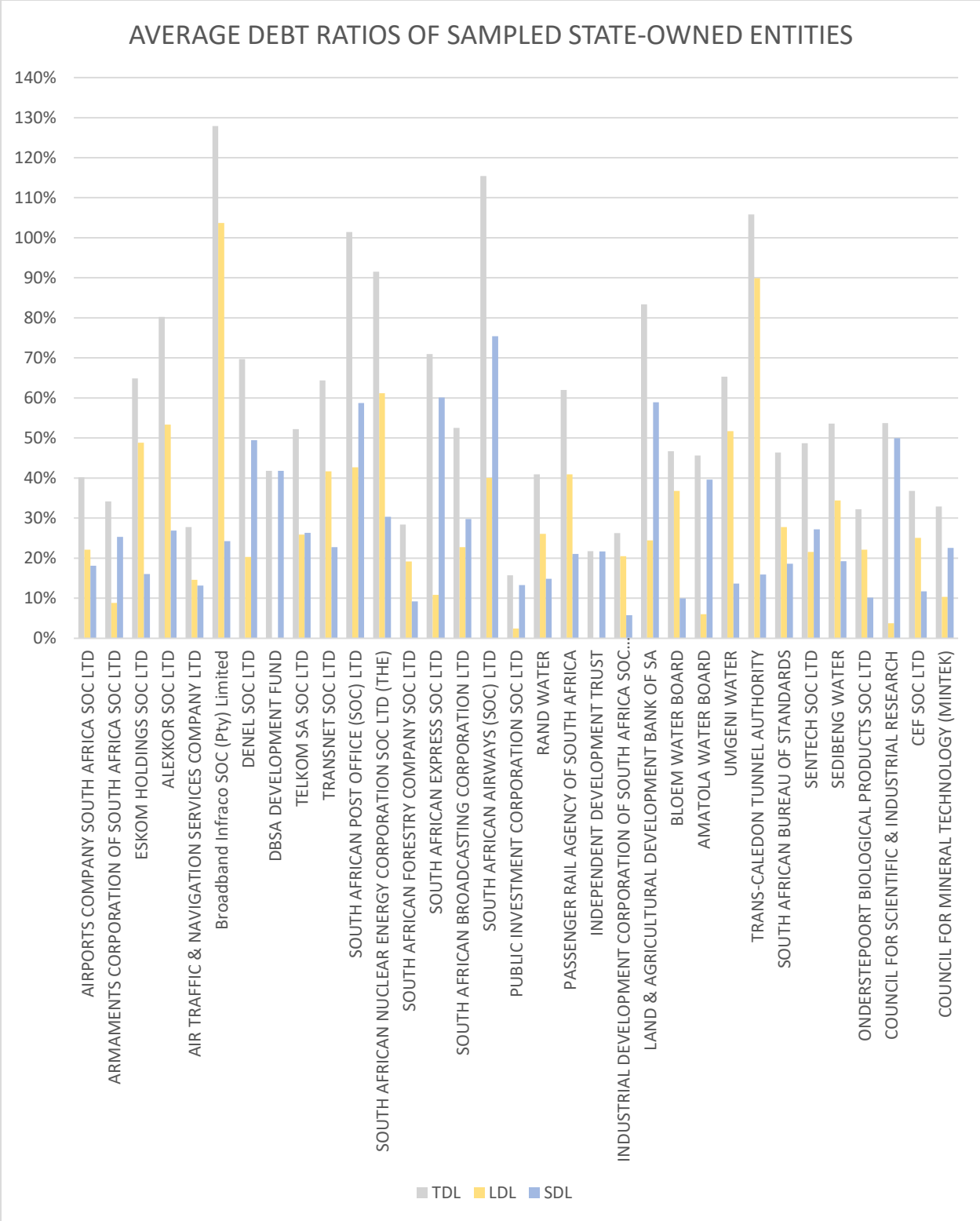


Figure 4-3: Debt ratios of sampled SOEs

Source: own construction

The trend displayed in Figure 4.2 and Table 2 (Appendix) is indicative of the effect of certain events such as the change in the political situation in 1994 which resulted in the restructuring of many SOEs; the 2008 global financial crisis that commenced in December 2007 and took a sharp downward turn in September 2008 and the 2011 stock market fall in August 2011. Debt levels fluctuated after the new government took over in 1994 as many SOEs were restructured, which is generally the case when a new government comes to power. In 2008-2011, there was a decline in debt levels, possibly due to the global economic shocks.

As indicated in Figure 4.2 and Table 2 (Appendix), since 2015, debt levels have increased. When firms take on debt financing, their value increases because of the tax shield from interest. At some point, the value levels off because the firm may not have enough taxable income. As firms take on more debt, there is a likelihood that they will go into distress and incur the costs of such distress. The value of the firm will then decrease at high levels of borrowing because of the financial distress costs associated with it. Hence, as highlighted earlier, the excessive debt levels in these SOEs can lead to financial distress and bankruptcy.

Figure 4.3 shows the average total debt, long-term debt and short-term debt levels of the sampled SOEs. The high debt levels of many of these parastatals could result in their failure to roll over debt or meet their debt obligations. This will result in increased use of government guarantees, which would heighten pressure on government finances (Zyl, 2018).

4.4.4.4 Correlation analysis

The correlation matrix that shows the direction and strength of the linear relationship between pairs of variables is presented in Table 4.6. The degree of association between the pairs of variables reveals the linear relationship and also whether any multi-collinearity exists between the variables, as this can pose serious issues in the estimations. Multi-collinearity exists when there is a perfect relationship between some or all explanatory variables and when the explanatory variables are highly correlated with each other. The Pearson correlation test was utilised in this study to assess the degree of multi-

collinearity. The pairwise correlation coefficient was estimated between the independent variables to identify if any of the correlation coefficients were above 0.80, which would indicate serious multi-collinearity issues (Islam, 2012). Table 4.6 indicates that no two explanatory variables are strongly correlated with each other beyond the rule of thumb of 0.80; hence there are no multi-collinearity issues to be concerned with.

The results of the correlation analysis indicate that the relationships between size, profitability, tax and liquidity and capital structure measured by total leverage (TDL) are significant.

Firm size and non-debt tax shield are positively correlated with total debt. Profitability, firm growth, probability of bankruptcy, firm age, asset tangibility, business risk, tax and liquidity are negatively correlated with total debt.

Table 4-6: Correlation analysis

	TD	Size	PROF	AGE	TANG	GROW	RISK	TAX	LIQ	BKCY	NDTS
TD	1.0000										
Size	0.1502*	1.0000									
	(0.0008)										
PROF	-0.1824*	0.1703*	1.0000								
	(0.0001)	(0.0002)									
AGE	-0.0550	0.3053*	-0.0244	1.0000							
	(0.2231)	(0.0000)	(0.5986)								
TANG	-0.0298	-0.1287*	-0.1147*	-0.1107*	1.0000						
	(0.5086)	(0.0042)	(0.0129)	(0.0139)							
GROW	-0.0437	0.0306	0.1542*	0.0803	0.0435	1.0000					
	(0.3424)	(0.5058)	(0.0010)	(0.0805)	(0.3446)						
RISK	-0.0740	-0.2587*	0.0315	-0.4005*	0.0193	-0.0588	1.0000				
	(0.1007)	(0.0000)	(0.4958)	(0.0000)	(0.6690)	(0.2005)					
TAX	-0.1312*	0.0711	0.1705*	0.0001	-0.0827	0.1068*	0.1915*	1.00000			
	(0.0036)	(0.1158)	(0.0002)	(0.9989)	(0.0674)	(0.0202)	(0.0000)				
LIQ	-0.3760*	-0.2222*	-0.1269*	-0.0113	0.0291	0.0198	-0.0232	0.0350	1.0000		
	(0.0000)	(0.0000)	(0.0059)	(0.8024)	(0.5198)	(0.6664)	(0.6074)	(0.4389)			
BKCY	-0.0318	-0.0346	0.3167*	-0.1446*	-0.0439	0.1075*	0.0474	0.0736	0.0179	1.0000	
	(0.4854)	(0.4475)	(0.0000)	(0.0014)	(0.3352)	(0.0201)	(0.2977)	(0.1060)	(0.6937)		
NDTS	0.0527	-0.0559	-0.0974*	-0.2104*	-0.1145*	-0.0999*	0.2256*	0.2939*	-0.0922*	0.1491*	1.00000
	(0.2429)	(0.2156)	(0.0350)	(0.0000)	(0.0109)	(0.0294)	(0.0000)	(0.0000)	(0.0408)	(0.0010)	

Pearson product moment correlation coefficients are shown below the diagonal. (Source: own construction)

4.4.4.5 Econometric analysis

Table 4.7 presents a summary of our estimates for the capital structure SOA as predicted by the dynamic trade-off model. The lagged total debt ratio coefficient is positive, statistically significant at the 1% level and not equal to zero. This significant finding, firstly, confirms that the target leverage ratio predicted by Equation (4.2) could serve as a proxy of the optimal target capital structure. Secondly, it is an indication that the total debt ratio in South African SOEs converges towards their optimal debt level over time as postulated by the dynamic considerations of the trade-off theory.

Table 4-7: Regression analysis

VARIABLE	Coefficient	t	P> t
L.TD	0.785***	14.66	(0.0000)
PROF	-0.225***	-5.97	(0.0000)
AGE	-0.0185***	-7.69	(0.0000)
SIZE	0.0841***	4.17	(0.0000)
TANG	0.4039	1.04	(0.3080)
GROW	-0.2446***	-7.18	(0.0000)
RISK	-1.193***	-3.56	(0.0010)
TAX	0.1049***	4.12	(0.0000)
LIQ	0.0038	0.268	(0.7930)
BKCY	-0.0155**	-2.17	(0.0380)
NDTS	1.1227**	1.35	(0.1880)
Constant	-1.2436**	-2.07	0.0480
Observations			400
Number of ID			30
Number of Instruments			24
AR(2)			0.269
Hansen test			0.883

Source: own construction

The SOA towards the target debt level is 0.215 (1 - 0.785). This value is based on the value of lambda found in the dynamic model based on the coefficient of the lagged leverage less one. The value of lambda approaching 0 means that there is no optimal capital structure target and if approaching 1 means that the optimal capital structure is adjusted instantaneously.

Under the static assumption of the trade-off theory, there is a clear target that can be adjusted immediately while under the dynamic assumption, the adjustment takes place partially each year and the target can change every year based on the circumstances. The fact that the values are far below 1 is a result of management considering the adjustment costs that are linked to the capital structure adjustment. Consequently, SOEs in South Africa do not fully adjust their debt ratios towards the optimal debt ratio in each period.

The findings reveal that South African SOEs do have a target capital structure towards which partial adjustment takes place and therefore the trade-off theory is supported. The SOA indicates that each year the SOEs close the gap to the optimal target by 0,215 times or 21.5%. The number of years to reach the target is computed using equation 4.5.

$$n = \frac{\log(1 - 0.99)}{\log(1 - 0.215)}$$

where $Y_n=0,99$ (considering a 1% tolerance), $\lambda=0,215$, then $n=19$ years. This is a long period to reach the target capital structure compared to other emerging economies such as Indonesia where Soekarno et al. (2016) found that SOEs take 7.55 years to reach the target with two-thirds of the gap being closed within two years. As shown in Figure 4.4, South African SOEs take almost five years to close two-thirds of the gap.

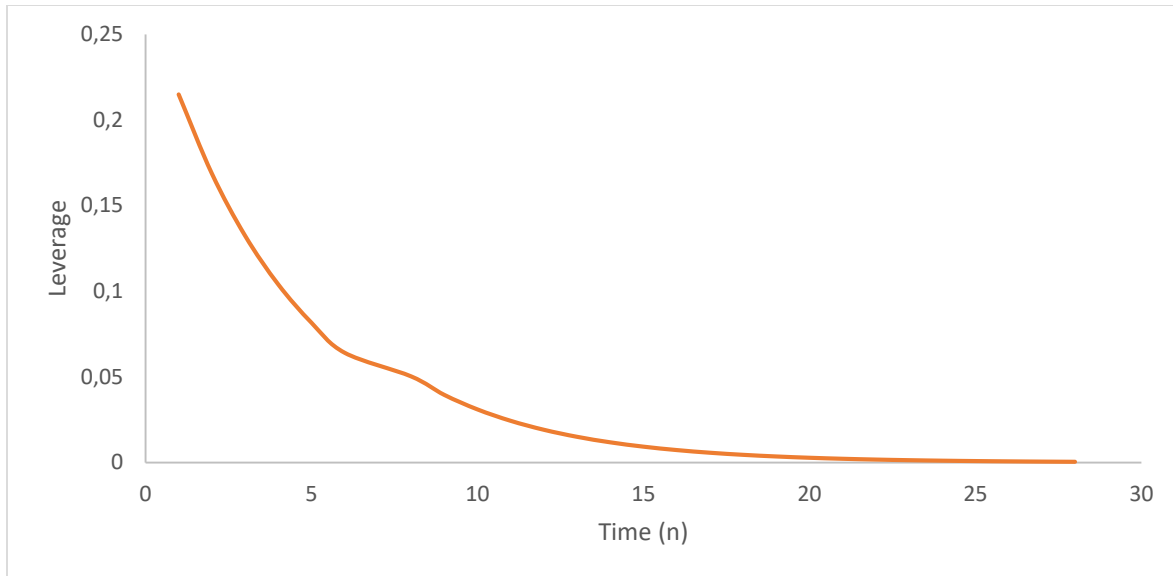


Figure 4-4: South African SOEs capital structure adjustment towards the target capital structure

Source: own construction

This is determined in the following manner: in the first year, the gap is closed by 0.215 with the remaining value of 0.785. In the second year, another 0.215 of the remaining gap is closed, with a remaining gap of 0.616. This pattern continues and in the fifth year another 0.215 of the gap is closed with a remaining gap of 0.298. Hence, it can be said that South African SOEs partially adjust to their capital structure targets over a period of time, albeit at a lower speed, since adjustment costs are likely to exceed those in other countries. Possible explanations for the slow SOA include:

- the economic recession, measured by a decline in GDP for two successive quarters, that South Africa experienced in 2008-2009 and again in the last quarter of 2018 (Statistics South Africa, 2018). A slower SOA is expected in poor macroeconomic conditions as indicated by a lower GDP growth rate (Mahakud and Mukherjee, 2011).
- The decline in profitability experienced by most of the SOEs reduces their financial flexibility to frequently alter the leverage. Hovakimian et al. (2001) state that profitability has an effect on the SOA as it provides funding for the repurchase of shares and it is an indication of financial stability that is used to issue securities at an attractive rate.

- Political resources in the form of government support can lead to a slower SOA. Zhou and Xie (2016) found that SOEs use their political resources to access more debt and keep their leverage levels at high levels even if they have exhausted their debt financing ability. Government support can reduce the SOA as SOEs are becoming too dependent on such support. These SOEs receive government bailouts when in financial distress, resulting in higher leverage. Appelbaum (1993) analysed the effect of government support such as bailouts and grants and concluded that firms can maximise the value of government intervention through their capital structure decisions. Firms use strategies to extract the maximum value from government support which reduces the SOA.
- SOEs have experienced a decline in growth opportunities and this reduces opportunities to raise funds from capital markets so that debt can be swapped with equity or equity with debt. This has an impact in reducing the SOA. Political influence such as corruption has caused the systematic mismanagement of SOEs, such that the developmental value of these entities has been eroded beyond recognition (Qobo, 2018). Developmental opportunities, that is growth opportunities, have been missed as a result of misdirecting resources away from value creation to line the pockets of a few government officials.

From model 4.9, the study derives the following equation:

$$\begin{aligned}
 TD_{it} = & -1.244 + 0.785TD_{it-1} - 0.225PROF_{it-1} - 0.0185AGE_{it-1} + 0.0841SIZE_{it-1} \\
 & + 0.4039TANG_{it-1} - 0.2446GROW_{it-1} - 1.193RISK_{it-1} \\
 & + 0.1049TAX_{it-1} + 0.038LIQ_{it-1} - 0.0155BKCY_{it-1} \\
 & + 1.1227NDTS_{it-1} + \varepsilon_{it}
 \end{aligned}$$

This infers that without accounting for the explanatory variables, the constant levels of total debt is -1.244. The sign of the coefficient could, among other things, be related to the financial constraints experienced by South African SOEs. Therefore, SOEs would utilise internal financing first. Compared to developed economies, the banking sector and capital markets in developing economies are much smaller in absolute and relative terms. Furthermore, investor protection in developing economies is considerably less than in developed economies (Nagel and Sauvagerd, 2013). This could account for the negative

effect on SOEs' leverage in South Africa and could thus explain our estimates for the negative constant term.

Researchers that have analysed the dynamic aspects of capital structure have attributed variations in SOA to specifics in the respective legal, institutional and macroeconomic landscapes. In particular, the development of financial markets has been found to be positively related to adjustment speed. The reason is that increases in capital supply bring about lower costs of capital, rendering adjustment to the target capital structure less costly.

The empirical research on the suitability of trade-off models has shown that partial adjustment regressions, particularly GMM are flawed in testing for capital structure targeting (Shyam-Sunder and Myers, 1999, Chang and Dasgupta, 2009, Hovakimian and Li, 2011). Even if debt ratios were simulated in a random fashion, the GMM methods erroneously show evidence of significant targeting. This is an issue that the researcher acknowledges.

4.4.4.6 Determinants of capital structure of South African state-owned entities

Profitability

Profitability, measured by operating profit as a ratio of sales, shows a significant negative relationship with the total debt ratio (significant at 0.01). This indicates that more profitable SOEs in South Africa would generate more cash flows and usually prefer to utilise internal funds to finance projects rather than debt financing. Since there is an increase in retained earnings when profits increase, the need for debt financing decreases as profitability increases.

The results do not support the static trade-off theory's prediction that firms prefer to issue debt in the case of higher profitability in order to minimise the tax burden (Ting and Lean, 2011). The negative prediction supports the dynamic version of the trade-off theory and the pecking order theory; however, the reasoning differs. From a dynamic trade-off theory perspective, accumulation of the cash flows used to finance investments is as a result of high adjustment costs, whereas the reason behind the pecking order theory is the cost of

adverse selection that arises from information asymmetries (Hovakimian et al., 2001, Hovakimian et al., 2004). This negative prediction in support of the dynamic trade-off theory arises as a result of profitability affecting deviation from the target. These findings are supported by Rajan and Zingales (1995), Booth et al. (2001), and Gwatidzo et al. (2016).

This significant negative prediction could be due to a lack of autonomy in major decision making pertaining to debt financing because of political influence by government (Palcic and Reeves, 2013, Nyamita et al., 2014b). Ahmad et al. (2017) also found that profitability had a negative influence on leverage in Malaysia, where SOEs utilise more internally generated funds as a result of their outstanding performance.

The significant finding of this study is inconsistent with the insignificant findings of Sia et al. (2016) who found that government owned-firms in Malaysia are more concerned with service delivery than profitability. This argument is supported by Deesomsak et al. (2004) who also found an insignificant relationship between leverage and profitability among state-owned firms in Singapore, suggesting that the capital structure of firms that are owned by government in Singapore is not affected by their profitability. While the results for the impact are reflectively mixed, the significant findings which contradict those on SOEs in other developing economies are a possible indication that SOEs in South Africa are more concerned with profit than with one of their primary objectives, namely, provision of services.

Growth

Growth, measured by the percentage change in total assets, reveals a statistically significant (1% level) and negative effect on leverage. High growth opportunities are also associated with agency problems such as asset substitution where managers of firms experiencing high growth are likely to increase the risks of their projects to the benefit of shareholders and the disadvantage of bondholders. These agency problems also point to the negative relationship found in this study between growth opportunities and leverage, thereby supporting the trade-off theory.

The agency theory predicts that firms with greater growth opportunities use less risky debt and when firms grow, this creates room for opportunistic behaviour from managers which

can be mitigated by employing more debt in the capital structure, resulting in a positive prediction (Yinusa, 2015). When in need of financing and once internal sources of finance are depleted, South African SOEs should use long-term debt financing which is more suited to growth opportunities based on capital expansion, acquisition and share repurchase, among others.

Asset tangibility

The results show that asset tangibility has a positive effect on leverage. These findings are not significant. Tangible assets are easier for outsiders to value, implying less information asymmetries; therefore, they are linked to reduced agency costs as firms can collateralise their debt (Jensen and Meckling, 1976, Frank and Goyal, 2009). In a world of information asymmetries, a firm's asset structure would directly influence its capital structure considering that tangible assets act as sources of collateral to lenders for borrowing and securing debt.

These findings support the trade-off theory's prediction of a positive relationship between tangible assets and leverage. Other authors that support this positive relationship include Titman (1984), Rajan and Zingales (1995), De Vries (2010), Shah and Khan (2007). These authors have shown that tangible assets are associated with higher leverage as they provide higher security for loans at a lower interest rate with reduced agency costs of debt for the lender. Furthermore, the tangible assets value of the firm at liquidation is higher.

Other studies that have found that asset tangibility has a positive effect on leverage include Ramjee and Gwatidzo (2012), Frank and Goyal (2009), Huang and Song (2006) and Fosu (2013b). Gwatidzo et al. (2016) suggested that collateral plays a significant role in mitigating the effects of information asymmetry in South African debt markets despite the fact that the country has more developed capital markets than its African counterparts.

The finding that asset tangibility has an insignificant effect on leverage contradicts studies on SOEs in other emerging economies. Soekarno et al. (2016) explained that Indonesian SOEs do not have to use their assets as collateral as they have sufficient retained earnings to finance their capital expenditure. Nyamita et al. (2014b) suggested that the strong political influence exerted on Kenyan SOEs may discourage them from using their

assets as collateral and rather using their tangible assets to issue more equity or negotiate increased guarantees or more subsidies. Nyamita et al. (2014b) further found that since government is the majority shareholder, the agency theory's negative prediction suggests that SOEs that have higher tangible assets issue equity to avoid conflict between government and debt holders.

Age

The results show that the firm's age, also regarded as a measure of reputation, negatively affects leverage in the case of South African SOEs. There is a statistically significant relationship at the 1% significance level which is an indication that older firms reduce their debt levels and are low-levered compared to younger firms. This partly arises because old firms are endowed with a reputation in the capital market, qualifying them for cheaper funds. This negative finding is supported by Gwatidzo et al. (2016).

Older firms are more established and should therefore reduce their reliance on debt as they have more internally generated cash flows. Most of the SOEs sampled in this study were established prior to the beginning of the study period. However, as shown in Figure 4.3 above, Broadband Infracore, a fibre-optic infrastructure entity formed in 2007, had the highest debt level of all the sampled SOEs. This supports the negative prediction between age and leverage where younger SOEs have higher debt levels. Despite already high debt levels, the SOE has appealed to government for further cash injections and bailouts to continue operations. This would further increase its debt levels, which will in turn compromise its liquidity position (News24Wire, 2015).

Size

The size of the SOEs, measured by natural logarithm of total assets, indicates a positive and significant (at the 1% level) effect on total debt. Size is often associated with the level of asymmetric information as well as reputation, with larger firms associated with lower levels of asymmetric information and a good reputation to protect. These firms know that they are being monitored by the market and hence must protect such reputation by honouring their debt obligations.

Larger firms may also get involved in large projects, which require more than their internally generated finance; therefore, the need to borrow in the debt market. The need to borrow as well as lenders' willingness to extend credit to larger firms are important factors that contribute to the positive relationship between firm size and leverage. This increase in debt levels by larger SOEs could also be due to government support in the form of subsidies and guarantees.

Risk

A statistically significant and negative relationship is found between risk and leverage (at the 1% level). This implies that riskier firms have less debt as they face higher expected costs of financial distress. This can be rationalised by the notion that riskier firms may be heavily penalised in the debt market; hence, they may resort to other sources of financing. There is a lower likelihood that SOEs that portray high levels of risk which is often seen as a sign of poor credit ratings, would attract investor financing. This can also be interpreted as having volatile cash flows, which implies that the probability of the maximum utilisation of the tax shield is reduced. Firms with volatile cash flows would be expected to have increased costs of financial distress due to difficulty in honouring interest payments and there is increased probability that the tax shield benefit will not be fully utilised; hence, they should use less debt (Frank and Goyal, 2009, Alzomaia, 2014). An increase in risk is detrimental to shareholders; therefore, the prediction of the trade-off theory is that riskier firms should use less debt. Disagreeing with the predictions of the trade-off and pecking order theories, Chen and Strange (2005) found statistically significant evidence that risk positively influenced the market value of leverage, explaining that debt is not a major constraint among Chinese firm structures as it is in other economies and implying that when risk increases, the total debt of Chinese SOEs increases. SOEs that experience high levels of risk may want to avoid an accumulation of additional financial risk by issuing less debt (Danso, 2014). Furthermore, SOEs that experience high earnings volatility, may be granted financial assistance by the government, in which case they may be subject to strict conditions in terms of the grant.

Tax

A statistically significant and positive relationship is found between tax and leverage, at the 1% significance level. This finding supports the trade-off theory which predicts that firms increase their debt levels to benefit from the tax savings derived from the interest on debt. Taxation also has a larger effect at the top than at the bottom of the leverage distribution. This suggests that taxation makes a bigger difference to the capital structure of firms with more debt than those with low debt levels. This finding confirms the predictions of the trade-off theory.

Probability of bankruptcy

The probability of bankruptcy is statistically significant and negative at the 5% confidence level. This finding also supports the predictions of the trade-off theory that foresees a negative relationship between leverage and the probability of bankruptcy due to higher bankruptcy costs being expected when the probability of bankruptcy increases. Firms reduce their debt levels in order to reduce bankruptcy costs. The probability of bankruptcy can be reduced if managers perceive bankruptcy to be costly. Debt can then create an incentive for them to reduce this probability by working harder, consuming less perquisites and making better investment decisions (Harris and Raviv, 1991).

A decrease in profitability causes a rise in bankruptcy costs and the threat of bankruptcy forces firms with lower profitability to reduce their target debt levels. On a similar note, more volatile earnings imply lower tax rates for firms and higher bankruptcy costs, which should push those that are smaller and less-diversified toward reducing their target leverage (Fama and French, 2002). These findings suggest that SOEs that follow the trade-off theory reduce their use of debt when the financial distress costs are high or the probability of bankruptcy becomes high.

The trade-off theory becomes a primary motivator of financing decisions at high levels of debt financing which is evidenced by the high debt ratios. If the deviation from the target debt level is from above, bankruptcy costs rise at an increasing rate, while tax savings rise at a decreasing rate. When the deviation from the target debt level is from below, the foregone tax savings rise at an increasing rate, while the reduced bankruptcy costs rise at a decreasing rate. Both these situations provide strong incentives for SOEs to

rebalance their capital structure and move towards the target, rendering the SOA an increasing function of the deviation.

4.4.4.7 Model specification tests

In dynamic panel data analysis, it is crucial to test whether the model specification and instrumental variables are legitimate in order to ensure the reliability of estimations.

Table 4-8: Specification tests for Trade-off Model

Observations	400
Number of ID	30
Number of Instruments	24
AR(2)	0.269
Wald test	0.000
Hansen test	0.883

(Source: own contribution)

Auto-correlation was introduced into the model when the lagged compensation variable was included as an additional regressor; hence, a first-order auto-correlation (AR(1)) was expected. The lagged-dependent variable coefficient had a value below 1, which is consistent with dynamic stability. Table 4.7 presented the lagged values for the firm performance variables (L.TDL) to account for autocorrelation or serial correlation that is expected under system-GMM.

The Arellano Bond AR1 and AR2 tests were also run to test for autocorrelation at first difference and second difference levels, respectively. If autocorrelation exists at first difference level, GMM would report $p < 0.05$ at the 95% significance level and if there is autocorrelation at second difference level, GMM would report $p > 0.05$ at the 95%

significance level. Autocorrelation is only expected to exist at level one (Blundell and Bond, 1998). Table 4.8 shows that the results of the AR (2) test for serial autocorrelation reflected non-significant p-values of 0.269 for model 4.2. These test results indicated that auto-correlation of order 2 was absent. Hence, these results were an indication that the models passed the test.

The Wald test was applied to the system-GMM results to test the reliability of the estimators in the models. The $p(\chi^2) < 0.05$ which is an indication that the estimators are reliable at the 95% confidence level.

The Hansen instruments-identification test evaluates the 'goodness of fitness' of the System-GMM estimator, by testing for over-identification of the variables (Bond, 2002). The results of the Hansen test revealed that all the models were not over-identified. Higher values are an indication of the robustness of the model; hence, all the models passed the over-identification of instruments test.

These model specification tests are all an indication of the models' correct specification.

4.5 Testing the pecking order theory

4.5.1 Variables and measures

This section discusses the variables that are used to test the predictions of the pecking order theory. The variables selected for inclusion in the model were based on previous empirical studies and the predictions of the pecking order theory and are displayed in the table below.

Leverage was measured as the change in net debt issued so that both short-term and long-term debt is incorporated in the financing of the deficit. Short-term debt, such as trade credit also provides financing when firms would otherwise be constrained (Verwijmeren, 2008).

The financing deficit (DEF) can be defined as the use of the cash flow to increase the assets which are supposed to be less than the change in current liabilities and retained earnings (Yulianto et al., 2016). The implication is that the retained earnings should

guarantee the current liabilities which should be greater than the asset purchases. In the case of a financing deficit, where the retained earnings are less than the current liabilities which are less than the asset purchases, its needs are met through external debt financing, in terms of the pecking order model. When the firm needs to make dividend and investment payments and increase working capital which is more than the cash flows generated, the condition for the financing deficit occurs.

Table 4-9: Variables and measures: Pecking Order Model

	MEASUREMENT	FORMULAE / PROXY
Independent Variable: Financing deficit	DEF	Dividend payments + capital expenditures + change in working capital - operating cash flows after interest and tax
Dependent Variable: Net debt issued	Δ TD	Current total debt – previous year's total debt

Source: own construction

4.5.2 Model specification

The pecking order theory predicts that external debt financing is driven by the internal financing deficit, whereby an outflow of capital causes a financing deficit by the same amount (Shyam-Sunder and Myers, 1999). The three sources of funding available to firms are retained earnings, debt, and equity. From investors' viewpoint, equity is riskier than debt. Therefore, a higher rate of return would be required on equity. From the firm's viewpoint, retained earnings are preferred over debt, while debt is preferred over equity. As a result, projects will be funded firstly using retained earnings and when this is exhausted, debt will be utilised. Equity will only be utilised as a last resort due to the high financial distress costs of debt or if debt capacity has been exhausted. In normal operating conditions, equity will not be utilised, and as a result, the financing deficit will match the

net debt issues. The pecking order theory can be tested using a financing deficit variable which is a component of several cash flow based components constructed by summing the dividends, investments, working capital, and internal cash flows.

The model developed in this section will test whether South African SOEs follow a financial hierarchy of financing in their capital structure, that is, using internal funds, then debt, then external equity. The model is based on a simple panel regression model adapted from other studies where this model was tested in both developed and developing economies and only the private sector (Frank and Goyal, 2003, Fama and French, 2002, Chirinko and Singha, 2000, Shyam-Sunder and Myers, 1999).

The specified equation 4.27 is based on the original financial deficit model by Shyam-Sunder and Myers (1999) who tested the predictions of the pecking order theory by regressing the change in debt against the categories of financing used to cover the financing deficit. The interpretation of this simple pecking order model is that the closer β_{pot} is to 1, the stronger the support for the pecking order theory and when β_{pot} is equal to one, this implies that all external funding requirements will be funded purely by debt. The Shyam-Sunder (1999) model has some inherent weaknesses. Specifically it fails to make a distinction between financing deficits and surpluses. As a consequence, the model imposes a homogenous pecking order coefficient for both financing deficits and surpluses (Cross, 2010).

$$\Delta D_{it} = \alpha_{it} + \beta_{pot} DEF_{it} + \varepsilon_{it} \quad (4.27)$$

Where:

ΔD_{it} = amount of long – term debt issued

β_{pot} = pecking order coefficient

DEF_{it} = Financing deficit

The financing deficit (DEF) can be measured as follows:

$$DEF_t = DIV_t + X_t + \Delta W_t + R_t - C_t \quad (4.28)$$

Where:

$DIV_t = \text{Dividend payments}$

$X_t = \text{capital expenditures}$

$\Delta W_t = \text{net increase in working capital}$

$= \text{change in operating working capital}$

$+ \text{change in cash and cash equivalents} + \text{change in current debt}$

$R_t = \text{current portion of long – term debt}$

$C_t = \text{operating cash flows after interest and tax}$

A positive financing deficit is an indication of a firm investing more in cash than internally generated funds, while a negative financial deficit is an indication of investing less in investments than internally generated funds and increased internal operating cash flows. In other words, if the deficit is positive, the firm invests more than it generates internally, while when the deficit is negative, it generates more cash than it invests, with positive free cash flow (Kayhan and Titman, 2007). The effect of the financial deficit on the capital structure is stronger when it is positive (that is, when firms are raising capital) than when it is negative (that is, when they are paying out capital) (Lew, 2013).

Equation (4.27) is the simplest way of testing the pecking order theory without any restrictions with the advantage that observations are not lost, which is usually the case when control variables are included (Frank and Goyal, 2003).

Frank and Goyal (2003) modified equation 4.28 by removing the current portion of long-term debt as this was included in the change in working capital.

Further modifications to the original Shyam-Sunder and Myers (1999) model were made by Chirinko and Singha (2000), De Jong et al. (2010) and Lemmon and Zender (2010) to include the size of the financing deficit and whether the deficit was negative (surplus) or positive (deficit). Cross (2010) further modified the models by the above authors to include short-term debt on the left side of the equation and remove it from the change in working capital. The reasons were that since both long- and short-term debt are used as a source of external financing and that the pecking order theory is not based on the term structure

of debt that will be used to fund the financing deficit. Furthermore, the timing of the debt can have severe implications for working capital considering that when the long-term debt has less than 12 months until expiry, it has to be reclassified as short-term debt in the balance sheet, resulting in a large financing deficit due to its effect on working capital (Cross, 2010).

Revised model specification:

$$DEF_t = DIV_t + X_t + \Delta W_t - C_t \quad (4.29)$$

$$\Delta TD_{it} = \alpha_{it} + \beta_{po} DEF_{it} + \varepsilon_{it} \quad (4.30)$$

Where:

$\Delta W_t = \text{inventory} + \text{debtors} + \text{cash and cash equivalents} - \text{creditors}$

$\Delta TD_{it} = \text{Change in long - term debt and change in short - term debt}$

Revised equation 4.29 and 4.30 accounts for the modifications that address the weaknesses of the Shyam Sunder and Myers (1999) pecking order model.

Previous studies including Frank and Goyal (2003) have stated that it is conventional to scale variables as a means for controlling for differences in the firm's size. Scaling can be done using total assets or sales and provided that both the right-hand side and the left-hand side are scaled by the same value, then the equality remains intact (Frank and Goyal, 2003). Frank and Goyal (2003) used net assets, total book assets, and sales to scale the variables and found similar results in all three methods of scaling.

Ağca et al. (2010) and De Jong et al. (2011) used total assets to scale the variables while Cross (2010) and Lemmon and Zender (2010) used the preceding year's book value of total assets to scale the financing deficit and the change in total debt. If the scaling variable is correlated with the regressed variables in the specified regression equation, then the estimated coefficient will be affected. This study will follow that of Vicol (2010), where the variables were unscaled as the author did not want to risk manipulating the coefficients.

4.5.3 Estimation methods

The use of panel data offers advantages in econometric analysis; however, the observations can no longer be seen as independent. Estimators such as random effects, fixed effects and OLS are often used to account for these unobservable effects in a linear panel data model, such as the pecking order model specification in this study.

The assumptions required to achieve efficient estimates are different for these estimators; hence, it is necessary to conduct tests. These included the Hausman test and the Breusch-Pagan test. The key differences between the estimators are presented in Table 4.10.

Table 4-10: Differences between FE, RE and OLS estimators

FE	RE	OLS
$y_{it} = x_{it}'\beta_1 + \varepsilon_{it}$ where specification for the error terms: $\varepsilon_{it} = \alpha_i + u_{it}$ α_i unit-specific, time-constant factors	$y_{it} = \beta_0 + x_{it}'\beta_1 + \varepsilon_{it}$ where specification for the error terms: $\varepsilon_{it} = \alpha_i + u_{it}$	$y_{it} = \beta_0 + x_{it}'\beta_1 + \varepsilon_{it}$ where specification for the error terms: $\varepsilon_{it} = \alpha_i + u_{it}$
α_i may be correlated with x_{it}	α_i and u_{it} are assumed to be mutually independent and correlated with x_{it}	α_i may be correlated with x_{it}
Strict exogeneity	Strict exogeneity	Strict exogeneity
ε_{it} is serially uncorrelated	ε_{it} is serially uncorrelated	ε_{it} follows a random walk (positive serial correlation and Δu_{it} is serially uncorrelated)
ε_{it} is homoskedastic	ε_{it} is homoskedastic	ε_{it} is homoskedastic

MODEL SELECTION

HAUSMAN TEST (choose between FE and RE)

bRE: consistent if x_{it} and α_i are uncorrelated

bFE: consistent if x_{it} and α_i are correlated

H^0 : RE estimates are consistent

Accept H^0 : FE=RE \Rightarrow Select the RE model

Reject H^0 : FE \neq RE \Rightarrow Select the FE model

BREUSCH-PAGAN TEST (choose between FE and RE or OLS)

Test for non-constant variance of the error terms

Rejection indicates preference for FE or RE model

Non-rejection indicates preference for OLS model

Source: (Wooldridge, 2010), authors own construction

The Hausman test is used to determine the most efficient estimator between the RE and FE estimators. When testing for random effects, the Breusch-Pagan Lagrange multiplier (LM) test helps to decide between a random effects regression and a simple OLS regression. The null hypothesis in the LM test is that variance across entities is zero. That is, there is no significant difference across units (no panel effect).

4.5.4 Empirical results

An alternate approach to test whether firms' financing behaviour follows the pecking order theory is that of Shyam-Sunder and Myers (1999), where changes in debt are considered to determine whether the change is driven by a financial deficit and if so, this would confirm the pecking order theory. The authors hypothesised a one-to-one relationship between the changes in debt and the financial deficit. The data was analysed and run through STATA to examine the presence of significant correlation between the change in

debt (dependent variable) and the financing deficit (independent variable). These results are presented in this section.

The data analysis results in Table 4.11 present FE, RE and OLS estimates of the financing deficit coefficients used to measure pecking order behaviour. The results indicate that the financing deficit which represents the inadequacy of internal financing (retained earnings) for investments and dividend payments is negatively related to the net debt issued. The financial deficit coefficients had low values in the range of -0.294 to -0.316 and were statistically significant amongst all three models. These coefficients can be interpreted as follows: for every one rand required to cover the financing deficit, 29.4 cents to 31.6 cents is financed with debt. Although the coefficients are far from zero, they are even further from one, which is evidence that the pecking order model is not supported by SOEs in South Africa. The results indicate that the financing deficit will minimise changes in net debt as SOEs would cover the deficit with other sources of finance, including capital.

Table 4-11: Regression results: Pecking order Model

	OLS	FE	RE
Financing Deficit	-0.294***	-0.316***	-0.303***
	(-17.3)	(-9.79)	(-8.33)
Constant	289,228***	241,965***	269,596**
	(2.63)	(3.6)	(2.04)
Adjusted R-Squared	0.3444		
R-Squared Overall		0.345	0.3455
Observations	558	558	558
Groups		33	33

F-Statistic	293.57	95.92	
Prob>F	0.0000	0.0000	
Wald chi2(1)			69.41
Prob > chi2			0.0000

t-statistics (OLS and FE) and z-statistics (RE) based on robust standard errors clustered at the firm level are reported in parenthesis. * p<0.01, ** p<0.05, * p<0.1**

Source: own construction

There was also low explanatory power as indicated by the R-Squared values, showing that the financing deficit explains approximately 35% of the variation in the net debt issued. The f-test results in Table 4.11, testing whether DEF is equal to unity, is rejected for the OLS and FE models. This is an indication that debt issues do a poor job in tracking the financing deficit. The coefficients based on the three estimation methods are all consistent, statistically significant (1% confidence level) and show the negative effect of the financing deficit variable on the change in net debt. These are indications that financial deficits are more related to issues of equity to reduce debt and build cash holdings. These findings are similar to those of Fama and French (2005), Lew (2013) and Wiagustini et al. (2017) who also found negative coefficients of the financing deficit and no support for the simple pecking order model. Wiagustini et al. (2017) suggested that firms that seek to use internal sources as funds minimise their risk, resulting in lower information asymmetries. If the capital structure follows the pecking order theory in the absence of the control variables, the coefficient of the financing deficit will be unity, as firms only issue safer securities when in need of additional capital. Other studies that have found low coefficients of the financing deficit variable include Frank and Goyal (2003) and Verwijmeren (2008). These studies also indicated that support for the pecking order theory was stronger in earlier decades and has weakened in recent years.

The high average debt ratio of 56% presented in Table 4.4 is an indication that the costs of financial distress are high among South African SOEs, which possibly explains why further debt issues may be curtailed and other sources of financing are utilised, such as

equity or other forms of assistance by government. For example, a possible solution to Eskom’s short-term capital requirements lies in government taking on a large chunk of Eskom’s debt or it could give Eskom cash to settle its debt (Zyl, 2019a).

In terms of the pecking order theory’s suggestion that the costs of adverse selection are dominant for "low to moderate" leverage levels, Lemmon et al. (2008) offer reasons why the financing deficit coefficient is not close to unity; hence, the pecking order model is not supported in the case of these SOEs.

4.5.5 Model specification tests

The Hausman test was applied to determine the more suitable estimator in the context of this study between FE and RE. The Chi-squared presented in Table 4.12 indicates that the p-value is greater than 5%; therefore, we cannot reject the null hypothesis. The test results indicate that the difference between the FE and RE is not significant; hence, the null hypothesis is accepted: $H_0: FE=RE$. The RE model is thus selected.

Table 4-12: Hausman test results

	FIXED EFFECTS	RANDOM EFFECTS	DIFFERENCE	S.E.
DEF	-.3163884	-.3033671	-.0130213	.017737
chi2(1)				0.54
Prob>chi2				0.4629

Source: own construction

The Breusch and Pagan Lagrangian multiplier test for random effects presented in Table 4.13 is significant; hence, we reject the null hypothesis that variances across entities is zero. It is thus concluded that there are panel effects and the random effect regression is the appropriate model.

Table 4-13: Breusch and Pagan Lagrangian multiplier test for random effects

Var(u) =0
Chibar2(01) = 30.23
Prob > chibar2 = 0.000

Source: own construction

4.6 Chapter summary

There is strong evidence to support the deduction that South African SOEs follow the trade-off theory. This conclusion is based on the empirical findings on the existence of a target capital structure and a SOA of 21.5% per annum towards the target.

Most studies have identified certain essential variables that possibly influence financing behaviour in terms of capital structure theories. The manner in which the variables behave has assisted researchers in determining whether the theory applies to observed practice. Hence, in addition to the initial means of testing the trade-off theory, the behaviour of the determinants was also considered. As shown in Table 4.14, the theoretical predictions of the trade-off theory in terms of the determinants of capital structure are in agreement with the majority of the results.

The pecking order theory's suggestion that the costs of adverse selection are dominant for lower levels of leverage, provides a reason for the financing deficit coefficient not being close to unity and is hence an indication that South African SOEs do not follow pecking order behaviour in their financing decisions.

On the other hand, the trade-off theory becomes a primary motivator of financing decisions at high levels of debt financing which is evidenced by the high debt ratios, and the existence of a target capital structure where the gap is closed between the current and the target debt level at an average SOA.

Table 4-14: Comparison of results with theoretical predictions

VARIABLE	RESULTS: +/- COEFFICIENT AND SIGNIFICANCE LEVEL	THEORETICAL PREDICTIONS	
		DYNAMIC TRADE- OFF THEORY	PECKING ORDER THEORY
PROF	-ve***	-ve	-ve
AGE	-ve***	+/-ve	-ve
SIZE	+ve***	+ve	+ve
GROW	-ve***	-ve	+ve
RISK	-ve***	-ve	-ve
TAX	+ve***	+ve	
BKCY	-ve**	-ve	+/-ve
NDTS	+ve**	-ve	+ve
Financing Deficit (DEF)	Not supported as DEF ranges from -0.294 to - 0.316		DEF coefficient is close to 1
Speed of adjustment (SOA)	Supported as there is evidence of target capital structure and SOA is 21.5%	Target capital structure exists and firms move towards target at a certain SOA	

Source: own construction

The next chapter addresses the second objective on the influence of capital structure and other determinants on financial performance.

CHAPTER 5

DETERMINANTS OF FIRM PERFORMANCE

5.1 Introduction

Emerging economies have the potential for rapid economic growth; however, volatile economic and political systems result in common challenges that affect their performance. This chapter focuses on the second objective of this study, namely to analyse the determinants of firm performance among South African SOEs. The main aim is to provide a clear understanding of the combination of factors that influences performance, which would lay a good foundation for key stakeholders to improve such performance. Furthermore, an analysis of the factors that hinder SOEs' financial performance will help to alleviate the financial burden experienced by the government in funding these entities and enable policymakers to adopt strategies to strengthen their performance.

The growth of firms in developing economies, especially in Africa, is often impeded by a lack of debt and equity capital. Hence, many firms seek to combine an optimal mix of debt and equity that will minimise the weighted average cost of capital and maximise shareholders' wealth (Yinusa, 2015). This suggests that a firm's capital structure does impact its value.

This chapter is structured as follows: Section 5.2 discusses the financial performance of SOEs in South Africa, the theoretical and empirical literature in the area of capital structure and firm performance as well as various determinants of firm performance. Section 5.3 describes the methodology employed to analyse the determinants of firm performance using a dynamic model. Section 5.4 presents the empirical results. The effect of leverage and other control variables on financial performance is empirically investigated. Thereafter government guarantees are incorporated into the model to examine its effect on financial performance. Section 5.5 concludes with the chapter summary.

5.2 Literature review

This section is divided into five sections. The first presents an overview of the performance of South African SOEs, highlighting the importance of investigating the factors that affect such performance. This is followed by a discussion on the concepts relating to the objective. Thereafter the theoretical framework is discussed, establishing a theoretical model to investigate the relationship between capital structure and firm performance. This is followed a review of the empirical literature on firm performance and other determinants of firm performance.

5.2.1 Financial Performance of South African SOEs

South African SOEs are plagued by structural and operational problems including financial mismanagement and ineffective corporate governance (Sixolile, 2018) which have resulted in irregular and unequal development of these entities and have led to poor service delivery and infrastructure provision (Fourie, 2001). Fourie (2001) suggested that at the broader macroeconomic level, SOEs aim to attract foreign direct investment in order to minimise public borrowing and to enhance the economy in ways that promote financial growth and industrial competitiveness.

There has been ongoing negative media publicity on the poor performance of South African SOEs. These entities constantly find themselves in precarious financial positions where they are unable to meet their financial obligations, forcing them to call on government to bail them out. However, despite increased government guarantees, the financial performance of many SOEs is not improving and they are in a state of perpetual financial distress. The overall status of SOEs in South Africa is thus one of underperformance and constant dependence on the government. In a situation of weak overall economic growth, this has led to calls for government to sell some of the underperforming SOEs (Chilenga, 2016).

According to the 2017 Budget Review, the financial and operational performance of many SOEs has weakened, with capital expenditure representing approximately 42% of total public sector infrastructure expenditure. The government's borrowing requirement for the

2016/17 fiscal year was R32.8 billion more than projected due to higher borrowing estimates by SOEs (National Treasury, 2017b). As stated in the 2018 Budget Review (National Treasury, 2018b), government borrows money in order to finance the difference between revenue and expenses and debt repayments that is due. In 2017/2018 the budget deficit increased to R217.3 billion from R170.5 billion in 2016/2017, which brought the total borrowing requirement to R246 billion in 2017/2018. The likely inability of SOEs to roll over debt and achieve financial consolidation could render government liable and possibly unable to finance the debt, placing a strain on public finances and resulting in deteriorating state balance sheets (South African Reserve Bank, 2018). In order for government to fund the budget deficit, it would have to borrow at sustainable levels, and the borrowing costs would depend on lenders' perception of its ability to repay the debt.

Lenders in bond markets rely on the sovereign credit ratings by rating agencies who consider the credibility of a government's macroeconomic framework, the integrity of SOEs, the political environment and the country's economic growth prospects when revising their credit ratings. Government's inability to fund the budget deficit could threaten the financial stability of the country and ultimately result in more credit-rating downgrades as the rising contingent liabilities of the government to SOEs continue to pose a downgrade threat. Rating agencies and international investors have expressed concern regarding South Africa's sluggish economic growth, political risk, policy uncertainty, governance failures and SOEs' weak balance sheets. In 2017, two rating agencies downgraded South Africa's credit ratings, which contributed to heightened volatility in domestic capital markets. Standard & Poor Global and Fitch Ratings downgraded the country's local and foreign currency debt rating to "junk" status while Moody's opted for one level above "junk status" at the end of 2017 (Haden, 2017). At the end of March 2018, Moody's affirmed South Africa's sovereign credit rating at investment grade and changed the outlook to stable; however, it warned that if risks at SOEs materialise and increase the government's debt burden, this could lead to further downgrades (South African Reserve Bank, 2018). Given that policies prevent hedge funds, pension funds and asset managers from investing in a junk-rated country, this would have severe implications for investment. A sovereign ratings downgrade has

substantial implications, including an increase in the cost of borrowing for government and the private sector, capital outflows, and a weak currency and increased cost of living. Government guarantees may also hamper SOEs' performance. According to the NDP, guarantees should be used selectively to lower the cost of capital and secure long-term finance (National Planning Commission, 2010). Governance issues at SOEs, rising contingent liabilities and inadequate liquidity could add pressure to government finances through the increased use of guarantees (South African Reserve Bank, 2018). Government guarantees to SOEs stand at more than R450 billion and government exposure increased from 54.4% to 64.5% in the 2017 fiscal year as SOEs drew on guarantees, adding pressure to state finances. One of the key risks to South Africa's downgrade was the loss of control of fiscal policy and guarantees issued to SOEs pose an additional risk to the fiscal outlook (Department of National Treasury, 2016). They lead to an increase in leverage, resulting in increased risk-taking (Cordella et al., 2016). While SOEs have recorded lower levels of performance than private entities operating in their sectors, they continue to exist due to government support (Halkos, 2002).

Government is the sole shareholder in majority of the SOEs with several other parties playing a role in the governance, including, the Minister who holds the share on behalf of the government; Parliament; the executives and the board of directors, whom all have an oversight role vested in them over the SOEs (Sixolile, 2018). Even though Parliament exercises its role through performance evaluation of SOEs by interrogating their financial statements; and the PFMA governing the standards for financial management of SOEs, the level of corruption in South Africa is another key factor that may impact on the performance of public sector enterprises. South Africa's corruption index increased from 56.80 in 1996 (Transparency International, 2018) to 45 in 2016, with the most recent score released of 43 in 2018. This was attributed to the country's endurance of large scale bribery, fraud and corruption scandals in public sector enterprises over the past two years from 2016 to 2018 (Business Tech, 2019). It has been alleged that SOEs' boards of directors have been captured by "political rent-seekers" where board members are appointed due to political affiliation and not because of their skills and expertise to manage these commercial entities (Chilenga, 2016). This creates a haven for corruption.

In 2018, the Minister of Finance stated that the government recognises that some SOEs' business models are unsustainable, and that their capital structures are too reliant on debt (National Treasury, 2018a). Underperforming SOEs can materially affect the broader public finances and become a drag on economic progress. There is thus a need to investigate the variables that could improve the performance of these SOEs so as to adjust their business models and prevent them from becoming a drag on economic progress.

5.2.2 Description and concepts

5.2.2.1 Firm performance

Performance can be measured using non-financial and financial measures and the nature of the study determines the selection Chenhall (1997). Non-financial measures of performance include the non-financial aspects of the firm with a combination of operational, accounting and economic information and can be grouped into internal operational, employee orientated and customer orientated measures (Mbo, 2017). On the other hand, financial performance, a key measure of an organisation's growth based on historical accounting information, is a broad measure that includes profitability, efficiency, solvency and liquidity. Financial measures of performance are relevant to those SOEs that have a commercial mandate, especially the measures that are return-based as they illustrate efficiency in the employment of capital, the extent of opportunity costs and the levels of risk in pursuit of business opportunities (Mbo, 2017). Given that the current study focuses solely on commercial SOEs, firm performance is measured using financial performance measures.

Researchers have used several different measures as indicators of firm financial performance. These can be categorised into market-based and accounting measures. Considering the nature of the sample, market-based measures are not applicable. Attaway (2000) argued that profitability as a performance measure can be manipulated by executives through manipulation of the depreciation policy and change of the inventory

valuation methods. It has thus been suggested that it is not a true reflection of the firm's real value.

When return on equity (ROE) is used as a performance measure, the focus is on returns to shareholders. However, firms can resort to certain strategies to hide deteriorating performance and hence reflect an artificially healthy ROE (Hagel et al., 2010). Given that SOEs are not obliged to declare dividends, their performance should not be judged on private-sector standards. Instead, their focus should be on reinvestment of profits in infrastructure development and other commercial activities that would strengthen their balance sheets so they have increased access to capital markets, which in turn results in less dependence on the fiscus (Ngwenya and Khumalo, 2012). Hagel et al. (2010) advocated for the use of return on assets (ROA) as a performance measure due to its inclusion of assets that are used to support the firm's operations. The use of multiple performance measures would ensure that the results are robust, hence providing better conclusions.

5.2.2.2 Leverage

Debt financing strategies (financial leverage) should be designed in such a manner that they improve financial performance whereby the return generated is greater than the cost of the borrowed funds. In testing the effect of capital structure on the firm's performance, leverage needs to be defined and the measure(s) need to be identified. Leverage is a financial measure that refers to the amount of borrowed funds used by a firm to finance its investments. Financial leverage can be referred to as the degree to which debt financing is used by a firm in its capital structure.

Leverage has been measured in different ways in the financial literature, from using market or book values to including total debt, long-term debt or short-term debt. Scholars have advocated for the use of book leverage and/or market leverage. Those familiar with modern financial theory prefer market values as they are regarded as more relevant when computing ratios. However, Myers (1977) argued that book values are more pertinent as they are based on assets already in place while market values are based on future growth opportunities. Book leverage is also preferred because financial markets fluctuate a great

deal and managers are said to believe that market leverage numbers are unreliable as a guide to corporate financial policy (Frank and Goyal, 2009). Theoretically, book value ratios and market value ratios would differ as book values are perceived as backwards-looking while market values are forward-looking (Frank and Goyal, 2007). Advocates of market values such as Chen (2013) have argued that the values obtained from financial statements may not provide an accurate value of the firm's equity as they are based on historical information and that book values may differ significantly from the true market values. Hence, using book values may not accurately compute the true value of leverage. However, Rajan and Zingales (1995) argued that using book values to compute leverage is not a serious limitation.

Book values are emphasised by rating agencies such as Standard & Poor as market values are based on growth prospects, have a short time horizon, are influenced by changes in alternative investment opportunities and can be very volatile (Standard & Poor's Ratings Services, 2001). However, they note that there are shortcomings in both methods. Considering that debt is supported by assets already in place rather than growth opportunities and that computation of market values for unlisted firms may prove problematic, book values are preferred to compute leverage.

The ratios used in earlier studies differ based on whether book values or market values are used as well as whether total, short-term or long-term debt is used. Abor (2007a) measured leverage based on book values using short-term debt, long-term debt and total debt, while Chen and Strange (2005) measured leverage based on book values and market values, using total debt to total assets. Frank and Goyal (2003) used five measures of leverage including those mentioned above as well as the interest-coverage ratio.

5.2.3 Theoretical framework

This section reviews theories on capital structure and firm performance. Scholars have proposed various theoretical frameworks to analyse the relationship between capital structure and firm performance. As noted by Myers (2001), the theories are conditional and are dependent on the nature of the firms covered in a study; hence there is no

universal theory. Theories may have to be modified to suit the environment that firms operate within. In particular, conditions differ between developed countries and developing countries, with the latter characterised by market imperfections, imbalances in the macroeconomic environment and poor quality institutions.

Capital structure theories were developed to provide a framework to understand the financing decisions and the capital structure of firms. Considering that a firm's capital structure has an impact on its value and hence its performance, management seeks to maximise the firm's value by employing an optimal capital structure which can influence the environment it operates in as well as its long-term survival.

Capital structure theories can be categorised into, firstly, those that assume the existence of an optimal debt level; these include the trade-off theory; the agency theory and the free cash flow theory. The second set of theories that is not based on the existence of an optimal debt level includes the pecking order theory and market timing theory. An extensive review of the theories was provided in chapter three. Therefore, only the agency cost theoretical model that is the central theory underpinning the analysis of the relationship between capital structure and firm performance, is discussed in this chapter.

5.2.3.1 Agency cost theory

Agency costs arise due to the separation of owners and managers in running the business and are the cost incurred by owners in preventing managers from deviating from firm's goals (Firer et al., 2012). Agency costs are also viewed as a reduction in firm value due to the opportunistic behaviour of managers (agents). The agency theory holds that the separation between owners, managers and debt holders can create conflict amongst the principal (owners) and agent (managers) (Jensen and Meckling, 1976). This occurs when managers pursue their own goals in the form of consumption of perks and perquisites, empire-building, or investment in projects that yield a negative net present value to the detriment of pursuing the firm's goals.

A significant criticism of the Modigliani and Miller theorem was that it did not take financial distress costs into account. This resulted in the proposition of the trade-off theory that suggested that an optimal capital structure does exist, which is the outcome of an

optimisation process in which firms trade-off the costs and benefits of debt, including tax shields; agency costs and financial distress costs, thus maximising the value of the firm (Frank and Goyal, 2003). One of the benefits of using debt in the capital structure is that it controls agency problems and reduces free cash flow problems because debt payments are contractual obligations that reduce poor consumption on the part of managers; hence, the embedment of the agency theory in the trade-off theory. The optimal capital structure can be viewed as the point at which agency costs are minimised and firm value is maximised. This implies that the firm's capital structure is dynamic and that firms can adjust their capital structure over time. Therefore, debt can be seen as a measure adopted by owners to ensure their wealth is maximised by mitigating agency costs and reducing opportunistic behaviour by managers (Jensen and Meckling, 1976).

As illustrated in Figure 5.1, the agency problem can arise due to conflict between managers and shareholders as well as shareholders and debt holders (Jensen and Meckling, 1976). Conflict between managers and owners may arise as a result of managers not having a residual claim on the firm (Harris and Raviv, 1991) with the result that they waste free cash flow by engaging in opportunistic behaviour in the form of consumption of perks and perquisites, empire-building, or investment in projects that yield a negative net present value. In order to resolve this conflict, more debt is employed in the capital structure as it controls agency problems by utilising the free cash flow through debt repayments which are contractual obligations that managers have to abide by. Other means of resolving this conflict include incentives such as share ownership and compensation schemes and monitoring (Yinusa, 2015).

The conflict between owners and bondholders arises as a result of employing debt in the capital structure, which is used as a means to mitigate the agency cost between the manager and owner. It also creates opportunities for owners to invest in suboptimal, risky investments. This type of conflict arises as a result of risk-shifting whereby the wealth is shifted to the owner when the returns are greater than the face value of debt. However, when the returns are less than the face value of debt, owners enjoy limited liability and fixed repayments, and debtholders are left with a firm where the extended debt is higher than its market value (Harris and Raviv, 1991). This type of agency problem is referred to as asset substitution or the risk-shifting problem whereby risky investments affect the

owner and the bondholder differently. As illustrated in Figure 5.1, agency problems take shape in the form of asset substitution, moral hazard, adverse selection and free cash flow problems.

Moral hazard also arises due to a conflict between the principal and agent caused by information asymmetries where the risk-taking party has more information. They thus engage in risky investments knowing that they are protected against the risk, while the other party bears the consequences of such investment (Darrough and Stoughton, 1986).

Adverse selection is also due to information asymmetries (Darrough and Stoughton, 1986). The free cash flow problem arises as a result of unsuccessful attempts by the principal to incentivise the agent to act in the principal's best interests. This implies that the agent would utilise the free cash flow to pursue their own goals (Jensen, 1986).

The conflict between managers, owners and debtholders results in:

- Bonding costs which are borne by the agent as a result of aligning their interests with that of the principal, guaranteeing that they will limit their consumption of perquisites.
- Monitoring costs incurred by the principal to monitor the agent and limit aberrant activities. These include auditing costs.
- Residual loss which is the cost of the divergence between agents' decisions and those decisions that maximise the value of the principal (Jensen and Meckling, 1976).

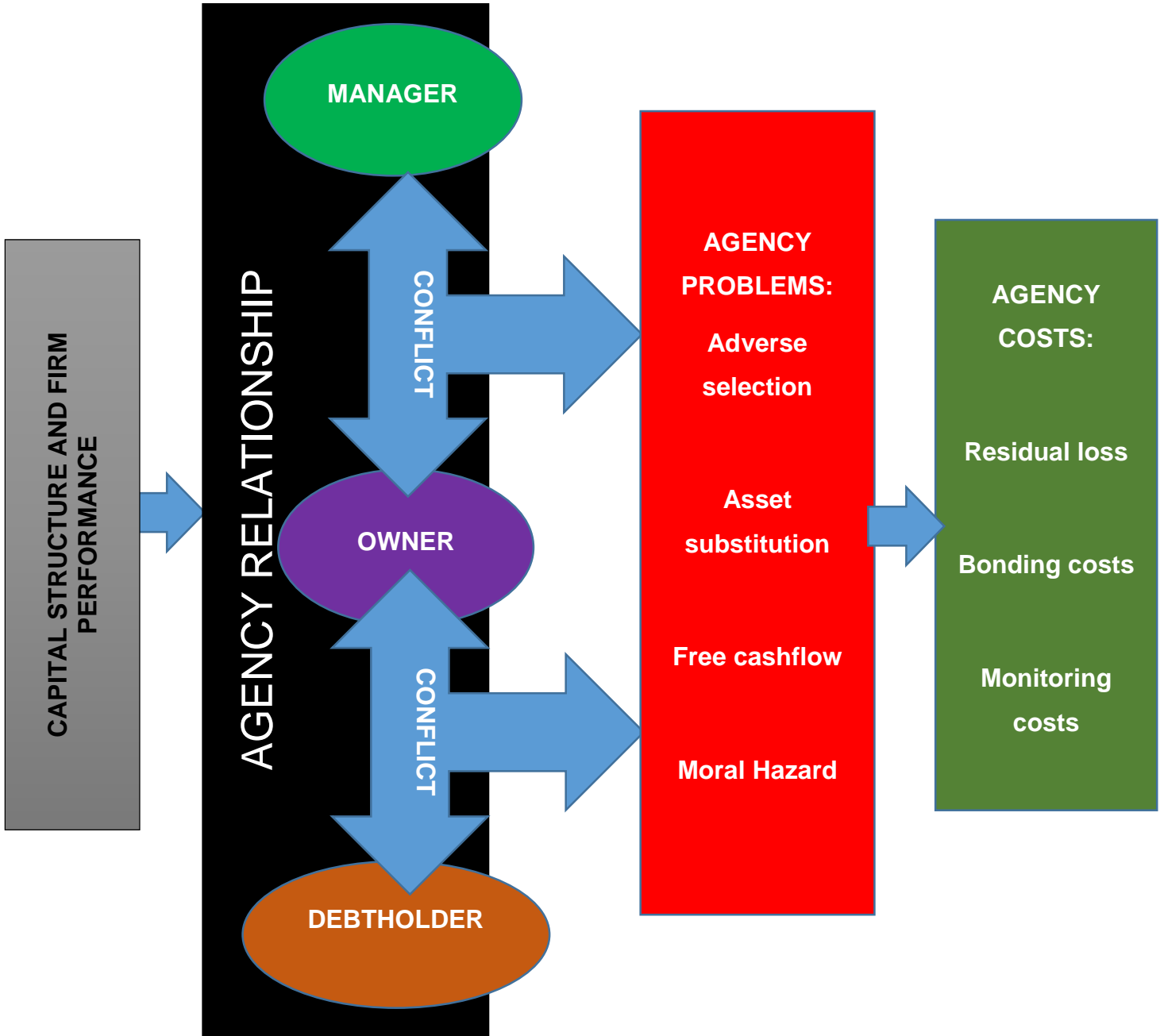


Figure 5-1: Schematic representation of agency theory and the relationship with capital structure and firm performance

Source: authors own compilation

5.2.3.2 Theoretical underpinning: Capital structure and firm performance

In the case of debt financing, managers are required to explain their investment decisions to debt holders, placing themselves under constant monitoring which they abhor. They thus prefer internal financing such as retained earnings (Frank and Goyal, 2007). From an agency perspective, debt financing disciplines managers and reduces agency costs by mitigating agency problems, which can be seen as a trade-off between the costs and benefits of debt in the trade-off theory as managers have to pay off the debt in order to avoid bankruptcy (Jensen, 1986). Debt mitigates the opportunistic behaviour of managers by tying up the free cash flow in debt repayments which the agent is forced to pay to meet the debt commitment such that bankruptcy is prevented, which would also be to their detriment. In order to meet debt commitments, managers would also try to maximise the firm's value through improved performance; hence, the agency cost theory predicts a positive relationship between capital structure and firm performance (Yinusa, 2015). The conflicting relationship between owners and debtholders is as a result of risk-shifting whereby the wealth is shifted to the owner when returns are greater than the face value of debt. However, when the returns are less than the face value of debt, owners enjoy limited liability and fixed repayments and debtholders are left with a firm where the extended debt is higher than its market value (Harris and Raviv, 1991). Due to risk-shifting behaviour, there is a possibility of default which may lead to debt overhang and possible bankruptcy. Hence, the agency cost theory predicts a negative relationship between capital structure and firm performance (Yinusa, 2015).

This negative and positive prediction suggests a non-monotonic relationship between capital structure and firm performance. The relationship is negative at excessively high debt levels due to the increased agency costs resulting from the possibility of bankruptcy and increased distress costs. However, it is positive if the debt is used efficiently and employed moderately (Jensen and Meckling, 1976). Yinusa (2015) posited that the agency theory is more relevant for a developing economy characterised by market imperfections such as macroeconomic imbalances, underdeveloped capital markets, and poor quality institutions due to weak corporate governance practices, poor contractual enforcement and weak protection of investors. Environments with such imperfections

promote agency problems at the firm level. Given that South Africa is an emerging economy characterised by many of these market imperfections, the agency theoretical model is most relevant in analysing the relationship between the capital structure and the firm performance of SOEs.

Jensen and Meckling (1976) developed the agency theory in the context of developed economies that are characterised by moderate market imperfections, stable economies and strong institutions. It is thus essential to examine whether this theory's predictions on the behaviour and performance implications of capital structure on firm performance that have been widely accepted in the case of developed economies are applicable to developing economies or whether it should be reassessed in the light of empirical evidence. Hence, this study examines whether the agency theory is applicable to the public sector of the South African economy that is characterised by severe market imperfections.

5.2.4 Review of empirical studies on the capital structure and firm performance

Mixed empirical findings have been reported on the relationship between capital structure and firm performance. Jensen and Meckling (1976), Brander and Lewis (1986), Grossman and Hart (1983) and Jensen (1986) suggest that leverage has a positive effect on firm performance. Studies supporting a negative relationship between capital structure and firm performance include Maksimovic and Titman (1991) and Titman (1984). In developing economies, negative findings were reported in several studies, including Booth et al. (2001) who studied this relationship among firms in Brazil, Mexico, South Korea, Zimbabwe and Malaysia while Nyamita et al. (2015) reported an inverse relationship amongst Kenyan SOEs. Dawar (2014) also reported a negative relationship amongst Indian firms. These findings indicate that developing economies have significantly larger agency costs of debt than developed economies. Abor (2007b) also found a negative relationship between long-term debt and firm performance, suggesting that agency issues may have led to the pursuit of very high debt policies by firms, resulting in lower performance levels.

Table 5-1: Summary of empirical studies of capital structure and other determinants on firm performance

STUDIES ON PRIVATE SECTOR FIRMS				
Author	Country / Period	Method	Summary of study	Findings
Abor (2005)	Ghana 1998-2002	OLS	The study investigated the relationship between capital structure (LTD and STD) and performance (ROE) amongst 22 listed firms.	A significant positive relationship was found between short-term debt and ROE while a negative relationship was found between long-term debt and ROE.
Abor (2007b)	Ghana and South Africa 1998-2003	Generalised Least Squares	The author extended his previous study (Abor, 2005) on capital structure and firm performance, studying 160 Ghanaian and 200 South African SMEs.	The results indicated that leverage negatively influences the financial performance of Ghanaian and South African firms, although not exclusively. The two studies show that there was a definite negative relationship between the LTD ratio and financial performance (ROE); while the STD ratio positively impacts firm performance.

El-Sayed Ebaid (2009)	Egypt 1997-2005	OLS	The study investigated the effect of capital structure (TD; LTD; STD) on financial performance (ROE; ROA; gross profit) based on listed firms. Size was used as a control variable as it can influence the results and inferences as larger firms benefit from a greater variety of capabilities and economies of scales.	The findings indicated that leverage (STD; TD) had a significant negative effect on ROA.
Meng (2012)	North America 1985-2010	OLS	Studied the effect of credit rating changes and capital structure on firm performance (ROA; EPS; Tobins Q) among 30 000 firms. Control variables included liquidity; dividends; earnings growth; asset tangibility and the non-debt tax shield.	The findings revealed that firms adjust their capital structure at least one quarter before the credit rating announcement. If upgrades are anticipated, then there is not a significant change the net debt issued, however, if a downgrade is anticipated, then firms increase the net debt issued. The evidence also suggests that information asymmetry materially affects firm performance.

Dawar (2014)	India 2003-2012	FE	The study was based on the agency theory and investigated the effect of capital structure (LTD; STD) on financial performance (ROE; ROA) based on listed firms. Control variables included size, age, asset tangibility, growth, liquidity and advertising.	The results indicated a negative relationship between the main variables, contrary to the agency theory predictions amongst developed and some developing economies. The authors suggested that the predictions of the agency theory have to be viewed within the environment of a developing economy that has underdeveloped bond markets and furthermore, is dominated by banks owned by the state servicing the corporate sector.
Fosu (2013b)	South Africa 1998-2009	FE; RE and two-step GMM	Studied the relationship between capital structure (lagged leverage) and competition and performance (ROA) based on 257 listed firms. Control variables included asset tangibility, NDTs, size and growth.	The effect of leverage on performance was found to be significant and positive.
Saifadin (2015)	Iraq 2009-2013	FE, RE	Studied the impact of capital structure (STD) on firm performance (ROA,	Significant negative findings were found with ROA and ROE while

			ROE, Tobins Q) based on listed firms. Control variables included size, age, growth, asset turnover and asset tangibility.	Tobins Q indicated a positive effect on STD.
Samour and Hassan (2016)	USA 2008	OLS	The study investigated the effect of capital structure (measured by LTD and STD) on financial performance (ROA) of listed firms during the financial crisis. Control variables included liquidity, asset tangibility, size and growth.	The findings indicated that leverage had a significant effect based on the industry. Control variables also had a significant effect.
Yazdanfar and Öhman (2015)	Sweden 2009-2012	3-stage least squares (3SLS) and FE	Studied the effect of capital structure on SMEs' performance. Control variables included size and age.	The findings showed that capital structure (accounts payable, STD and LTD) had a negative effect on firm performance (ROA).
Vu Van and Bartolacci (2017)	Vietnam 2007-2015	OLS and GMM	The study analysed the effect of government support on performance (ROA) in SMEs. Control variables included age, size, leverage and innovation.	The results indicated that government support had a positive effect on SMEs' performance.

Khatoon and Hossain (2017)	Bangladesh 1999-2011	FE	Studied the relationship between capital structure (STD, LTD, TD) and performance (ROA, ROE, EPS and net profit) among listed firms. Control variables included asset tangibility and liquidity.	The effect of leverage (STD) on performance (ROA, EPS and net profit) was found to be significant and positive while LTD had a negative effect, suggesting that managers should be cautious when using LTD in their capital structure as it negatively affects performance.
STUDIES ON STATE-OWNED ENTITIES				
Bhatti and Sarwet (2012)	Pakistan 2001-2011		The study analysed the financial performance of SOEs in order to determine the reasons for poor performance.	The results highlighted poor financial management practices; incompetent management policies; poor management information systems (MIS); lack of key performance indicators (KPIs); political interference and corruption which was a common factor when political interference was present, along with poor salary structures.

Chang et al. (2014)	Vietnam 2007-2011	FE, RE, and OLS	The study investigated the effect of leverage (STD and LTD) on SOEs' performance.	The results indicated that STD negatively affects firm performance while LTD positively affects performance. Size had a positive and significant effect on performance; asset tangibility had a negative and significant effect on performance and taxation had a weak effect on performance.
Nyamita et al. (2015)	Kenya 2002-2012	FE, RE, and System-GMM	The study investigated the effect of debt (TD) on performance (ROA, ROE, ROI) among SOEs. Control variables included size, asset tangibility, growth, risk, liquidity, inflation and age.	The results indicated an inverse relationship between total debt and performance (ROA, ROI). Size, growth and liquidity positively affected performance while risk negatively affected performance.
Assagaf and Ali (2017)	Indonesia 2005-2016	Linear Regression Models	Investigated the factors affecting financial performance among seven SOEs. Financial performance was the dependent variable, and the independent variables were leverage, strategic profitability with real earnings	Government subsidy had a significant negative effect on financial performance when tested as an independent variable and it also strengthened the relationship between leverage and financial

			management as a proxy and strategic profitability with accruals earnings management as a proxy. Government subsidy was the moderating variable and size, capital expenditure and growth were control variables.	performance as government encouraged SOEs to obtain loans rather than placing too much of a burden on government. Strategic profitability showed a positive effect on financial performance.
Mbo (2017)	Sub-Saharan Africa 2001-2012	FE	Investigated the drivers of SOE performance focusing on power utilities among 23 SOEs in 10 countries. The variables were financial performance (dependent variable), liquidity, and board strength, stakeholder representation on board, government involvement in pricing as the independent variables to test the resource based, agency, stakeholder and public choice theories.	The results showed that a strong board and availability of resources were linked to sound performance, hence supporting the agency and resource based theories. The study also found that a high level of government interference leads to poor performance.
Jin et al. (2018)	China 2011-2015	Linear Regression Models	Investigated the relationship between government subsidies and firm performance among SOEs and non-	The findings indicated that government subsidies improve firm performance. They also showed that despite SOEs obtaining more

			SOEs. Ownership was employed as a moderating variable.	subsidies than privately-owned firms, the impact of government subsidies was stronger among private firms.
--	--	--	--	--

Source: own contribution

These empirical findings are supported by various capital structure theories. The static trade-off theory whereby a target debt level is set and an attempt is made to reach that level, predicts a positive relationship between financial leverage and financial performance (Tudose, 2012). The agency cost theory advocates that the level of debt may reduce the agency cost incurred by shareholders through increased monitoring of managers and pressure to meet interest payments (Vos and Forlong, 1996). Tudose (2012) and Thomas (2013) suggested that an increased debt level will reduce agency costs and result in improved financial performance until the target debt level is reached; thereafter, the debt level will decrease as financial performance improves. Tudose (2012) concluded that there is a negative relationship between financial leverage and financial performance due to more profitable firms generating higher earnings which are used for financing, therefore relying less on debt financing.

In summary, the review of previous empirical studies shows there are mixed findings on the determinants of firm performance, particularly the relationship between capital structure and firm performance. Furthermore, most scholars adopted a generic perspective that does not recognise the uniqueness of strategic government enterprises, especially South African SOEs.

5.2.5 Other determinants of firm performance

This chapter examines the impact of leverage on firm performance as the main variable, combined with other factors that, according to the literature, may drive SOEs' performance. These include government financial assistance, tangible assets, board size, credit ratings, corruption, size and age of the firm, liquidity, growth opportunities and non-debt tax shield.

5.2.5.1 Government financial assistance

A government guarantee is a security instrument where government provides an undertaking to partially or fully cover liabilities in the event the debtor is unable to repay a debt or meet another liability which has been guaranteed, or when the borrower fails to meet his/her liabilities within the agreed time limit. These guarantees are issued to state-

owned enterprises, development banks, guarantee agencies and public-private partnership projects. They result in a direct or indirect legal relationship between government and the debtholder (Bajo and Primorac, 2011).

Heald and Hodges (2018) define guarantees as being explicit when they are fully articulated and implicit when they are derived from an understanding that is unstated. Guarantees can be contractual, where they are legally enforceable or non-contractual, whereby a promise is made. Contingent credit risks are incurred when an SOE is unable to meet its financial obligations to parties to whom government has issued a guarantee. These risks may also arise when there are public expectations that government will support a failed SOE that is deemed to be of national interest.

Government assistance to SOEs is not supported by any funding policy as assistance is based on their crisis levels and the seriousness of their financial needs. Decisions to grant guarantees are taken by Parliament and National Treasury guided by the PFMA (Sadiki, 2015). While it is necessary for government to assist SOEs so they are able to play their role as catalysts of economic growth and development, it is equally important for a funding policy to be adopted to guide government support to these entities.

Government guarantees can have both positive and / or negative impacts. They can be used to lower the cost of capital as well as secure long-term finance (National Planning Commission, 2010). However, large guarantees to SOEs expose the fiscus to risk, resulting in deterioration of the country's fiscal position which impacts credit ratings (Omarjee 2018). One can argue that government financial assistance may lead to distortion in financial markets by encouraging excessive capital use and slow repayment as well as enabling the survival of poorly performing firms. Furthermore, guarantees are not included in fiscal analyses and hence a distorted picture of the public finances is conveyed. This can threaten the efficiency of public financial management and may even impede reliable projections of fiscal policy effects in the future (Bajo and Primorac, 2011).

South African SOEs' poor performance has led to government intervention in the form of grants, funds, rebates and subsidies. The impact of this financial assistance has been the subject of debate due to poor evidence of any incremental effect and a lack of clarity on

whether the overall benefit of these subsidies exceeds their often-large costs (Xiang and Worthington, 2017).

Assagaf et al. (2017) posited that the subsidy policy reduces the costs of other economic sectors and can be viewed as a burden on government spending. They added that government subsidies encourage management to be less concerned about the level of financial strength, and more reliant on the subsidy to meet operational and investment needs. They can hence be viewed as an unfavourable option for SOEs' development. These authors found that government subsidies had a significant negative effect on the financial performance of Indonesian SOEs.

Pergelova and Angulo-Ruiz (2014) found that government support has an indirect impact on firm performance through competitive advantage as such support assists in developing unique resources and capabilities. Overall and specific competitive advantages enable a firm to improve its performance; this is hence an indirect result of government support. Garcia-Tabuenca and Crespo-Espert (2010) showed that government financial support is directly related to profitability. Such support enables firms to access more resources, with a significant effect on firm performance. These findings suggest that government support improves efficiency levels and that this effect is stronger in weaker firms. Vu Van and Bartolacci (2017) found a positive relationship between government support and financial performance amongst Vietnamese SMEs where capacity to tackle projects is facilitated. However, some studies, including McKenzie and Walls (2013) and Sun and Gan (2014), found that government subsidies have no impact on firm performance, but that lagged subsidies had a positive effect on performance. Government support is widely defined as a dummy variable in order to reduce measurement errors (Vu Van and Bartolacci, 2017). Government subsidy intensity can be measured by the ratio of government subsidy to total assets (Jin et al., 2018).

Hypothesis

H_0 : Government financial assistance is positively related to firm performance

H_1 : There is a negative association between government financial assistance and firm performance

5.2.5.2 Asset Tangibility

Asset tangibility refers to the resale value or ease of redeployment of a firm's assets as the more tangible the assets, the more valuable they are because they are easier to repossess and resell. Given that fixed assets are not liquid, they hinder firms from pursuing investment opportunities, implying a negative relationship between tangible assets and firm performance (Samour and Hassan, 2016). When firms underperform or become distressed, high levels of asset tangibility can lead to creditors choosing asset liquidation over contract renegotiation.

The impact of asset tangibility on firm performance is associated with its role of providing insiders with incentives to adopt policies that maximise the firm's value and hence performance, resulting in a positive relationship between asset tangibility and firm performance (Campello, 2007). Measures of tangibility include tangible assets divided by total assets (Frank and Goyal, 2003). The combined asset base of SOEs in South Africa has been reported as being over one trillion Rand which is approximately 27% of GDP (Kikeri, 2018). However, the poor financial viability of some SOEs combined with poor asset utilisation impedes their ability to raise financing which may affect their performance.

Hypothesis:

H_0 : There is a negative association between tangible assets and firm performance

5.2.5.3 Board Monitoring

Proponents of the agency theory often see boards as a panacea for good firm performance (Jensen and Meckling, 1976). Therefore, one of the structures of a strong corporate governance system is board monitoring, generally proxied by board size. There are mixed empirical findings and theories on board size. A smaller board has less bureaucratic issues, a more streamlined decision making process, and enhanced cohesiveness and participation and is therefore favoured by corporate rating systems (De Andres et al., 2005). On the other hand, larger boards have a broader range of experience and more time and can therefore effectively monitor executives. De Andres et al. (2005)

found an inverse relationship between board size and firm value. Hastori et al. (2015) posited that a larger board improves firm performance due to its power and effectiveness, whereas a smaller board reduces agency costs.

Boards of SOEs have been linked to corruption and some are alleged to have been captured by “political rent-seekers” where board members are appointed due to political affiliation and not because of their skills and expertise to manage these commercial entities. Appointments to SOE boards based on political affiliation consolidate a system of patronage across SOE operations, which is a haven for corruption (Chilenga, 2016). The Companies and Intellectual Property Commission (CIPC) identifies the following issues that affect the monitoring of SOE boards: (Rabilall, 2017): the boards are not run independently as other parties exert much influence, including the Minister, among others; there is political interference; the composition may not be ideal; not all members are suitably qualified with the necessary skills and experience; and some boards are not nimble, despite their market domination and state mechanisms. These issues lead to the following hypothesis:

Hypothesis

H₀: There is a negative association between board size and firm performance

5.2.5.4 Credit ratings

Credit ratings are independent assessments that are designed to measure organisations' ability to honour their financial obligations as they become due. They capture the overall creditworthiness of the organisation (Ratings and Global, 2016). Three prominent rating agencies, namely Standard & Poor's (S&P), Moody's and Fitch assign credit ratings to issuers of debt, reflecting their opinion on an entity's overall creditworthiness and its capacity to satisfy its financial obligations. These agencies are concerned with governance as it can impair a firm's financial position when it is weak and leave debtholders vulnerable to losses (Shaheen and Javid, 2014).

Given the limited research on the relationship between credit ratings and capital structure, Kisgen (2006) introduced credit ratings in the capital structure debate and found that firms

with a rating downgrade issue less debt in the subsequent year. The reason would be to appear more financially stable and less distressed. Kemper (2011) subsequent empirical investigation of this relationship concluded that firms with a negative threat to their ratings issue more debt.

One would assume that a firm with low creditworthiness would incur higher debt service costs due to the challenges it would face in the debt market. On the other hand, a firm with higher creditworthiness would more easily obtain debt finance, lowering the cost of its debt. Hence, a positive relationship can be expected between credit ratings and leverage. This analysis further suggests that firms with higher credit ratings show superior levels of corporate performance and tend to have higher stock returns (Shaheen and Javid, 2014). Rating agencies consider the credibility of a government's macroeconomic framework, the integrity of SOEs, the political environment and the country's economic growth prospects when revising their credit ratings. Recent years have witnessed downgrades to South Africa's credit ratings. Since a limited number of SOEs have been rated by the agencies, the country's credit rating is used as a measure.

Hypothesis

H₀: Credit rating is positively related to firm performance

5.2.5.5 Corruption

Corruption arises when public officials abuse their power for personal gain (Sahakyan and Stiegert, 2012). Van et al. (2017) found that when corruption was measured as a dummy variable, it had no effect on firm performance. However, measured by the intensity of corruption, it had negative impacts on firms' financial performance.

Van et al. (2017) also suggested that, contrary to beliefs that corruption negatively affects performance, it can also be viewed in a positive way where it provides firms with opportunities to achieve their objectives, and overcome bureaucratic processes and complex regulations. Hence, firms may save time and conduct business activities more speedily, which ultimately could promote growth and improve firm performance.

South African SOEs have been under scrutiny for their high levels of corruption which results in inefficiencies. This is seen as a major obstacle affecting the country's growth (Business Tech, 2018). Corruption has also been tied in with SOE boards of directors, some of whom lack the skills and expertise required to manage these entities as their appointments were due to their political affiliations (Chilenga, 2016).

H_0 : A negative relationship exists between corruption and performance

5.2.5.6 Size

Larger firms have greater diversification, resources and capabilities than smaller firms (Frank and Goyal, 2003) and this reduces their risk of bankruptcy (Rajan and Zingales, 1995). Larger firms also benefit from economies of scale and reduced borrowing costs; hence, profitability is improved. Smaller firms experience greater information asymmetries due to shareholder and debtholder conflict, with a negative influence on financial performance (Saifadin, 2015). The effect of size on firms' performance is likely to be positive as larger firms are also expected to use more advanced technology and be better managed (Margaritis and Psillaki, 2010).

Measures of firm size include natural logarithm of total assets (Fosu, 2013b) and natural logarithm of total sales (Frank and Goyal, 2003, De Jong et al., 2008, Saifadin, 2015, Margaritis and Psillaki, 2010).

Hypothesis

H_0 : Firm size is positively related to firm performance

H_1 : There is a negative association between firm size and firm performance

5.2.5.7 Liquidity

The literature observes that liquidity is a critical resource in influencing firm performance (Mbo, 2017). Liquidity refers to the ability of the firm to meet its financial obligations in a timely manner by converting assets into cash. Samour and Hassan (2016) suggested that firms with higher levels of liquidity enjoy reduced borrowing costs due to their lower risk of default and increased profitability. However, higher levels of liquidity also imply that an

opportunity cost is created by the low returns in comparison to other assets, signifying a negative relationship between liquidity and performance.

Karanja (2014) found that liquidity had a positive effect on firm performance and suggested that, this is a weak measure when it is computed from the firm's financial statements. This is due to the lack of disclosure on access to capital markets that provide additional liquidity, which in turn implies that the liquidity of the firm is underreported. Measures of liquidity include absolute and relative measures with the former including working capital or the excess of current assets over current liabilities, whereas the latter includes the current ratio and quick ratio.

Hypothesis

H_0 : Liquidity is positively related to firm performance

H_1 : There is a negative association between liquidity and firm performance

5.2.5.8 Growth opportunities

Growth opportunities can be regarded as a good signal of the firm's expectations regarding its performance and hence its profitability (Saifadin, 2015). Increased growth opportunities result in an increase in the rate of return as more profits are generated from investments. Studies that have found a positive relationship between growth opportunities and firm performance include Margaritis and Psillaki (2010), Samour and Hassan (2016) who measured growth opportunities using the percentage change in sales, while Saifadin (2015) employed the percentage change in total assets.

Hypothesis

H_0 : Growth opportunity is positively related to firm performance

H_1 : There is a negative association between growth opportunities and firm performance

5.2.5.9 Non-debt tax shield

Gao (2016) found that non-debt tax shields can reduce tax costs, affecting firm performance as well as management's financing behaviour by reducing the cash flow and hence the capital structure. Firms with large non-debt tax shields are less reliant on debt to provide tax shields. The measure used should capture tax credits other than the interest on debt payments; hence, variants of depreciation and amortisation are often used.

Hypothesis

H_0 : Non-debt tax shield is positively related to firm performance

H_1 : There is a negative association between non-debt tax shield and firm performance

5.3 Methodology

5.3.1 Variables and measures

Table 5-2: Summary of variables and measures

VARIABLE	MEASUREMENT	FORMULAE / PROXY
Control variable		
Size	SIZE	Natural logarithm of total assets
Asset tangibility	TANG	Tangible assets / Total assets
Growth	GROW	% change in total assets
Liquidity	LIQ	Current assets / current liabilities
Non-debt tax shield	NDTS	Depreciation / total assets
Board monitoring	BOARD	Logarithm of board members
Credit ratings	CR	Country's credit ratings
Corruption index	CPI	Country's corruption perception index
Independent Variable		
Long-term debt	LTD	Long-term debt / Total assets
Short-term debt	STD	Short-term debt / Total assets

Dependent Variable		
Return on assets	ROA	Operating profit / Total assets
Return on investment	ROI	Profit after tax / Total assets

Source: Own construction based on literature reviewed

Dependent variables

To test the robustness of the empirical evidence obtained, alternative measures of firm performance are used, namely ROA and ROI.

5.3.1.1 Independent variables

Measures of leverage used to achieve the study's second objective included short-term debt and long-term debt. Book values are used to measure leverage as most of the sample SOEs are unlisted firms.

5.3.1.2 Control variables

When control factors are omitted from the regression models, they can materially change the inferences made on core factors (Frank and Goyal, 2009).

In order to avoid a spurious relationship between the dependent and the independent variables, the size of the firm, asset tangibility, growth opportunities, liquidity, non-debt tax shield, credit ratings and corruption are used as control variables.

5.3.1.3 Dummy variable

The credit ratings have been proxied by the country's credit ratings as per Standard & Poor's ratings as most of the sampled firms did not have ratings because they were unlisted. There is no standard approach to credit ratings. Each agency defines its own rating categories and employs its own set of criteria. Standard & Poor's long-term issuer credit rating, also referred to as the corporate credit rating, is employed in this study in line with Kisgen (2006). The long-term credit ratings are divided into different categories

ranging from 'AAA', reflecting the strongest credit quality, to 'D', reflecting the lowest, with the addition of a (+) or (-) sign to show relative standing within the categories (Standard & Poor's Ratings Services, 2001).

Table 5-3: credit ratings point values

	Rating symbols
INVESTMENT-GRADE RATINGS	
Highest quality	AAA
High quality	AA+
	AA
	AA-
Strong payment capacity	A+
	A
	A-
Adequate payment capacity	BBB+
	BBB
	BBB-
SPECULATIVE-GRADE RATINGS	
Likely to fulfil obligations, ongoing uncertainty	BB+
	BB
	BB-
High-risk obligations	B+
	B
	B-

Source: (Standard & Poor's Ratings Services, 2001)

Firms are classified as either investment grade or speculative grade. The former are firms with at least adequate capacity to meet their financial obligations and have a rating of BBB(-) or higher. The latter are firms that have a rating below BBB- as they are more

susceptible to default because they have more elements of uncertainty. Firms with a rating of D are those that are in default as they have failed to meet their financial obligations (Van Berlekom et al., 2012). The lowest category considered in this study is B(-) as South Africa has not been issued a rating lower than this. The credit rating variable takes a value of one (1) if it was in the higher ratings from A(-) and higher, and a value of zero (0) if the ratings were in the lower ratings of investment-grade ratings from BBB(+) and lower.

Government financial assistance (GOVT) would take a value of one (1) if the SOE received any financial assistance from the South African government, including grants, subsidies and rebates, otherwise zero (0).

The impact of factors on financial performance is commonly analysed by panel data regression models. This study employed a panel data model which enables observation of multiple phenomena obtained over multiple time periods for the same firms. Capital structure decisions and their effect on firm performance are dynamic by nature and hence should be modelled as such. Therefore, a dynamic panel data model was used which helps to deal with endogeneity problems. The lagged values of the dependent variables are also included as regressors in order to account for the impact of past profitability.

The general form of the model can be specified as:

$$Y_{it} = \alpha + \rho Y_{it-1} + \beta X_{it} + \varepsilon_{it} \quad (5.1)$$

The model was adapted from previous empirical studies ((El-Sayed Ebaid, 2009, Chadha and Sharma, 2015, Fosu, 2013a) to include control variables as other factors besides leverage can influence financial performance.

$$Y_{it} = \alpha_0 + \rho Y_{it-1} + \beta X_{it} + \sum_{k=1}^N \theta_k Z_{kit} + \varepsilon_{it} \quad (5.2)$$

where Y_{it} is the measure of financial performance measured by ROA and ROI for firm i in year t , X_{it} is the measure of leverage measured by STD and LTD, Z are the controlled variables which include size, asset tangibility, growth, liquidity, non-debt tax shield, board

monitoring, credit ratings, corruption and inflation. The lagged profitability, (Y_{it-1}) is included in the regression model because profitability in the previous year influences the current year's profitability.

The model in equation (5.2) is modified whereby a shift dummy variable is added in equation 5.3. The dummy variable changes from zero to one when an SOE gets its first bailout from government and remains at one in all subsequent periods. The coefficient of this shift dummy is intended to measure a potential persistent change in operating performance when an SOE becomes a recipient of a government bail-out.

$$Y_{it} = \alpha_0 + \rho Y_{it-1} + \beta X_{it} + \sum_{k=1}^N Y_k Z_{kit} + Govtbailout_{dummy} + \varepsilon_{it} \quad (5.3)$$

5.3.2 Estimation methods

Dynamic panel data models include a lagged dependent variable as a regressor; therefore, strict exogeneity is violated because the lagged variable may be correlated with the idiosyncratic error, resulting in endogeneity. As a result of this, the fixed effects estimator cannot be used. A commonly applied technique, by Arellano and Bond (1991) referred to as the Generalised Method of Moments (GMM) estimator is used to estimate the specified models. GMM using the Arellano-Bond conditions is the most robust method that uses only the moment conditions implied by the AR(1) model, and it properly removes the heterogeneity. The application of GMM as an estimating technique in econometrics is predominantly because of its ability to account for endogeneity in models' regressions arising from cases of reverse causality, simultaneity and variable omission, amongst others. GMM utilises the appropriate lag instruments, which is usually that of the first difference, required to resolve the issues that would have made the regressions somewhat invalid. Ideally, in regression, the independent variables and the error terms are not supposed to be correlated. Where this is the case, it is a case of endogeneity and renders the regression results invalid. Instruments are variables that correlate with the independent variables but are uncorrelated with the error terms. They are used by GMM to correct such problems when they arise, as they do in most regressions.

The System-GMM by Blundell and Bond (1998) which is a weighting of the Differenced-GMM (Arellano and Bond, 1991) and the Levels-GMM (Arellano and Bover, 1995) was employed as the estimator. More specifically the two-step System-GMM estimator, with orthogonal deviation, which is asymptotically more efficient (Lew, 2013), was employed as it caters for missing values and the survivorship bias of this study's unbalanced panel.

5.4 Empirical results

5.4.1 Descriptive analysis

This section presents the summary statistics for the financial data comprising financial performance as measured by ROA and ROI; leverage based on book values of long-term debt and the short-term debt and control variables affecting the firm performance of the sampled South African SOEs for the period 1995 to 2017. The numerical descriptive measures comprising mean (average), standard deviation, minimum and maximum (range) of the panel data across the variables, offers enhanced understanding of the nature of the data. The average debt ratio for long-term debt is 30% and 27% for short-term debt which is more or less similar to the high debt levels and mix among other developing economies such as Kenya where Nyamita (2014) reported an average 34% long-term debt ratio and 28% short-term debt ratio among SOEs. The mean for ROA, measured by the ratio of operating profit to total assets and ROI measured by the ratio of profit after tax to total assets is 1% which is an indication of the poor performance of South African SOEs. This is also consistent with other African countries. Nyamita (2014) reported a 1% ROA among Kenyan SOEs. In comparison to firms in South Africa's private sector where the average ROA has been reported around 11 to 16%, with debt ratios of between 40 and 50% (Jardine, 2014, De Vries, 2010, Abor, 2007b, Gwatidzo et al., 2016), these are further indications of inefficiencies in the public sector, excessive debt levels and insufficient retained earnings to fund further operations.

The average liquidity (LIQ) measured by the ratio of current assets to current liabilities is 2 which is on par with the general norm of 2 for this ratio. This high liquidity is an indication that internal debt financing is greater than external debt financing, which supports the

pecking order theory (Frank and Goyal, 2008). Overall growth, measured by the percentage change in total assets was 10.8%, which is fairly low compared to other developing countries such as the 15.65% reported by Nyamita (2014) among Kenyan SOEs. This indicates that there is a need to finance more long-term expansion projects for SOEs in South Africa.

Most of the variables have relatively low standard deviation, which indicates that there is a small deviation of the actual data from the mean or expected values. All the variables indicate a high level of consistency as their mean values and standard deviation fall within the minimum and maximum range.

Table 5-4: Descriptive statistics

Variable	Mean	Std. Dev.	Min	Max
LTD	0.3001097	0.270392	0	1.656702
STD	0.2707794	0.219648	0.0020266	1.412478
ROA	0.014656	0.141529	-0.749	0.998
ROI	0.010497	0.130972	-0.747	0.998
BOARD	12.175080	4.8626	5	42
GOVT	0.583871		0	1
SIZE	15.066100	1.73456	11.6975	19.1331
TANG	0.991350	0.02861	0.46711	1.00000
GROW	0.108160	0.18083	-0.26491	1.25891
LIQ	2.003840	1.83950	0.20575	13.0053
CR	0.658416		0	1
CPI	0.197892	0.227715	-0.12	0.67

Source: own contribution

5.4.2 Panel data unit root tests

The selected tests for unit roots presented in Table 5.5 include the Im–Pesaran–Shin and Fisher-type tests that make provision for unbalanced panels (STATA, 2019). Considering

that none of the unit root tests are free from shortcomings, more than one test was conducted to ensure authentic evidence on the order of integration.

Table 5-5: Panel unit root tests

		ADF - Fisher		Im, Pesaran and Shin W-stat	
Variable	Order	ADF Chi-square	Prob	W-stat	Prob
Board	I(0)	109.5139	0.0000	-4.25631	0.0000
Size	I(1)	150.602	0.0000	-6.05904	0.0001
LTD	I(1)	151.2100	0.0000	-0.4929	0.3111
STD	I(1)	163.5625	0.0000	-3.0902	0.0010
TANG	I(0)	195.7588	0.0000	-3.4956	0.0002
GROW	I(1)	232.1856	0.0000	-1.8E+02	0.0000
LIQ	I(0)	145.496	0.0001	-10.4385	0.0000
GOVT	I(0)	80.4753	0.0023	-4.2469	0.0000
CPI	I(0)	194.4321	0.0001	-6.2179	0.0000
CR	I(0)	159.4712	0.0000	-6.0024	0.0001
ROA	I(0)	142.112	0.0000	-5.74834	0.0000
ROI	I(0)	145.642	0.0000	-5.87426	0.0000

Ho: Panels contain unit roots

Ha: Panels are stationary

Source: Own construction

Variables were either stationary at all levels [I(0)] or at first difference [I(1)]. The probability of the statistic values for each of the variables were all less than the probability of the allowed error margin of 5%. Therefore, we can reject the null hypothesis and accept the alternative to conclude that the panel is stationary. Board, TANG, LIQ, GOVT, CPI, ROA, ROI and CR are stationary at levels for all the tests. Size, LDL, SDL and GROW are stationary at first difference (order one). The panel root tests results revealed that there

was a short-run equilibrium relationship between the variables; therefore, further analysis continued.

5.4.3 Correlation analysis

This section presents the degree of association between pairs of variables revealing the linear relationship and also whether any multicollinearity exists between the variables as this can pose serious issues in the estimations. Multi-collinearity exists when there is a perfect relationship between some or all explanatory variables and when the explanatory variables are highly correlated with each other. The Pearson correlation test was utilised in this study to assess the degree of multi-collinearity. The pairwise correlation coefficient was estimated between the independent variables to identify if any of the correlation coefficients were above 0.80 which would indicate serious multi-collinearity issues (Islam, 2012). The table indicates that no two explanatory variables are strongly correlated with each other beyond the rule of thumb of 0.80. Hence, there are no multi-collinearity issues to be concerned with.

There is a negative relationship between long-term debt and both ROA and ROI. There is also a negative relationship between short-term debt and both ROA and ROI. This means that when either the long-term debt ratio or short-term debt ratio increases, there is a decrease in the ROA or ROI. There is a stronger correlation between short-term debt and performance measures than between long-term debt and performance measures. Higher performance is associated with a decrease in both short-term and long-term debt levels.

Table 5-6: Correlation analysis

	ROA	ROI	LTD	STD	SIZE	TANG	GROW	LIQ	BOARD	GOVT	CR	CPI
ROA	1											
ROI	0.9636	1										
LTD	-0.0746	-0.1677	1									
STD	-0.2845	-0.2949	-0.2155	1								
SIZE	0.0519	0.0144	0.2284	-0.1942	1							
TANG	-0.1081	0.0103	-0.3544	0.0846	0.033	1						
GROW	0.1962	0.2053	-0.0392	-0.0311	0.0148	0.0659	1					
LIQ	-0.0961	-0.0841	-0.176	-0.2114	-0.081	0.0538	-0.0713	1				
BOARD	0.0591	0.0108	0.0557	-0.0214	0.4736	0.0215	-0.0091	-0.0279	1			
GOVT	-0.2305	-0.182	-0.0167	0.2305	-0.0107	0.223	0.0496	0.0338	-0.1621	1		
CR	0.1363	0.1033	-0.0025	-0.0265	-0.0656	-0.1336	0.0374	0.0925	0.0238	-0.0761	1	
CPI	0.117	0.0768	0.1282	-0.0078	-0.017	-0.2213	0.0382	0.0000	-0.014	-0.0399	0.2694	1

Pearson product moment correlation coefficients are shown below the diagonal.

***p<0.01 significant at 1% level **p<0.05 significant at 5% level, *p<0.1 significant at 1% level

Source: own contribution

5.4.4 Regression analysis

Table 5.7 displays the regression analysis results for the firm performance variables (ROA and ROI) under the System-GMM panel regression model. The findings indicate that the lagged performance variable is driven by past performance and a lagged ROA and ROE variable captures previous performance trends on current performance levels. The coefficients of lagged ROA and ROI are both statistically significant at the 1% confidence level and positive. Furthermore, there is consistency with dynamic stability where the lagged performance coefficients are both less than one.

The results are mixed for long-term debt and short-term debt. The optimal mix between long-term and short-term debt is usually based on parameters, including the firm's observable credit rating, its portfolio of growth opportunities, the profitability of investments and ability to fund the investments through internal financing, the assets liquidation value, the perceived accuracy of financial information, the firm's size and age, and the level of competition amongst banks (AbuTawahina, 2015). As indicated in Table 5.4, the existing mix based on the average debt levels shows that the levels are almost equal, with long-term debt slightly higher.

Leverage can be used to increase shareholders' wealth; however, failure to do so will lead to the destruction of shareholder wealth (Thomas, 2013). Long-term debt shows a negative relationship with firm performance measured by ROI. The coefficients of the long-term debt ratio are significant and negative at a 1% level. We are 99% confident that the current leverage measured by long-term debt has a significant adverse effect on the SOEs' performance measured by ROI. The findings are statistically significant at the 1% confidence level for the SOEs to the extent of 0.172. This implies that an increase in the SOEs' long-term debt is associated with a decrease in their performance. This is an indication that the capital structure decisions taken by South African SOEs are inefficient. These findings concur with those of Abor (2007b) who also reported a negative relationship between long-term debt and firm performance, suggesting that agency issues may have led to the pursuit of very high debt policies, resulting in lower performance. These negative findings could be the result of risk-shifting behaviour, where there is a possibility of default which may lead to debt overhang and possible bankruptcy. Hence,

the agency cost theory is supported which predicts a negative relationship between capital structure and firm performance (Yinusa, 2015). Debt overhang occurs when an entity has excessively high existing debt which limits it from borrowing, even though the additional debt may be to its benefit.

Nyamita (2014) also found a negative effect between long-term debt and firm performance, indicating that SOEs in Kenya are forced to increase their debt levels in order to finance their operations, causing reduced profitability. Reducing debt levels may contribute to an increase in efficiency which will improve firm performance (Lemmon and Zender (2010). However, this reasoning can clearly not be applied to SOEs in South Africa in light of their increased debt levels and poor performance. The negative effect of long-term debt on firm performance may also be an indication that it is used to discipline managers due to the increased monitoring associated with the reduction of agency costs (Berger and Bonaccorsi di Patti, 2006).

Developing economies have higher growth opportunities and studies have shown that debt financing in such conditions causes companies to commit to future fixed repayments and thus deters investment in immediately available positive NPV projects (Iavorskyi, 2013). As a developing economy, South Africa has high growth potential which is a possible reason why a negative relationship is found between long-term leverage and firm performance. Another explanation could be the high interest rates in developing economies which increase the cost of borrow and hence the costs of financial distress that cause firms to fail. The lack of proper bond markets in capital markets is another possible explanation (Abata et al., 2017).

On the other hand, short-term debt shows a positive relationship with firm performance measured by ROA. The coefficients of the short-term debt ratio are significant and positive at a 1% level. We are 99% confident that the current leverage measured by short-term debt has a significant positive effect on SOEs' performance measured by ROA. The findings are statistically significant at the 1% confidence level where a unit increase in short-term debt results in a commensurate decline in ROI for the SOE to the extent of 0.648. This implies that an increase in the SOE's short-term debt is associated with an increase in their performance. From an agency perspective, debt financing disciplines

managers and reduces agency costs by mitigating agency problems as managers have to pay off debt in order to avoid bankruptcy. In order to meet debt commitments, managers would also try to maximise the firm's value through improved performance. Hence, the agency cost theory's prediction of a positive relationship between capital structure and firm performance is supported. According to Nyamita et al. (2015), the positive effect of short-term debt on firm performance indicates that when retained earnings are insufficient, more profitable SOEs would opt for an increase in short-term debt financing and a reduction in long-term debt.

The results show that the size of the SOE affects its performance, measured by ROI, negatively while a positive relationship is found when performance is measured by ROA. Both these findings are weak and insignificant. A positive prediction between the size of the SOE and firm performance would imply that larger SOEs would enjoy economies of scale that can be used to exercise influence over the product and market place. However, since the findings are insignificant, this variable does not impact on SOE performance in South African, unlike in other developing economies like Kenya and China, where the size of the SOE positively influenced their performance (Chang et al., 2014, Nyamita et al., 2015).

The weak negative coefficients for asset tangibility with both performance measures imply that an increase in asset tangibility would result in a decrease in firm performance. Generally, a positive prediction would imply that the tangible assets of SOEs provide good collateral and are easily monitored, resulting in the mitigation of agency conflicts between shareholders and bondholders. However, the finding of a negative prediction suggests that SOEs that have high levels of intangible assets have more investment opportunities in the long-term. Therefore, performance is improved in the case of lower tangible assets.

Growth, measured by the percentage change in total assets, reveals a positive effect on the performance measures. A statistically significant positive influence, at the 5% confidence level, on firm performance, measured by ROI, suggests that SOEs are able to generate more profits as a result of increased investment opportunities. A positive effect on performance measured by ROA is found; however, these findings are weak and insignificant. The negative effect of leverage on ROI tends to exist for high-growth SOEs

as the presence of debt binds the SOE to future fixed repayments, and managers should postpone some immediately available projects with a positive NPV. Debt is used as an instrument to prevent managers from investing in projects that have a negative NPV. As a developing economy, South Africa has high growth potential and this is a possible reason why a negative relationship is found between long-term leverage and firm performance as long-term debt is used to finance investments and capital expenditure. Liquidity, included as a control variable as it controls for industry-related, firm-specific and operating cycle factors, shows an inverse relationship with performance. This finding is consistent with both performance measures and is statistically significant at the 1% confidence level with the ROI measure. These findings conflict with those of Dawar (2014) whose positive findings were an indication of superior working capital management.

Board monitoring has a very weak, positive influence on firm profit. Hence, no significant relationship is shown with the performance of SOEs. The agency theory prediction suggests that boards are seen as a panacea for good firm performance as larger boards improve firm performance due to their power and effectiveness. However, given that the findings are insignificant, this cannot be suggested with certainty in the case of SOEs in South Africa.

The board is a key role player in corporate governance and overseeing SOEs' performance, and it acts as an intermediary between government and executive management. Appointment of board members by a political executive member can compromise the governance of an SOE, especially when the entity is fully owned by the government. This occurred in the case of SAA where the appointment of board members was politically motivated (Chilenga, 2016). Chilenga (2016) suggested that government-appointed members of different SOE boards are not selected for their skills but based on political affiliation. Political influence on SOE boards can seriously jeopardise their functions (OECD, 2018).

Even with the addition of the government subsidy variable in Table 5.8, the findings are still insignificant on the relationship between board monitoring and firm performance. The consistent negative influence of board monitoring on firm performance is an indication that these board members do not have the necessary

skills and expertise to efficiently manage these commercial SOEs. This negative finding, even though weak, can be related to corruption and concurs with Chilenga (2016) assertion that appointments to SOE boards are based on political affiliation. This consolidates a system of patronage across SOE operations, providing a haven for corruption.

Non-debt tax shields which exclude the debt tax shield of interest expense has a statistically significant (5% confidence level) negative influence on firm performance measured by ROI, which is consistent with the ROA measure; however, the findings are weak.

The results indicate that the country's credit ratings positively influenced firm performance, which was consistent between both performance measures. When the ratings improved from speculative-grade (firms that have a rating below BBB- and are more susceptible to default) to investment grade (firms with a rating of more than BBB- and capacity to meet their financial obligations), this had a weak, positive influence on the SOEs' performance. The sovereign credit ratings are evaluations by rating agencies which evaluate the creditworthiness of the government. It is essential for developing economies to obtain a good sovereign credit rating in order to access international bond market funding.

With the addition of the government guarantee variable in Table 5.8, the coefficient values increase; however, they remain insignificant. All signs for the credit rating variable are consistently positive between the models, which is an indication that as the country's credit rating improves, so too does the performance of the SOE. A better measure of the credit rating would have been at the firm level; however, only a limited number of SOEs have a corporate credit rating by rating agencies. Kisgen (2006) introduced credit ratings to the capital structure debate and found that firms with a rating downgrade issue less debt in the subsequent year. The reason is that they seek to appear to be more financially stable and less distressed. This argument can be linked to the positive relationship between credit ratings and firm performance as an improvement in the ratings results in increased debt which, as per the agency theory, is used to improve performance.

South Africa's corruption level, proxied by the corruption perception index, has an insignificant effect on performance. Firms with a high CPI (low corruption) would exhibit better performance due to reduced information asymmetry problems. High levels of corruption (low CPI) are associated with such problems.

Given the high levels of corruption in SOEs discussed earlier, and the fact that corruption causes inefficiencies, this is a key variable in determining firm performance. The insignificant findings could be an indication that the country's CPI may not be a good measure of the extent of corruption among SOEs. Van et al. (2017) found that corruption, measured by its intensity, had negative impacts on firms' financial performance. However, when corruption was measured using a dummy variable, the findings were insignificant. With the addition of the government subsidy variable in Table 5.8, the findings become significant at the 1% confidence level. This significant negative finding confirms that corruption and cronyism are major issues affecting SOEs in South Africa where SOE executives are given too much power with no proper checks and balances (Cheteni and Khamfula, 2018). This finding can be tied to the board monitoring variable where a negative effect was also found. This suggests that board appointments are tied to the corruption level and concurs with Chilenga (2016) assertion that political appointments to SOE boards consolidate a system of patronage across SOE operations, creating the conditions for corruption.

The above findings indicate that, after controlling for the size of SOEs, asset tangibility, growth opportunities, liquidity, board monitoring, non-debt tax shields, South Africa's credit rating and corruption, there are significant, mixed empirical findings on the relationship between capital structure and the performance of South African SOEs. These findings contradict those of Abor (2005) who found a positive effect and Dawar (2014) who found a negative effect. The above evidence partially supports the postulates of the agency theory that has been accepted in other developing and developed economies.

Table 5-7: GMM Regression results based on equation 5.2.

VARIABLES	ROI	ROA
L.ROI	0.323***	
	(0.106)	
L.ROA		0.584***
		(0.22)
LTD	-0.172***	0.105
	(0.0495)	(0.0656)
STD	-0.15	0.648***
	(0.0962)	(0.317)
SIZE	-0.00601	1.84E-10
	(0.0189)	(1.18E-10)
TANG	-1.312	-0.194
	(1.799)	(0.64)
GROW	0.164**	-0.0321
	(0.0807)	(0.0535)
LIQ	-0.0476***	-0.0134
	(0.0206)	(0.0132)
BOARD	0.0019	0.00345
	(0.00597)	(0.00255)
NDTS	-3.542**	-0.992
	-1.911	-1.155
CR	(0.0623)	(0.0466)
	-0.0801	-0.047
CPI	(0.163)	(0.0189)
	-0.128	-0.0497
CONSTANT	1.729	-0.0863
	(1.72)	(0.645)

Source: own contribution

Corrected standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1

Table 5.8 displays the regression analysis results for the firm performance variables (ROA and ROI) by incorporating the government subsidy as an additional control variable under the System-GMM panel regression model. Inclusion of this variable has significant implications for the impact of debt levels on firm performance. However, the level of significance on the coefficient has dropped from a 1% significance level to a 5% significance level, indicating that in the presence of government guarantees, the performance of South African SOEs is significantly affected by their capital structure. This negative prediction is supported by other findings in developing economies including Booth et al. (2001) who studied this relationship among firms in Brazil, Mexico, South Korea, Zimbabwe and Malaysia while Nyamita et al. (2015) reported an inverse relationship amongst Kenyan SOEs. Dawar (2014) also reported a negative relationship amongst Indian firms. The findings indicate that developing economies have significantly larger agency costs of debt than developed economies. Abor (2007b) also found a negative relationship between long-term debt and firm performance, suggesting that agency issues may have led to the pursuit of very high debt policies, resulting in lower performance.

The results in Table 5.8 indicate that support by government in the form of guarantees and subsidies, has a significant negative effect on the financial performance of SOEs. The coefficients of short-term debt change from a positive to negative sign in the presence of government guarantees, which supports the position that increased guarantees by government would encourage an increase in debt levels. However, excessive amounts of debt beyond the target level will reduce firm performance. This proposition is supported by Thomas (2013) who suggested that an increase in debt increases firm performance until the optimal debt level is reached but that excessive amounts will reduce firm performance. The significant negative prediction between government financial assistance and firm performance is supported by Assagaf et al. (2017) who posited that the subsidy policy reduces the cost of other economic sectors and can be viewed as a burden on government spending. They added that government subsidies encourage management to be less concerned about the level of financial strength, and more reliant on the subsidy to meet operational and investment needs. They can hence be regarded as an unfavourable option for SOEs' development. These

authors found that government subsidies had a significant negative effect on the financial performance of Indonesian SOEs.

Government guarantees to South African SOEs stand at more than R450 billion, and government's exposure increased from 54.4% to 64.5% in the 2017 fiscal year as SOEs drew on the guarantees, adding to pressure on state finances. The increased guarantees granted to SOEs in 2017/2018 that are listed below prove that they are incapable of running profitable operations (Rabilall, 2017):

Eskom – R170 billion;

Passenger Rail Agency of South Africa – R53 billion;

South African National Roads Agency Limited – R35 billion;

South African Airways –R19.1 billion;

South African Post Office –R4.4 billion.

In 2018, the total guarantee used by Eskom increased by R51.1 billion while it used an additional R50 billion of its R350 billion guarantee in 2018/19 (South African Government News Agency, 2019). Governance issues at many of these SOEs, rising contingent liabilities and inadequate liquidity could add to pressure on government finances through the increased use of guarantees (South African Reserve Bank, 2018). Such guarantees lead to an increase in leverage, increasing risk-taking (Cordella et al., 2016). While SOEs perform at lower levels than their private sector counterparts, they continue to exist due to government support (Halkos, 2002).

Government guarantees should reduce the cost of borrowing when SOEs require financing from the private banking sector or state-owned financial institutions such as the Development Bank of Southern Africa, the National Empowerment Fund and the Industrial Development Corporation (Dube, 2009). This should have strengthened the positive relationship between short-term debt financing but instead it changed the relationship to a negative one. This relationship provides evidence that government support encourages management to rely on such support to meet operational and investment needs rather than relying on their own balance sheets.

Table 5-8: GMM results based on equation 5.3.

VARIABLES	ROI	ROA
L.ROI	0.383***	
	(0.176)	
L.ROA		0.762***
		(0.159)
LTD	-0.0632*	-0.233*
	(0.0859)	(0.165)
STD	-0.233*	-0.134*
	(0.137)	(0.236)
LNSIZE	-0.0375**	0.00555
	(0.0182)	(0.0156)
TANG	2.687	2.31
	(3.318)	(2.004)
GROW	0.178***	0.181***
	(0.0618)	(0.0649)
LIQ	-0.0752**	-0.0562**
	(0.0365)	(0.0323)
BOARD	-0.00384	-0.00202
	(0.00272)	(0.00339)
GOVT	-0.0808**	-0.0669**
	(0.062)	(0.0744)
CR	0.0793	0.259
	(0.158)	(0.182)
CPI	-0.127	-0.176***
	(0.104)	(0.0588)
CONSTANT	-1.637	-2.334
	(3.29)	(2.282)

Corrected standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1

Source: own contribution

Studies on the public sectors of developing economies found similar results with some of these factors having an effect on performance. Nyamita et al. (2015) found that leverage, liquidity, growth opportunities and size had a significant effect on the performance of Kenyan SOEs. Chang et al. (2014) found mixed effects with leverage and firm performance amongst Vietnamese SOEs, with size and asset tangibility having a significant effect on performance.

The findings indicate that the key variables affecting performance in this study are leverage measured by short-term and long-term debt, growth opportunities, liquidity, non-debt tax shields and government guarantees. The findings in Table 5.8 show that corruption becomes a significant variable when the government guarantee variable is added as a dummy variable. This indicates that corruption has an effect on the performance of SOEs. If government wants to improve the performance of these underperforming SOEs that are in continual need of bailouts, the focus should be on some of these key variables.

The agency theory also proposes that debt is used as a means to discipline managers. This is clearly not the case in many of these SOEs due to soft budget constraints and lack of governance control. Resources drive performance; however, high levels of political interference, in the form of politically motivated governance and management structures, are attracted by such resources. This impedes resolution of the agency problem in these SOEs and, indeed, exacerbates such problems. Finally, much depends on political influence if politicians that are self-serving are in charge of finding a solution to the agency problem and leading the use of SOE resources (Mbo and Adjasi, 2017).

5.4.5 Model specification tests

In dynamic panel data analysis, it is crucial to test whether the model specification and instrumental variables are legitimate in order to ensure the reliability of estimations.

Auto-correlation was introduced into the model when the lagged compensation variable was included as an additional regressor; hence, a first-order auto-correlation (AR(1)) was expected. The lagged-dependent variable coefficients for all models had coefficients that were below 1, which is consistent with dynamic stability.

Table 5-9: Specification tests for equation 5.2.

OBSERVATIONS	295	295
NUMBER OF ID	33	33
WALD STATS	0.000	0.000
NO OF INSTRUMENT	24	26
AR2	0.245	0.342
HANSEN STAT	0.983	1.000

Source: own contribution

Table 5-10: Specification tests for equation 5.3.

OBSERVATIONS	292	292
NUMBER OF ID	33	33
NO OF INSTRUMENTS	22	22
AR2	0.346	0.854
HANSEN	0.97	0.955
WALD STAT	0.000	0.000

Source: own contribution

Tables 5.7 and 5.8 presented the lagged values for the firm performance variables (L.ROA and L.ROI) to account for autocorrelation or serial correlation that is expected under system-GMM. The Arellano Bond AR1 and AR2 tests were also run to test for autocorrelation at first difference and second difference levels, respectively. If autocorrelation exists at first difference level, GMM would report $p < 0.05$ at the 95% significance level. If there is autocorrelation at second difference, GMM would report $p > 0.05$ at the 95% significance level. Autocorrelation is only expected to exist at level one (Blundell and Bond, 1998). The results of the AR (2) test for serial autocorrelation reflected non-significant p-values of 0.245 and 0.342 in Table 5.9 for model 5.2. and 0.346 and 0.854 for model 5.3. in Table 5.10. These test results indicated that auto-correlation of order 2 was absent. Hence, these results were an indication that the models passed the test.

The Wald test was applied to the system-GMM results to test the reliability of the estimators in the models whereby the $p(\chi^2) < 0.05$, which is an indication that the estimators are reliable at the 95% confidence level.

The Hansen instruments-identification tests evaluates the 'goodness of fitness' of the System-GMM estimator, by testing for over-identification of the variables (Bond, 2002). The results of the Hansen test revealed that all the models were not over-identified. Higher values are an indication of the robustness of the model; hence, all models passed the over-identification of instruments test.

These model specification tests are all an indication of the models' correct specification.

5.5 Chapter summary

This chapter addressed the second objective of the study, namely to analyse the determinants of firm performance within South African SOEs. The main focus of this chapter was to provide a clear understanding of the combination of factors that influence performance, especially the effect of capital structure and the government guarantees.

The South African economy is characterised by market imperfections such as macroeconomic imbalances, underdeveloped capital markets, and poor quality institutions due to weak corporate governance practices, poor contractual enforcement and weak protection of investors that promote agency problems. According to Yinusa (2015), the agency theory is more relevant for a developing economy characterised by market imperfections.

The agency theory proposes that debt can motivate efficiency in firms by firstly, reducing the agency costs of free cash flow whereby the cash flow available for spending on discretionary private benefits is reduced; and secondly, by motivating managers to pay back debt using the threat of failure (Jensen, 1986). Debt levels should be increased until the marginal costs of debt equal the benefits of debt. At a conceptual level, Jensen's reasoning can be applied to SOEs where managers are more likely entrenched and easily pursue private benefits under a capital structure that is low in debt. However, the negative and positive effect of leverage on firm performance suggests a non-monotonic

relationship between capital structure and firm performance. In a situation such as this, the relationship is negative at excessively high debt levels due to the increased agency costs resulting from the possibility of bankruptcy and increased distress costs, and positive if the debt is used efficiently and employed moderately (Jensen and Meckling, 1976).

Furthermore, the research findings indicate a statistically negative relationship between capital structure and financial performance when the government subsidy is included as an additional control variable. Poor performance among SOEs has led to government intervention in the form of financial assistance such as grants, funds, rebates and subsidies. The findings show that this has had a negative effect on the performance of these SOEs and has allowed poorly performing entities to survive. Of great concern is the inverse relationship, implying that despite government assistance, SOEs' performance continues to decline. Misalignment between government support and performance could contribute to their poor performance. The findings show that government assistance is not a sound option for the development of SOEs as it causes management to be more reliant on such assistance to meet operational needs and to take advantage of growth opportunities rather than being concerned about the level of financial strength. Furthermore, the increase in government guarantees increases the use of debt which places a strain on government finances.

The findings of this study could assist in alleviating the financial burden on government. Furthermore, they highlight the key performance indicators that affect the performance of South African SOEs. This information could be useful to key stakeholders in their efforts to improve SOEs' performance. Finally, the findings indicate that government assistance is hindering SOEs' performance.

It can be concluded that, leverage does not improve firm performance as predicted by the agency theory. This implies that SOEs in South Africa should be meticulous about their choice of capital structure. Leverage is a formidable aspect of capital structure and hence further investigation is required on the part of government and other key stakeholders to determine the reasons why leverage positively affects performance in other countries. Further investigations are also necessary to determine how to use debt effectively to

improve performance. One avenue could be for the SARB to consider interest rates. SOEs' financial objectives also need to be clearly defined. Are they required to maximise their ROA or ROE where the former requires a reduction in debt levels and the latter would require debt levels to be higher than equity? If their aim is to maximise both, an optimal mix between debt and equity is necessary to achieve optimal performance and hence maximise firm value.

The next chapter covers the third objective of the study, which seeks to determine if there is an alignment between executive remuneration and firm performance.

CHAPTER 6

THE RELATIONSHIP BETWEEN EXECUTIVE REMUNERATION AND FINANCIAL PERFORMANCE

6.1 Introduction

The final objective of this study is addressed in this chapter that analyses the relationship between executive remuneration and firm performance from an agency theory perspective. The excessive remuneration levels of SOE executives in South Africa have been scrutinised as a result of their perceived underperformance and the large wage gap between executives and lower-level employees (Bussin and Ncube, 2017). Executive remuneration is often perceived to be excessive and unmerited when measured against the firm's performance and remuneration of other employees, and the opacity of remuneration disclosure amongst some firms in South Africa adds to this perception (PWC, 2018).

Remuneration practices shape income distribution and extreme earnings disparities cause offence when they are associated with profiteering and financial malfeasance, and when the reward for honest work seems disproportionate or weakly aligned with incentives (2010). Executives should be held accountable for the financial performance of the SOE and ensure that financial performance is maximised. Their remuneration should be based on the extent to which they make decisions that improve performance, resulting in the firm's increased value. When executive remuneration is not aligned to firm performance, this can pose a threat to the SOE's continued existence and to the broader society.

The theoretical foundation in addressing the relationship between executive remuneration and firm performance is anchored on the proposition of the agency theory. The applicability of this theory to SOEs can be tested based on their alignment of executive remuneration and firm performance.

Despite the plethora of research on the agency theory in both private and public companies, the literature pertaining to SOEs, especially within the South African context, is very limited. Hence this chapter determines if the premise of the agency theory is applicable to South African SOEs, and more specifically whether executive remuneration is aligned to SOEs' financial performance.

Understanding these variables would assist SOEs' remuneration committees to develop an optimal executive remuneration package that ensures both alignment of remuneration with performance and the sustainability of the SOE. The existence of an agency relationship between executives and government may prevent these SOEs from meeting their developmental objectives; hence the significance of this objective.

The chapter is structured as follows: Section 6.2 discusses the theoretical and empirical literature in the field of firm performance and executive remuneration from an agency theory perspective. Section 6.3 describes the methodology, whereby the relationship between executive remuneration and performance is analysed using a dynamic model. Section 6.4 presents the empirical results on the alignment between pay and performance. Section 6.5 presents the chapter summary.

6.2 Literature review

This section reviews the literature relating to the research constructs on executive remuneration and firm performance. Empirical studies conducted in South Africa relating to the specific constructs presented in this chapter are also reviewed.

6.2.1 Executive remuneration

Executive remuneration (compensation) can be defined as financial and non-financial payments to executives of a firm comprising basic fixed pay, bonuses and other long-term incentives. Remuneration can be a useful tool in minimising the agency problem that arises from the agency relationship between executives and government. Adequate incentives can help to maximise motivation and performance, especially when they are linked to performance. Hence, from an agency theory perspective, the executive's effort

and objectives may be more accurately aligned with those of government, provided that there are adequate remuneration packages comprising incentives, including share options, ownership stakes and bonuses, and dividends, among others (Otieno, 2012).

Determining an appropriate remuneration package for executives is often a difficult task. When these packages are inadequately designed, employees tend to use the firm's property for their personal gain. However, when they are appropriately designed, they can motivate employees to improve the firm's performance. Remuneration packages need to be sufficiently competitive to attract and retain executives from both the public and private sectors. These packages are an important aspect of corporate governance and are usually designed by the board of directors. The size of the firm, the industry and the nature of the job are usually taken into consideration (Maloa and Bussin, 2016).

Executive remuneration at SOEs is a complex matter. A framework that aligns remuneration, financial viability and sustainability should thus be developed and communicated to the various stakeholders. In determining executive remuneration, the following should be considered: the remuneration package should be sufficient to attract the right individual; executive remuneration should be fair when compared to other salaries within the firm; and the package should not put a strain on the firm's finances.

6.2.2 Executive remuneration in South African SOEs

As discussed in earlier chapters, the poor performance of SA SOEs is widely publicised. Many of these SOEs do not follow the remuneration guidelines issued in 2011 by the DPE that require remuneration to be benchmarked with the private sector (Maloa and Bussin, 2016). The issue of remuneration of top executives, especially in light of the poor performance of SOEs in South Africa, has attracted widespread attention from various stakeholders especially the exorbitant remuneration packages of chief executive officers which have been widely publicised by the media (Bezuidenhout et al., 2018).

Executive remuneration frameworks and practices are inconsistent amongst South African SOEs and this has a direct impact on their performance which is under constant public scrutiny, especially when such packages are disconnected from the firm's performance (Davies, 2018). Remuneration policies and principles should ensure

competitiveness and optimum retention by promoting alignment and harmonisation across SOEs as well as improving governance and oversight of such remuneration by the executive authority (Presidential Review Committee, 2012).

Challenges with regard to executive remuneration among SOEs that were identified by the Presidential Review Committee (2012) include:

- Inconsistencies across SOEs as, in most cases, their boards determine executive remuneration. Furthermore, the PRC observed that there was no valid reason why some SOEs paid their executives much more than others.
- The income disparity between executive management and workers on the lower level of the pay scale, which causes a widening wage gap.
- The lack of a centralised authority to manage SOE remuneration which may result in executives defining their own packages.

The remuneration of SOE executives in the form of fixed salaries and bonuses has recently triggered an outcry. The pay-performance link has been scrutinised by the media because excessive executive remuneration is misaligned with the performance of SOEs in South Africa. Some striking cases include:

- Talib Sadik, Denel's CEO was paid R5.6 million and executives received bonuses of R4.3 million during the 2009/2010 financial year despite Denel declaring a loss of R544 million during 2009 (Bezuidenhout, 2016).
- Brian Molefe, Eskom's former acting CEO received total remuneration of R9.467 million during the 2015/2016 financial year. In addition, he was awarded performance shares in April 2015 to the value of R4.73m payable in June 2018 at a share price of R1.26. Eskom executives received R75.33 million in total remuneration packages during the 2015/2016 financial year, in comparison to R50.61m in the 2014/2015 financial year (Peyper, 2016).
- Monwabisi Kalawe, the former suspended CEO of SAA Airways, received a termination payment of almost R2.7m upon resignation (Majangaza, 2015).

6.2.2.1 The Department of Public Enterprise Remuneration Guidelines

SOEs in South Africa should be following the remuneration model developed by the DPE when determining their executive remuneration packages. This model should eliminate excessive and unjustified executive remuneration. The purpose of the guidelines is to assist boards and remuneration committees in determination and negotiation of the remuneration of executives and non-executives (Department of Public Enterprises, 2007).

The DPE developed an SOE categorisation model for the purpose of the guideline. It categorises SOEs in four bands of size according to asset base and revenue and suggests annual guaranteed packages according to size. SOE boards and remuneration committees of Schedule 2 and 3 entities are expected to apply this model when executive remuneration packages are determined and in formulating remuneration policies. The 2007 guideline was updated in 2011 in order to allow for improvements and incorporation of new precedents.

Table 6-1: SOE Categorisation — assets and revenue

SOE SIZE	ASSETS	REVENUE	SOE CATEGORY
A	>R16.3bn	>R2.54bn	very large SOE
B	R1.55bn – R16.3bn	R243.2m - R2.54bn	large SOE
C	R143.5m – R1.55bn	R22.8m - R243.2m	medium SOE
D	Up to R143.5m	Up to R22.8m	small SOE

Source: Department of Public Enterprises (2007)

Key areas highlighted in the DPE guidelines include:

- Remuneration committees should comprise of a minimum of three independent, non-executive directors and should be chaired by a non-executive director.

- Remuneration committees have the responsibility to ensure that the composition of incentives is reflective of the needs of the entity, and that an appropriate balance is struck between fixed and variable remuneration based on targets that are stretching, verifiable and relevant. Furthermore, they must be satisfied with the accuracy of recorded performance measures that govern the assignment of variable remuneration.
- The fixed pay, and variable pay comprising short-term incentives and long-term incentives should not exceed the median value (threshold) of the DPE remuneration model.
- There must be detailed explanation, justification and shareholder approval prior to any material payments being made that may be viewed as being ex-gratia in nature.
- Contravention of the guidelines by the board requires approval and strong motivation for the contravention.
- Full disclosure of the remuneration components in terms of the Companies Act, the PFMA, and King IV.

Many SOEs have not adopted these guidelines (Maloa and Bussin, 2016, Bezuidenhout et al., 2018).

6.2.3 Agency theory

Several South African studies have focused on the relationship between executive remuneration and firm performance with the agency theory as the underlying economic principle driving executive remuneration (Otieno, 2012, Shaw, 2011, Bezuidenhout et al., 2018). The agency theory assumes that the separation between owners, managers and debt holders can create conflict amongst the principal and agent (Jensen and Meckling, 1976). The conflicting relationship between the agent (management) and principal (shareholders) can generate agency problems as they have different interests, especially if the agent's objectives are not aligned with the principal's objectives.

In the case of SOEs, government, referred to as the principal, entrusts the running of the entity to executive management, the agent, fostering a principal-agent relationship. The

separation of ownership and management can create agency problems that result in agency costs, which are the costs incurred by the owners in preventing managers from deviating from the goal of the firm (Firer et al., 2012). These are costs that arise from agency problems and include, for example, using exclusive facilities, making sub-optimal investments, mismanaging the firm's funds, and focusing more on social status (Hastori et al., 2015).

The costs associated with the agency problem can reduce the value of SOEs and hence decrease shareholders' wealth. Therefore, the agency theory is most commonly applied in research relating to executive remuneration and firm performance (Otieno, 2012). The problems include reduced effort on the part of executives; on-the-job perks; empire-building; entrenchment of investments by a selection of projects designed to reward existing managers; and avoiding risk by investing in low NPV projects (Brealey et al., 2012) 29). These problems generally arise when executives are not appropriately incentivised in the form of adequate remuneration packages, resulting in the misalignment of executive remuneration and the entity's value.

Agency costs can be minimised by means of a sound corporate governance system. Corporate governance can be defined as a system that defines the relationship between all stakeholders, namely owners, managers and boards of directors, among others, to ensure that their behaviour is regulated to achieve the firm's objectives (Hastori et al., 2015). The agency theory addresses the agency problem of conflict of interest.

However, Perrow (1986) observed that advocates of the agency theory focus purely on the agent side of the agency problem when the principal can also be the cause. He noted that principals can also mislead, evade and exploit agents who are unknowingly dragged into working within a perilous working environment where they can do little to intervene to prevent principals from behaving in an opportunistic manner. Perrow's (1986) argument that humans are noble and work ethically for the betterment of the firm persisted in the finance literature to develop into a theory referred to as the stewardship theory (Donaldson, 1990).

6.2.4 Remedies to the agency problem

Otieno (2012) noted that SOEs' poor performance has been linked to agency problems due to the separation of agents (executives) and principals (government). This relationship has been linked to the firm's value measured by its performance. Misalignment of executive remuneration and firm performance can destroy the firm's value. The literature on the agency theory notes that the board of directors and pay-for-performance systems are among the crucial corporate governance mechanisms that reduce opportunistic behaviour on the part of agents and align their interests with those of the principals (Kyalo and Lishenga, 2017).

Panda and Leepsa (2017) suggested that the agency problem is one of the oldest issues and that factors such as ownership structure, managerial ownership, board size, independent board members, executive remuneration and different monitoring committees can minimise the agency cost and hence the agency problem.

Other researchers have suggested other remedies for the agency problem. Eisenhardt (1989) observed that sound governance systems can help to relegate the agency problem. The author proposed two solutions. Firstly, the contract between the principal and agent must be outcome-based. This will align the agent's behaviour with the principal's interests as the agent's actions determine the rewards. Secondly, a well-structured information system ensures that the agent's behaviour is aligned with the principal's interests as the agent is aware that the principal is kept informed of the activities that the agent is engaged in.

Van Den Eijnden (2010) suggested that the agency problem can be solved by means of an improved corporate governance structure and/or implementing a pay-for-performance reward system which would incentivise agents to act in the best interests of the principal. Monitoring executive actions and intervention when their actions are incongruous to the principal, is another means of reducing agency costs. Monitoring tools include the board of directors, independent auditors, debt financing and information systems (Otieno, 2012).

6.2.5 The agency theory link with executive remuneration and firm performance

Agency costs can reduce the value of SOEs and hence shareholder wealth; therefore, the agency problem has received attention from various stakeholders (Otieno, 2012). Deterioration in a firm's performance could be the result of issues that arise between the agent and principal, largely due to their conflicting interests. The principal (government) delegates the running of the day-to-day operations of the firm to the agent (senior management of an SOE). The CEO then acts in his/her best interests, pursuing his/her own ambitions through investments that would lead to high short-term profits, which are usually linked to his/her remuneration (Bezuidenhout et al., 2018). Actions such as this occur at the cost of shareholders' value maximisation which is achieved through long-term growth. Li and Xia (2008) highlighted the agency issue in SOEs, especially government's inability to monitor executives, which ultimately leads to executives' participation in wasteful projects that are to their own advantage.

Guiding et al. (2005) suggested possible reasons for this conflict of interest, namely: the agent could put little effort into completing a task; the agent's use of the work situation as an opportunity to divert resources for personal gain; there could be a difference of opinion between the agent and principal in terms of the time horizon, where the former focuses on the short-term and the latter on the long-term; and the agent and the principal may have different attitudes towards risk.

Remuneration is an area of significance in the application of the agency theory as it is a means of reducing the agency conflict because of the incentives that can be created. It is thus identified as an agency variable by Eisenhardt (1989). An adequate remuneration package, especially incentives, can help to motivate executives to improve performance especially when the incentive is linked to performance. The pay-performance system based on executive remuneration and firm performance is a means of aligning the interests of shareholders (government) with the agents (top executives) since the shareholders have to incentivise the agents to act in their best interests due to information asymmetry. According to Van Den Eijnden (2010), one means of accomplishing this is to

link executive remuneration to the firm's performance; reduced monitoring of executives results in reduced agency costs. When executives are not remunerated according to firm performance, they may not be motivated to maximise the value of the firm. In the case of SOEs whose mandate is to fulfil state objectives, this agency problem may hinder the entity from achieving government's objectives such as the provision of basic goods or services and infrastructure (Otieno, 2012).

6.2.6 Empirical evidence on executive remuneration and firm performance

Numerous empirical studies have been conducted on executive compensation and firm performance in both developed and developing economies, with mixed findings. Uwuigbe et al. (2016) found a significantly positive relationship between executive remuneration and firm performance whereas the relationship between board size and compensation was significantly negative.

Otieno (2012) found a positive relationship between executive remuneration and firm performance, supporting the tenets of the agency theory. Furthermore, the author suggested that remuneration schemes are effective tools in reducing the agency conflict that results from the negative impact of the principal-agent relationship. In considering the relationship between executive remuneration and firm performance, the board needs to take into account the size of the firm, growth opportunities, leverage and government regulations as these factors may distort the results.

Mengistae and Xu (2004) examined the extent to which the agency theory explains CEOs' remuneration in 769 Chinese SOEs from 1980-1989. The study found that there was a decrease in CEO pay-performance sensitivity, which supports the agency theory. It also noted that the level of incentives, a determinant of managerial remuneration policies, was far greater than in other transitional economies.

Ngwenya and Khumalo (2012) investigated the relationship between CEO remuneration and financial performance for the period 2009-2011 among five South African SOEs that fall under the DPE and five that do not. The authors found an insignificant relationship between remuneration and performance, which contradicted the findings of the majority of studies and statements that executive compensation should be linked to firm

performance for economic reasons. They offered possible reasons that included the fact that SOEs' main purpose is to provide services to the public without making a profit and that they receive government subsidies as most of the sampled SOEs had negative total revenue. A positive relationship between size and remuneration was only found amongst the SOEs that fell under the DPE, indicating that larger SOEs remunerate their executives at a higher level. The entities that fall under the DPE are very large; therefore, the finding of a positive relationship.

Gunasekhar and Dinesh (2017) examined the effect of corporate governance and performance on CEO remuneration in 62 Indian SOEs for the year 2015 using Partial Least Square (PLS) based on Structural Equation Modelling. Their results revealed that corporate governance measures using board monitoring and performance had no impact on CEO remuneration due to the fact that CEOs' pay is determined by government through the Central Pay Commission.

Bussin and Ncube (2017) investigated the relationship between CEO and CFO remuneration and performance among 21 Schedule 2 South African SOEs for the period 2010-2014 using the Cochrane-Orcutt estimation method. They found a positive relationship between remuneration and performance using absolute profitability measures.

Kyalo and Lishenga (2017) examined the effect of executive remuneration on the financial performance of SOEs in Kenya for the period 2010-2014 by controlling for the effect of size and leverage on financial performance. A weak negative association was found between remuneration and financial performance and a strong negative relationship was established between size and financial performance, whereby a unit increase in either remuneration or size led to a commensurate decline in ROA. The correlation analysis results revealed no increased value in performance for higher CEO remuneration. The authors thus suggested that systems should be designed to include pay-for-performance perks.

Peng et al. (2016) extended the property rights, transaction cost, agency cost and resource-based theories to SOEs in a conceptual paper with 12 testable propositions. The study demonstrated that theories of the firm could be extended to SOEs to develop

research focusing on SOEs. It also noted that research on SOEs could extend existing theories.

It is therefore clear from the above-mentioned empirical analyses and Table 6-2 between executive remuneration and firm performance that there are mixed results that have left literature in this area rather inconclusive. Other South African studies on executive remuneration and financial performance focused on a limited number of Schedule 2 SOEs.

Table 6-2: Summary of empirical evidence on executive remuneration and firm performance

AUTHOR	SUMMARY	GAP
Mengistae and Xu (2004)	Tested the implications of the agency theory on 769 Chinese SOEs from 1980 to 1989 by testing the effect of firm performance (ratio of operating profit to total sales) on CEO remuneration (base salary plus bonus) with control variables including CEO age, CEO experience and firm size (log of sales) and the previous CEO (dummy variable). Using OLS and Fixed Effects specifications, the findings reveal that larger SOEs pay their CEOs more and that pay-performance sensitivity decreases.	The findings of the study cannot be applied to this study as there are differences between a Chinese SOE and a South African one which would have a bearing on executive remuneration.
Ghosh and Paterson (2011)	The study examined the influence of capital structure (total debt ratio), firm size, growth opportunities, and net income on executive remuneration (salary and bonus) among 336 US firms from 1989 to 1999 with dummy variables (industry characteristics). It found a statistically significant positive relationship between capital structure, firm growth and remuneration based on an OLS model. The findings on net income and firm size	The results cannot be generalised to the public sector of a developing economy due to differing economic conditions.

	showed insignificant results. Hence, the author posited that higher leverage and growth opportunities result in higher remuneration for the higher risk borne and increased growth.	
Otieno (2012)	An empirical investigation of the relationship between executive remuneration (CEO remuneration, CFO remuneration, non-executive remuneration and executive remuneration) and firm performance (net profit, total assets and turnover) among 21 Schedule 2 South African SOEs for the period 2007 to 2009 using a step wise regression model. Consistent with the agency theory, the findings revealed a positive relationship between executive remuneration and firm performance.	The findings were only based on Schedule 2 SOEs and may not be applicable to other SOEs. Furthermore, control variables (size and board monitoring) that have been shown to affect remuneration were not included.
Conyon and He (2012)	An empirical investigation of the relationship between CEO remuneration (salary, bonus, and stipend) and firm performance (ROA) with control variables: ownership and board monitoring, firm age, CEO tenure, CEO age, CEO gender and remuneration committee. Based on Fixed Effects and OLS estimation, the findings revealed significant positive correlation using a dynamic panel	The study is based on listed firms, therefore the findings cannot be applied to the current study setting.

	model during the period 2000 to 2010 for 2 104 Chinese publically traded firms.	
Ngwenya and Khumalo (2012)	The study analysed the influence of CEO remuneration and size (revenue) on firm performance (ROA) during the period 2009 to 2011 among five South African SOEs. The findings indicated an insignificant relationship which revealed that CEO remuneration is not dependent on firm performance, while the size of the SOE is positively related to remuneration. The authors suggested that CEOs should be held accountable by boards and should not receive huge salaries and bonuses when the firm is performing poorly.	The findings cannot be applied to this study as the dependent variable in the current study is executive remuneration. Furthermore, the sample is too small to generalise the findings to all SOEs.
Kazan (2016)	The study examined the impact of CEO remuneration (base salary plus cash bonuses, share-based payments and stock option payments) on firm performance (ROE and ROA) during 2016 among Scandinavian firms. It established a non-significant negative relationship using a linear regression model. Control variables included age, size, previous year's performance and leverage.	The findings cannot be applied to this study as the dependent variable in the current study is executive remuneration.

Khanna (2016)	<p>Studied the influence of performance (ROA), size (log of sales), management (dummy variable of 1 if professionally managed), CEO duality (binary variable if CEO is also chair then value is 1) on CEO remuneration (basic salary plus director's sitting fees plus bonus and commission plus perquisites plus retirement benefits plus provident fund contribution) using company age and industry as control variables. The sample was 300 Indian companies over the period 2007 to 2009. The findings revealed that size and performance positively affected remuneration. Data analysis was done using random effects.</p>	<p>The findings can't be generalised to the South African economy, especially SOEs.</p>
Raithatha and Komera (2016)	<p>Analysed the effect of firm performance measured by both accounting measures (ROE and ROA) and market based measures (Tobin's Q and annual stock return) together with the firm size (natural log of total assets), leverage (total debt/total assets), and risk (firm's beta) to determine the influence of the pay-performance relationship. The sample was 3 100 Indian firms over the period 2002 to 2012. The system generalised methods</p>	<p>The findings can't be generalised to the South African economy, especially SOEs.</p>

	of moments (GMM) estimator was employed and the study found significant persistence in executive remuneration.	
Kyalo and Lishenga (2017)	The study examined the impact of CEO remuneration (base salary plus cash bonuses, share-based payments and stock option payments), firm size and capital structure on firm performance (ROA) during the period 2010 to 2014 among eight Kenyan SOEs. It reported a non-significant negative relationship using a linear regression model.	The findings cannot be applied to this study as the dependent variable in the current study is executive remuneration. Furthermore, the findings in Kenya cannot be generalised to the South African context.
Bussin and Ncube (2017)	Investigated the relationship between CEO and CFO remuneration and performance among 21 Schedule 2 South African SOEs for the period 2010 -2014 using the Cochrane-Orcutt estimation method. The study found a positive relationship between remuneration and performance using absolute profitability measures.	The findings were based on absolute profitability measures which is a serious limitation in applying the findings to this study. Relative measures are more robust in the literature. The findings were only based on Schedule 2 SOES and may not be applicable to other SOEs.
Gunasekhar and Dinesh (2017)	Investigated the effect of corporate governance and performance on CEO remuneration among 62 Indian SOEs for the year 2015 using Partial Least Square	The findings of the study cannot be applied to this study as there are differences between Indian SOEs and South African

	(PLS) based on Structural Equation Modeling. The study found that corporate governance measures using board monitoring and performance had no impact on CEO remuneration due to the fact that CEO pay is determined by the government through the Central Pay Commission.	ones which would have bearing on executive remuneration.
Bezuidenhout et al. (2018)	Investigated the relationship between CEO remuneration and firm performance (turnover, operating profit, net profit, ROCE, ROE, liquidity ratio, solvency ratio, audit opinion and Irregular, fruitless and wasteful expenditure (IFWE)) among 18 Schedule 2 South African SOEs for the period 2006 -2014 using the OLS estimation method. Statistically significant results were found with a positive relationship between remuneration and turnover and a negative relationship between remuneration, and net profit and IFWE.	The findings were only based on Schedule 2 SOES and may not be applicable to other SOEs. Furthermore, control variables (size, and board monitoring) that have been shown to affect remuneration were not included. A lagged variable for performance was also omitted from the study.

Source: Own construction

6.2.7 Determinants of executive remuneration

6.2.7.1 Firm performance

Researchers have used several different measures as indicators of firm performance that can be summarised into market-based and accounting measures. Raithatha and Komera (2016) found that when using market-based measures, no relationship was found with executive remuneration. Given the nature of the sample for the current study, market-based measures are not applicable. The use of multiple performance measures would ensure that the results are robust, hence providing better conclusions. It has been argued that profitability as a performance measure can be manipulated by executives through manipulation of the depreciation policy, and changes in inventory valuation methods. Thus, it might not offer a true reflection of the firm's real value (Attaway, 2000).

When ROE is used as a performance measure, the focus is on returns to shareholders. Firms can resort to certain strategies to hide deteriorating performance in terms of actual business fundamentals and hence reflect an artificially healthy ROE (Hagel et al., 2010). SOE performance should not be judged on private sector standards, namely, declaration of dividends, as these entities are not obliged to declare dividends. Instead, they should focus on reinvestment of profits in infrastructure development and other commercial activities that would strengthen their balance sheets so that they have increased access to capital markets. In turn, this would reduce their dependence on the fiscus (Ngwenya and Khumalo, 2012). Some authors have advocated for the use of ROA as a superior performance measure due to its inclusion of assets that are employed to support the firm's operations (Hagel et al., 2010).

Bezuidenhout et al. (2018) used several performance measures including turnover, operating profit, net profit, ROCE, ROE, liquidity ratio, solvency ratio, audit opinion and irregular, fruitless and wasteful expenditure. The main finding was that there was an inverse relationship between pay and performance. Supporting this negative prediction, Kyalo and Lishenga (2017) found a weak negative correlation between firm performance and executive remuneration. Ngwenya and Khumalo (2012) found an insignificant relationship between firm performance and executive remuneration when performance

was based on ROA measured by the ratio of earnings before interest and tax to total assets. Canarella and Gasparyan (2008) and Lilling (2006) also based firm performance on ROA. On the other hand, Bradley (2013) used ROE, ROA and EPS and found no linear relationship between firm performance and executive remuneration. Considering the mixed empirical findings, the hypothesis is developed as shown below.

Hypothesis

*H*₀: Profitability is positively correlated with executive remuneration

*H*₁: Profitability is negatively correlated with executive remuneration

6.2.7.2 Board size

A sound corporate governance structure can ensure that the pay-for-performance system works properly. One of the components of a strong corporate governance system is board monitoring which is generally proxied by board size. There have been mixed empirical findings and theories on board size. A smaller board has less bureaucratic issues, a more streamlined decision making process, and enhanced cohesiveness and participation and is therefore favoured by corporate rating systems (De Andres et al., 2005). On the other hand, larger boards have a broader range of experience and more time and can therefore effectively monitor executives. De Andres et al. (2005) supported their theory by finding an inverse relationship between board size and firm value. Hastori et al. (2015) posited that a larger board improves firm performance due to its power and effectiveness, whereas a smaller board reduces agency costs. Van Den Eijnden (2010) initially theorised that a smaller board would effectively monitor top executives, resulting in a decrease in executive remuneration and a stronger corporate governance structure. However, empirical evidence revealed that there was a positive relationship between board size and executive remuneration. Alves et al. (2016) argued that executives are not restricted by the existence of a remuneration committee as part of the board; however, their results supported the view that a greater proportion of independent directors might restrict excess earnings by executives. The authors also found that when board size was positively related to executive compensation, the board's monitoring efficiency decreased.

Hypothesis

H_0 : Board size is positively correlated with executive remuneration

H_1 : Board size is negatively correlated with executive remuneration

6.2.7.3 Firm Age

Many of the explanations for a systematic relationship between firm age and remuneration are similar to those proposed for the positive correlation between firm size and remuneration (Heyman, 2007). Studies have found that age is positively correlated with executive compensation as more established firms have more highly paid executives (Bouvier, 2010, Heyman, 2007). Older firms are more likely to develop more attractive remuneration packages (De Kok (2012)). They are also more likely to employ people with longer tenure and more experience and these characteristics can affect the relationship between remuneration and firm age. However, De Kok (2012) did not find support for a positive relationship between firm age and remuneration.

Hypothesis

H_0 : Age is positively correlated with executive remuneration

H_1 : Age is negatively correlated with executive remuneration

6.2.7.4 Firm size

Attractive remuneration packages are largely determined by the size of the organisation (Maloa and Bussin, 2016). This is reasonable as one would expect that a larger organisation would be better able to offer more attractive remuneration packages. The larger the organisation, the more complex it becomes; therefore a more qualified CEO is required who would demand a higher remuneration package as the position becomes more demanding (McKnight and Tomkins, 2004). A positive relationship between the size of the firm and executive remuneration was found by (Ngwenya and Khumalo, 2012). The board of directors takes into consideration the size of the firm and several other factors when determining remuneration packages (Otieno, 2012). Mengistae and Xu (2004) highlight the importance of controlling for size in regression equations when analysing

executive remuneration and firm performance. SOEs in South Africa should be following the remuneration model developed by the DPE when determining their executive remuneration packages. This model categorises SOEs in four bands of size according to asset base and revenue and SOE Boards of Schedule 2 and 3 entities are expected to apply this model when executive remuneration packages are drawn up. It should eliminate excessive and unjustified executive remuneration (Department of Public Enterprises, 2007).

Hypothesis

H_0 : Size is positively related to executive remuneration

H_1 : There is a negative association between size and executive remuneration

6.3 Methodology

6.3.1 Variables and measures

This section discusses measures of executive remuneration and the factors affecting it. The variables selected were based on previous empirical studies and the predictions of the agency theory. The table below summarises the variables discussed in this chapter.

Table 6-3: Summary of variables and measures

VARIABLE	MEASUREMENT	FORMULAE / PROXY
Independent variable		
Firm Age	AGE	No of years in existence
Firm Size	SIZE	Logarithm of total assets
Board monitoring	BOARD	Logarithm of board members
Financial performance:		
Return on equity	ROE	Profit after tax / Equity
Return on assets	ROA	Operating profit / Total assets
Return on investment	ROI	Profit after tax / Total assets

Dependent variable		
Executive remuneration	COMP	Logarithm of executive remuneration

Source: Own construction

6.3.1.1 Dependent variables

Executive remuneration (COMP) is the dependent variable in this study proxied by logarithm of executive remuneration.

6.3.1.2 Independent variables

The independent variables include firm performance (ROE, ROA, ROI) and board monitoring (BOARD). The reasons for choosing these variables are firstly, that the data required was readily available from the source and secondly, that they have been widely used in other studies; hence, comparison can be made in a more efficient manner.

6.3.1.3 Control variables

When control factors are omitted from the regression models, they can materially change the inferences made on core factors (Frank and Goyal, 2009). There are other factors that influence executive remuneration. Earlier studies such as Conyon and He (2012) used ownership and board monitoring, firm age, CEO tenure, CEO age, CEO gender and remuneration committee as control factors in their regression models while Gunasekhar and Dinesh (2017) used firm size and firm age. Mengistae and Xu (2004) used control variables CEO age, CEO experience and firm size. Based on previous empirical findings, firm size and firm age are used as control variables in this study. Furthermore, data pertaining to these variables were available from the data source. The control variables selected are widely considered important and have proved robust in the literature.

6.3.2 Model specification

When firm performance is used as a determinant of CEO remuneration, this is a means of aligning the interests of the principal (government) with the agent (CEO) and hence addressing the agency problem (Khanna, 2016). The econometric model to test the agency theory builds on the framework used in studies by Gunasekhar and Dinesh (2017), Kazan (2016) and Mengistae and Xu (2004) to test whether CEO remuneration is linked to firm performance in financial terms. These studies have shown that board size and financial performance have an effect on remuneration as boards that include independent directors would ensure effective monitoring and a well-paid CEO would be motivated to improve the entity's performance. Hence, the model will test whether board monitoring and financial performance have a positive influence on executive remuneration.

$$Y_{it} = \alpha_0 + \sum_{k=1}^N \beta_1 X_{it} + \sum_{k=1}^N \beta_2 Z_{it} + \varepsilon_{it} \quad (6.1.)$$

Where Y_{it} is the measure of executive remuneration for firm i in year t , X_{it} is the measure of firm performance and board monitoring, Z_{it} are the control variables which include size and age and ε_{it} is the error term.

Consideration of the lagged compensation as one of the explanatory variables, makes the estimated equation a dynamic one. The specified equation is:

$$\begin{aligned} COMP_{it} = & \alpha_0 + \beta_1 PERF_{it} + \beta_2 COMP_{it-1} + \beta_3 BOARD_{it} + \beta_4 AGE_{it} \\ & + \beta_5 SIZE_{it} + \varepsilon_{it} \end{aligned} \quad (6.2.)$$

The results obtained from this model could assist policymakers to design executive remuneration packages where the interests of the principal (the government) and the agent (executive management) are aligned so that the negative impact of the principal-agent relationship is minimised and agency costs are reduced.

6.3.3 Estimation methods

Dynamic panel data models include a lagged dependent variable as a regressor; therefore, strict exogeneity is violated because the lagged variable may be correlated with the idiosyncratic error, resulting in endogeneity. As a result, the fixed effects estimator cannot be used. A commonly applied technique by Arellano and Bond (1991) referred to as the Generalised Method of Moments (GMM) estimator will be used to estimate the specified models. GMM using the Arellano-Bond conditions is the most robust method that uses only the moment conditions implied by the AR(1) model, and it properly removes the heterogeneity. The application of GMM as an estimating technique in econometrics is predominantly due to its ability to account for endogeneity in models' regressions arising from cases of reverse causality, simultaneity and variable omission, amongst others. GMM utilises the appropriate lag instruments, which is usually that of the first difference, required to resolve the issues that would have made the regressions somewhat invalid. Ideally, in regression, the independent variables and the error terms are not supposed to be correlated. Where this is the case, it is a case of endogeneity that renders the regression results invalid. Instruments are variables that correlate with the independent variables but are uncorrelated with the error terms. They are used by GMM to correct such problems when they arise, as they do in most regressions.

The System-GMM by Blundell and Bond (1998) which is a weighting of the Differenced-GMM (Arellano and Bond, 1991) and the Levels-GMM (Arellano and Bover, 1995) was employed as the estimator. More specifically the two-step System-GMM estimator, which is asymptotically more efficient (Lew, 2013), was employed.

6.4 Empirical results

6.4.1 Descriptive statistics

A summary of the descriptive statistics for all variables used in the executive remuneration model is presented in Table 6.4. The average ROA for the sample firms is 1.90%, which is extremely low in comparison to the findings of other studies in developing economies,

including Raithatha and Komera (2016) who reported 10.74% among Indian firms and Kyalo and Lishenga (2017) who reported 7.64% among Kenyan SOEs. The ROI also reflects poor performance with an average of 1.48%. However, the ROE indicates a much higher average of 10%.

Table 6-4: Descriptive statistics

Descriptive statistics

VARIABLE	OBS	MEAN	STD. DEV.	MIN	MAX
COMP	495	8.7124	1.0970	4.8752	11.259
ROA	541	0.0190	0.0968	-0.397	0.2350
ROE	541	0.0999	0.7262	-2.248	8.9660
ROI	541	0.0148	0.0895	-0.471	0.2360
BOARD	265	2.4185	0.2936	1.7918	3.4012
AGE	546	10.529	6.1459	1.0000	23.0000
SIZE	541	15.164	1.7378	11.697	19.7619

Source: Own construction

6.4.2 Panel data unit root tests

The selected tests for unit roots presented in Table 6.5 include the Levin-Lin-Chu, Im-Pesaran-Shin, and Fisher-type tests with the null hypothesis as all the panels contain a unit root. Given that none of the unit root tests are free from shortcomings, more than one test was conducted to ensure authentic evidence on the order of integration. Options include the inclusion of fixed effects and time trends in the model of the data-generating process. The Im-Pesaran-Shin and Fisher-type tests make provision for unbalanced panels (STATA, 2019).

Table 6-5: Panel unit root tests

		ADF - Fisher		Levin, Lin & Chu t*		Im, Pesaran and Shin W-stat	
Variable		ADF Chi-square	Prob.	statistic	Prob.	W-stat	Prob.
Comp	I(0)	111.227	0.0001	-5.15998	0.0000	-2.78658	0.0027
ROA	I(0)	142.112	0.0000	-6.03856	0.0000	-5.74834	0.0000
Board	I(0)	70.8228	0.0036	-7.26978	0.0000	-4.25631	0.0000
ROI	I(0)	145.642	0.0000	-6.06362	0.0001	-5.87426	0.0000
ROE	I(0)	132.352	0.0000	-4.29132	0.0000	-5.04500	0.0000
Size	I(1)	150.602	0.0000	-7.61152	0.0000	-6.05904	0.0001
Age	I(1)	61.7061	0.0001	-5.19022	0.0000	-6.7E+13	0.0000

Ho: Panels contain unit roots

Ha: Panels are stationary

Source: Own construction

The p-value is less than 5%; therefore, we can reject the null hypothesis and accept the alternative to conclude that the panel is stationary. Compensation, ROA, ROI, ROE, and Board are stationary at levels for all the tests. Size and age are stationary at first difference. The panel root tests results revealed that there was a short-run equilibrium relationship between the variables; therefore, further analysis continued.

6.4.3 Trend analysis

As reflected in Figure 6.1, average executive compensation among South African SOEs has increased over the years. The figure also displays fluctuations in the values. This trend has continued despite the poor performance of these SOEs as evidenced by the average performance measures (ROA and ROI) in Table 3 (Appendix) and Figure 6.2, which is much lower than in other developing economies.

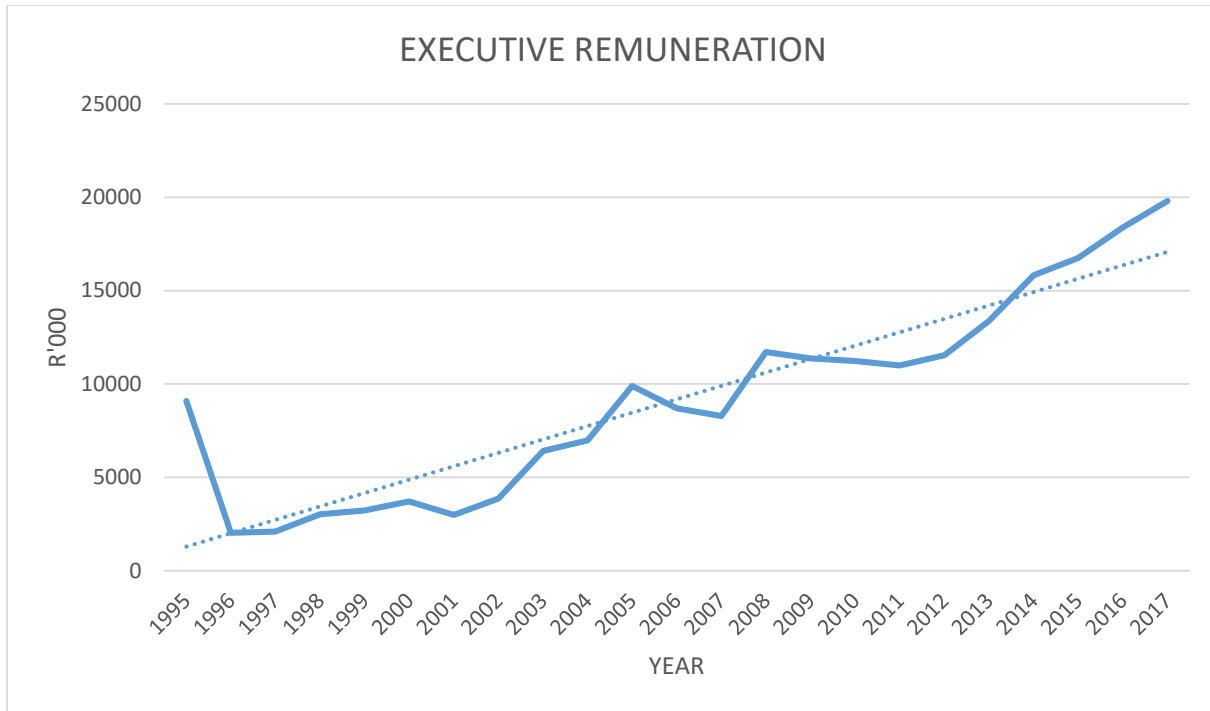


Figure 6-1: Trend of executive remuneration from 1995-2017

(source: own contribution)

The erratic trends in the financial performance measures illustrated in Figure 6.2 are cause for serious concern, especially since there is a decline in the past decade while executive remuneration continued to increase. The financial performance measures also did not show a consistent positive trend during the period of study, casting doubt on whether executive remuneration was based on performance targets. This could indicate that the remuneration guidelines set by the DPE were not adopted in the sampled SOEs and that remuneration packages were set independent of the performance of these entities.

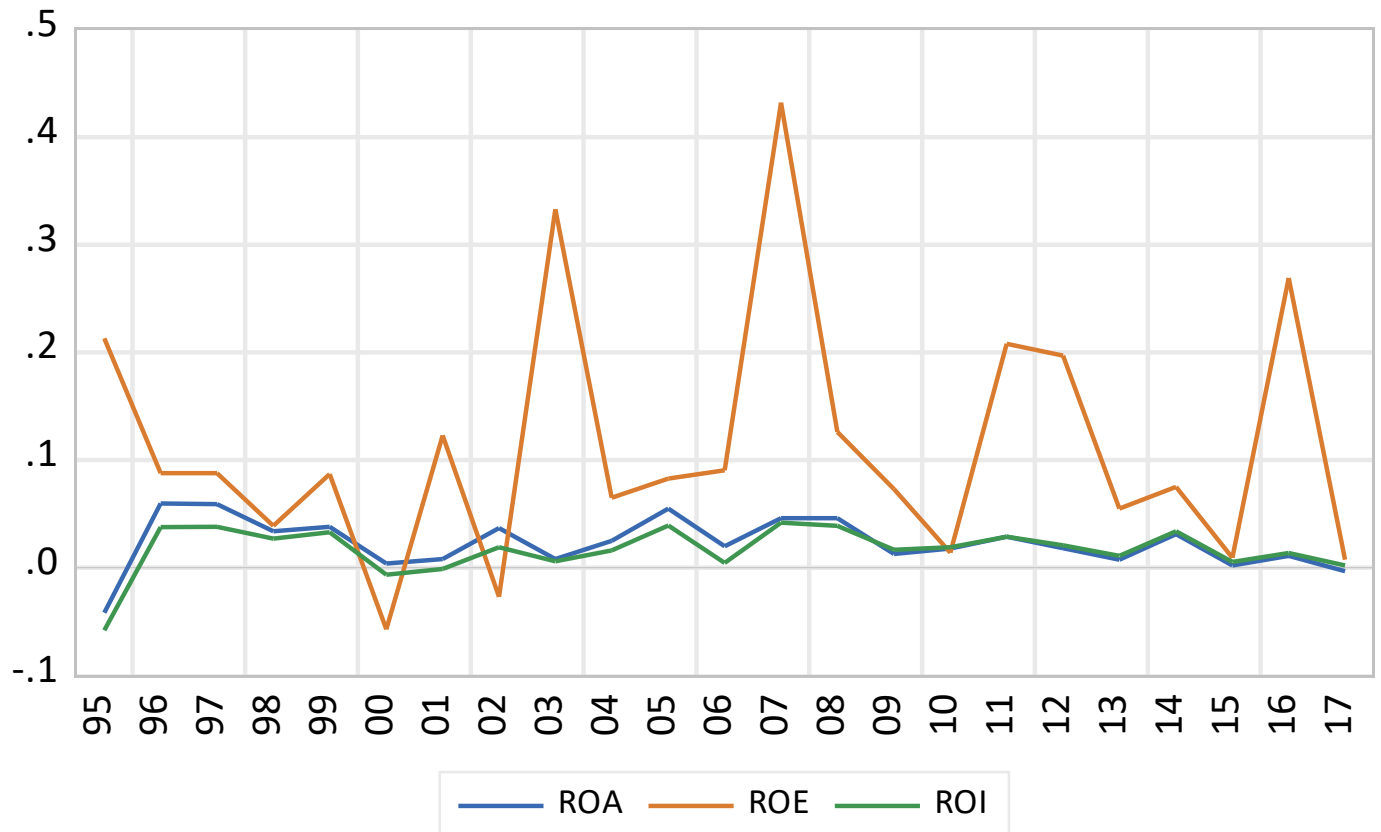


Figure 6-2: Trend of financial performance measure from 1995-2017

Source: Own construction

6.4.4 Correlation analysis

The correlation matrix that shows the direction and strength of the linear relationship between pairs of variables is presented in Table 6.6. The degree of association between the pairs of variables reveals the linear relationship and also whether any multi-collinearity exists between the variables. The Pearson correlation test was utilised to assess the degree of multi-collinearity. The pairwise correlation coefficient was estimated between the independent variables to identify if any of the correlation coefficients were above 0.80, which would indicate serious multi-collinearity issues (Islam, 2012). Attention needs to be paid to the correlation between variables that will be included in the same model.

Table 6-6: Correlation analysis

	COMP	ROA	ROE	ROI	BOARD	AGE	SIZE
COMP	1.0000						
ROA	0.1347*	1.0000					
	0.0027						
ROE	0.0277	0.1506*	1.0000				
	0.5391	0.0004					
ROI	0.0937*	0.9177*	0.1638*	1.0000			
	0.0371	0.0000	0.0001				
BOARD	0.5520*	0.1065	0.0007	0.0568	1.0000		
	0.0000	0.0837	0.9908	0.3570			
AGE	0.5303*	0.0555	0.0303	0.0979*	0.1983*	1.0000	
	0.0000	0.1975	0.4823	0.0228	0.0012		
SIZE	0.5693*	0.0768	-0.0155	-0.0139	0.4921*	0.3065*	1.0000
	0.0000	0.0743	0.7192	0.7465	0.0000	0.0000	

Pearson product moment correlation coefficients are shown below the diagonal.

***p<0.01 significant at 1% level **p<0.05 significant at 5% level, *p<0.1 significant at 1% level

Source: Own construction

Table 6.6 indicates that no two explanatory variables are strongly correlated with each other beyond the rule of thumb of 0.80, with the exception of ROI and ROA. However, these variables will be modelled separately and hence there are no multi-collinearity issues to be concerned with.

The results of the correlation analysis indicate that the relationship between executive remuneration and ROA, ROI, board size, firm age and firm size is statistically significant. Positive correlation between ROA and ROI and compensation is significant which supports the theoretical predictions of the agency theory as discussed earlier. The correlation between ROE and compensation is insignificant. This is an indication that ROE is not a popular measure of firm performance in studies of this nature. Correlation coefficients only show the pair-wise relationship between the variables and how variables move together; this does not mean causation. On the other hand, regression analysis checks causation.

6.4.5 Econometric analysis

This section presents and discusses the regression results (Table 6.7). The relationship between executive remuneration and firm performance was measured by equation 6.2. There are three different specifications, with each using a different performance measure as a predictor variable. The results indicated strong significant results across the three performance measures (ROA, ROE and ROI) based on the System-GMM estimations. Furthermore, there was consistency in the signs across all three specifications.

The contemporaneous performance of the SOE as measured by ROA, ROE and ROI displays a negative influence on executive remuneration. This implies that executive pay increases despite a decrease in performance of South African SOEs. These findings are significant at the 1% level and are a contradiction of the agency theory that theorises that executive remuneration is positively linked to firm performance. This also suggests that there is no increased value in the SOEs that can justify higher executive compensation in these public sector entities. When there is an improvement in firm performance and executives' remuneration packages increase, this is an indication that their compensation is linked to performance (El-Sayed and Elbardan, 2016). Misalignment between executive

remuneration and firm performance is also an indication that executives have significant power to influence their remuneration packages, including their incentives as they are rewarded despite the poor performance of the SOEs. These findings are consistent with those of Bezuidenhout et al. (2018), whose main finding was an inverse relationship between pay and performance. Supporting this negative prediction, Kyalo and Lishenga (2017) found a weak negative correlation between firm performance and executive remuneration. The authors suggested that for performance to be enhanced, harmonization and review of the remuneration system, including pay for performance perks is necessary. Ngwenya and Khumalo (2012) found an insignificant relationship between executive remuneration and firm performance, therefore offering no support for the tenets of the agency theory whereby alignment implies that executives are held accountable and that performance is maximised. These findings were based on the period 2007-2009 and Schedule 2 SOEs in South Africa. The findings of this study contradict those of Ngwenya and Khumalo (2012) and the tenets of the agency theory with the results indicating that higher executive remuneration does not translate to higher performance. This lends credibility to public perceptions that executive remuneration is excessive and unjustified.

These findings of a significant negative influence between firm performance and executive remuneration are similar to those of Kyalo and Lishenga (2017) who examined Kenyan SOEs. They imply that excessive executive remuneration that is not aligned with performance is typical in other African developing economies.

Tuhaika Jr (2007) argued that due to the divergent interests of SOE executives and government, there would be a negative relationship between executive remuneration and performance. Furthermore, the value of the SOE can be destroyed if executive remuneration and performance are misaligned. Misalignment between these two variables is an indication of the agency problem whereby the one party (executive) benefits at the expense of the other (government). Individuals are motivated by economic benefit and can be incentivised through appropriate remuneration packages and incentives when they add value to the entity, which would minimise the agency costs. In order for SOEs to achieve their developmental objectives, they have to remain financially

viable and sustainable and alignment of executive remuneration and financial performance is a key factor in doing so.

Common tools employed to reduce agency costs and maximise shareholder wealth include among others, an effective board and adequate remuneration packages, especially incentives, which can help to motivate executives to improve performance especially when the incentive is linked to performance. The board is a key role player in corporate governance and overseeing the performance of SOEs as it acts as an intermediary between government and executive management. Increased commercialisation of SOEs around the globe as well as heightened expectations of improved performance, have motivated governments to professionalise boards and improve their performance by ensuring their independence and shielding them from ad hoc political intervention (OECD, 2018). Appointment of the chairperson and executive directors of a board by a political executive can compromise the governance of an SOE especially when a commercial SOE is fully owned by government. Such was the case at SAA, where the appointment of board members was the outcome of political power (Chilenga, 2016). The chairperson is responsible governance of the SOE; however, such an individual may become susceptible to political influence where executive members serve political agendas. Chilenga (2016) suggested that government shareholders on different SOE boards are not appointed for their skills but based on political affiliation. Political influence on SOE boards can seriously jeopardise their functions of audit, risk management and remuneration (OECD, 2018) where executives are rewarded despite the entity's poor performance.

Abiding by the DPE's 2007 remuneration guidelines as revised in 2011 is another means of ensuring that performance is aligned with remuneration. However, many SOEs have not adopted and implemented these guidelines (Maloa and Bussin, 2016). This is a further explanation for the misalignment between executive remuneration and firm performance.

Governance of SOEs is the responsibility of Parliament, and the executive authority responsible for the SOE (e.g., the Minister of Transport is responsible for SANRAL) as well as the board of directors (Mtshali, 2016). An SOE can put all the right governance structures in place such as setting up a board, forming various committees such as audit

and remuneration and designing and implementing policies, but corrupt or ill-intentioned shareholders or executives place these policies and practices at risk.

The evidence suggests there is political interference in the operations of many South African SOEs and reports of mismanagement of resources, wasteful expenditure and leadership issues point to the need for stringent government oversight, as the sole or major shareholder, to ensure that their agents (the board, ministerial executive authority, and executive management) run the SOE efficiently. Reports of excessive executive remuneration also create negative public perceptions of SOEs (Thomas, 2012).

A sound corporate governance structure can ensure that the pay-for-performance system works properly. Board monitoring, proxied by board size is one of the key components of a strong corporate governance structure. The results indicated that there is a statistically significant and positive relationship between board size and executive remuneration. This finding is consistent with Conyon and He (2012) who reported that board size was significantly associated with higher executive remuneration among Chinese public firms. However, board size was negatively associated with the quality of board monitoring. Given that executive remuneration increases despite a decrease in performance, as reflected by the significant negative coefficients in all three performance measures, the effectiveness of board monitoring has to be questioned. Hence, this study supports the argument that an increased board size reduces the quality of board monitoring. Larger boards would be inefficient in their monitoring and as such executives may have opportunities to compensate themselves at higher levels. Pressure is not exerted by these larger boards on executives to ensure that wealth is not expropriated in the form of excess remuneration (Ozkan, 2007).

In light of South African SOEs' poor performance, the significant positive relationship between board size and executive remuneration corroborates the earlier discussion on the misalignment between executive remuneration and firm performance. This positive influence that suggests that larger boards result in higher executive remuneration, could be an indication of issues relating to coordination, communication, and decision-making such that board effectiveness is hindered. These findings are consistent with those of Ozkan (2011). The findings reported in Chapter five revealed a consistent negative

influence of board monitoring on firm performance. This suggests that board members do not have the necessary skills and expertise to efficiently manage commercial SOEs. The positive influence on board size and executive remuneration is linked to the finding in Chapter five and supports Chilenga's (2016) suggestion that appointments to SOE boards are based on political affiliation.

The South African government has reviewed the manner in which board members are appointed in order to ensure that they have the necessary expertise, experience and integrity. Furthermore, in order to restore sound corporate governance, new boards with credible, appropriately experienced and ethical directors, have been appointed at Eskom, Denel, Transnet, SAFCOL, PRASA and SA Express (Zyl, 2019b).

The results indicate that the size of the SOE, significantly (at the 1% significance level) and positively influences executive remuneration with consistent results in all models. These findings are significant at the 1% confidence level in all the models. They are consistent with the findings of Raithatha and Komera (2016); Ngwenya and Khumalo (2012) and Vaneylen (2017) who reported that executives are paid more when the firm is large as it is more complex to manage a larger enterprise and they are exposed to greater risk (Core et al., 1999). Attractive remuneration packages thus need to be designed in order to retain high-quality executives. Jeppson et al. (2009) also found that larger firms, measured by sales value, remunerate their executives on a higher scale. This is due to the fact that they are required to perform more complex tasks and take on additional responsibilities, as well as oversee several layers of management and possibly more subsidiaries.

Remuneration packages are largely determined by the size of the organisation (Maloa and Bussin, 2016) as the larger the firm, the more complex it becomes and a better qualified CEO is required who would then demand a higher remuneration package as the position becomes more demanding (McKnight and Tomkins, 2004). Bezuidenhout (2016) inferred that size does affect executive remuneration in very large Schedule 2 SOEs in South Africa; however, the results were not statistically significant. SOEs are classified into four size bands, namely very large, large, medium and small, based on their asset structure and revenue. Their executive remuneration should be based on the category

they fall under. These results indicate that size positively influences executive remuneration in SOEs; therefore, the remuneration guidelines set by the DPE are followed to a certain extent.

The age of SOEs proxied by the number of years in existence is also positive and significant at the 1% level. This implies that SOEs that have been in existence for a longer period, remunerate their executives at a higher rate. These findings are consistent with those of Bouvier (2010), Heyman (2007) who found that age is positively correlated with executive compensation as more established firms have more highly paid executives. Heyman (2007) also argued that the relationship between firm age and remuneration is robust when variables that may have an effect on the findings are included. Given that a firm's size and age are linked, with larger firms often being older firms, the findings reveal that by including firm age as a variable, the positive influence of firm size on remuneration and its level of significance is not altered. Generally, the explanation provided for the relationship between firm age and remuneration is identical to that of firm size and remuneration to the extent that there is sometimes difficulty in distinguishing the difference between the firm size and the firm age effect. The general expectation is that on an average, larger firms have been in existence for a longer period of time; hence, if there is a positive relationship between firm size and remuneration, there is also a positive relationship between firm age and remuneration as revealed by the results of this study. Most of the large SOEs sampled had existed from the beginning of the sampled period.

The results also provide strong evidence in support of the view that executive remuneration displays adjustment dynamics since the estimated coefficient on the lagged-compensation variable displays a sign that is consistent with the literature and is highly significant at the 1% level of significance ($p\text{-values} < 0.05$), regardless of the performance measure. The coefficient estimate of the lagged executive remuneration is significant and positive, which implies that there is consistency with past remuneration and the coefficients are less than one, which is consistent with dynamic stability. These findings are consistent with those of Canarella and Nourayi (2008) and Conyon and He (2012) whose results indicated that executive remuneration dynamics are important due to the current year's remuneration being significantly and positively influenced by the previous year's remuneration.

Table 6-7: Regression analysis

	Model 6.1	Model 6.2	Model 6.3
	ROA	ROE	ROI
ROA	-1.329***		
	(0.06510)		
ROE		-0.0499***	
		(0.01420)	
ROI			-1.181***
			(0.05460)
AGE	0.0105***	0.00805***	0.0157***
	(0.00061)	(0.00044)	(0.00157)
BOARD	0.549***	0.277***	0.410***
	(0.06730)	(0.01850)	(0.01680)
SIZE	0.0269***	0.033***	0.059***
	(0.00722)	(0.00939)	(0.01070)
COMP_{t-1}	0.703***	0.723***	0.608***
	(0.00468)	(0.01070)	(0.02770)
Constant	0.901***	1.327***	1.520***
	(0.09350)	(0.18100)	(0.08880)
Observations	246	246	246
Number of id	31	31	31
Instruments	30	30	20
AR(2)	0.455	0.90	0.523
Hansen test	0.582	0.990	0.975

Source: own contribution

Corrected standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1

This study incorporated a lagged executive remuneration variable in the model based on the study of Conyon and He (2012) who argued that remuneration is serially correlated as the board gradually learns about the capabilities of executives and can therefore not immediately adjust the pay to the target levels.

Conyon and He (2012) further argued that if pay is serially correlated, this suggests that studies on executive remuneration and firm performance that did not incorporate pay dynamics in their models may suffer from omitted variable bias, with the result that their estimates were inaccurately calibrated. This implies that the results of previous South African studies on the relationship between executive remuneration and firm performance of SOEs that did not incorporate pay dynamics, are not completely accurate as the findings of this study clearly show that pay dynamics are relevant.

From model 6.1, the study derives the following equation:

$$COMP_{it} = 0.901 - 1.329ROA_{it} + 0.703COMP_{it-1} + 0.549BOARD_{it} \\ + 0.0105AGE_{it} + 0.0269SIZE_{it} + \varepsilon_{it}$$

This infers that without accounting for the explanatory variables ROA, board size, firm age and firm size, the constant levels of executive remuneration is 0.901. Furthermore, a unit increase in the firm's ROA has a commensurate decline in executive remuneration to the extent of 1.329.

From model 6.2, the study derives the following equation:

$$COMP_{it} = 1.327 - 0.0499ROE_{it} + 0.723COMP_{it-1} + 0.277BOARD_{it} \\ + 0.00805AGE_{it} + 0.033SIZE_{it} + \varepsilon_{it}$$

This infers that without accounting for the explanatory variables ROE, board size, firm age and firm size, the constant levels of executive remuneration is 1.327. Furthermore, a unit increase in the firm's ROE has a commensurate decline in executive remuneration to the extent of 0.0499.

From model 6.3, the study derives the following equation:

$$COMP_{it} = 1.520 - 1.181ROI_{it} + 0.608COMP_{it-1} + 0.410BOARD_{it} \\ + 0.0157AGE_{it} + 0.059SIZE_{it} + \varepsilon_{it}$$

This infers that without accounting for the explanatory variables ROI, board size, firm age and firm size, the constant levels of executive remuneration is 1.520. Furthermore, a unit increase in the firm's ROI has a commensurate decline in executive remuneration to the extent of 1.181.

These results provide evidence that the performance of South African SOEs and executive remuneration are linked; however, the inverse relationship is cause for real concern. Executive remuneration is excessive and unjustified in SOEs that are underperforming as indicated by their financial performance measures.

In order to ensure that SOEs deliver on their developmental roles to support infrastructure development and transformation of the economy, their performance must improve. Existing key policies should be strictly implemented while new policies are required, with severe repercussions for non-compliance. Should this not occur, the trajectory of the economy will continue to weaken. The results on the key variables highlighted in this chapter, may assist in aligning executive remuneration and performance which would, in turn, improve SOEs' performance. Such improvement is crucial to the delivery of basic services, fostering economic growth, generating employment, and increasing the fiscal space to address inequality.

6.4.6 Economic impact of regression results

GMM is a partial equilibrium model and not a full equilibrium model; therefore, it is necessary to calculate the economic impact for the regression coefficient. In partial equilibrium models, the analysis only takes the effects of a given policy action in the market that is directly affected into account and the economic interactions between the various markets in the economy are not accounted for. The analysis is based on pre-determined economic variables, which increases its sensitivity to behavioural elasticities (WITS, 2010). This section uses the model's estimates to determine the impact of the

independent variables on the dependent variable. Table 6.8 shows the economic impact of firm performance (measured by ROA, ROE, ROI), firm age, firm size and board size on executive remuneration, calculated using the following formulae:

Economic impact

$$= \frac{StdDev_{INDEPENDENT VARIABLE} \times Regression\ coefficient}{StdDev_{DEPENDENT VARIABLE}}$$

Table 6-8: Economic impact of regression results

VARIABLE	ROA	ROE	ROI
L.COMP	0.7030	0.4633	0.4007
ROA	-0.1173		
ROE		-0.0330	
ROI			-0.0964
BOARD	0.0028	0.0022	0.0042
AGE	3.0758	1.5519	2.2970
SIZE	0.0426	0.0523	0.0935

Source: Own construction

Table 6.8 illustrates that the estimated coefficients for performance measures ROA, ROE, and ROI are -1.329, -0.0499 and -1.181, respectively. Further analysis of the economic implications in Table 6.8 indicates that one standard deviation decrease in performance measure will result in an increase of between 0.0330 and 0.1173% in executive remuneration. These findings contradict the agency theory that theorises that executive remuneration is linked to firm performance, where higher performance leads to higher

compensation. When executives achieve performance targets, they are rewarded accordingly. For the agency theory to be applicable, a positive relationship is expected where executives earn more in the case of better firm performance, indicating that their compensation is linked to performance measures.

Table 6.8 also shows that executive remuneration is most sensitive to the SOE's age as indicated by the highest percentage changes per standard deviation ranging from 1.5519 to 3.0758%. This implies that for a given increase in the age of the SOE, executive remuneration increases by a higher magnitude. This is consistent with the literature as more established firms have more highly paid executives (Bouvier, 2010; Heyman, 2007) and older firms are more likely to develop more attractive remuneration packages. Furthermore, according to De Kok (2012), older firms are more likely to employ people with longer tenure and more experience and these characteristics can positively affect the relationship between remuneration and firm age.

The range of the impact values for board size implies that one standard deviation increase in the board size results in an increase in executive remuneration in a range between 0.0022 and 0.0042%. For a given increase in board size, executive remuneration will increase; however, the magnitude of the change is not high. These results imply that executive remuneration is not as sensitive to board size as it is to the other explanatory variables.

6.4.7 Model specification tests

In dynamic panel data analysis, it is crucial to test whether the model specification and instrumental variables are legitimate in order to ensure the reliability of estimations.

Auto-correlation was introduced into the model when the lagged compensation variable was included as an additional regressor; hence, a first-order auto-correlation (AR(1)) is expected. The results of the AR (2) test for serial autocorrelation as reflected by the non-significant p-value were 0.455; 0.90, 0.523 for the three models, respectively which indicated that auto-correlation of order 2 was absent. Hence, these results were an indication that the models passed the test.

The results of the Hansen test, which is an over-identification of instruments test that was employed to evaluate the 'goodness of fitness' of the System-GMM estimator, revealed that all three models are not over-identified.

The lagged-dependent variable coefficients for the three models are 0.703, 0.723, 0.608, respectively. All coefficients are below 1, which is consistent with dynamic stability. These model specification tests are all an indication of the models' correct specification.

6.5 Chapter summary

This chapter presented the results of the third and final objective of this study where the relationship between executive remuneration and firm performance was analysed from an agency theory perspective. The main aim of the objective was to determine whether there was an alignment between the remuneration of the SOE executives and the financial performance of the entity's they manage.

It could be expected the PFMA, the Companies Act (2008) and King III, among others, would ensure increased regulation and monitoring of SOEs and hence executive remuneration would be positively and significantly linked to performance. The poor performance that is continuously reported in the media in relation to the magnitude of executive remuneration and the results of this study negate this expectation.

From the regression results, it can be concluded that there exists a statistically significant and negative relationship between executive remuneration in South African SOEs and their financial performance proxied by three different accounting-based performance measures. Of great concern is the inverse relationship, implying that executive remuneration is high despite the declining performance of these SOEs. This misalignment between executive pay and performance could contribute to SOEs' poor performance. These findings undermine the core principles of the agency theory, resulting in poor performance. They provide empirical support for public and media perceptions that executive remuneration is excessive and unmerited when measured against the firm's performance. Serious intervention by government and sound remuneration practices are urgently required to ensure that the relationship between executive remuneration and

financial performance changes to a positive one. This would promote strict adherence to the pay-for-performance system and government should act punitively when directives are not followed.

On the other hand, there a statistically significant and positive relationship between executive remuneration and the size, age and board size of the SOE. This is an indication that remuneration packages take into consideration the size of the SOE and that some SOEs follow the DPE's remuneration guidelines.

These findings highlight key performance indicators that affect executive remuneration in South African SOEs which can be used by remuneration committees to determine the relationship between executive remuneration and financial performance based on strong statistically significant empirical evidence.

The next chapter presents an overall summary, conclusions, recommendation, limitations of the study and offers suggestions for future research.

CHAPTER 7

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

7.1 Introduction

This chapter concludes the study by providing a synthesis of previous chapters. The key findings of each chapter are highlighted together with the conclusions to address the research questions. This is followed by a broad overview of the main aim of the study and its limitations. The chapter concludes with recommendations as well as suggestions for future research.

7.2 Summary of research findings

The first chapter set the tone for this thesis. It provided an introduction and background to the study by detailing the problem statement, the study's significance, the research objectives and questions, and the organisation of the thesis. The second chapter focused on SOEs. The concepts, regulatory and legal frameworks, and their structure, as well as the issues and challenges surrounding them, were discussed.

The third chapter provided a detailed theoretical and empirical review of capital structure theories. The discussion commenced with the seminal work of Modigliani and Miller, followed by several other theories, including the pecking order theory, the trade-off theory and the agency theory.

Chapters four, five and six adopted an essay approach with the methodology, results and discussion of findings included in each chapter. The fourth chapter addressed the study's first research objective, namely, to identify the capital structure theory that explains the financing behaviour of SOEs. The pecking order theory and the trade-off theory were tested using separate model specifications. The findings showed that SOEs in South Africa followed the trade-off theory as they had a target capital structure towards which

they adjusted at a SOA of 22%. The pecking order theory was tested using the financing deficit model. The findings revealed that the costs of adverse selection are dominant for lower levels of leverage, providing a reason for the financing deficit coefficient not being close to unity. This is an indication that SOEs in South Africa do not follow pecking order behaviour in their financing decisions. On the other hand, the trade-off theory is a primary motivator of financing decisions at high levels of debt financing, which is evidenced by high debt ratios, and the existence of a target capital structure where the gap is closed between the current and the target debt level at an average SOA.

The fifth chapter addressed the second research objective, i.e., to analyse the determinants of financial performance with the main variable being capital structure. The findings indicated that capital structure had a significant effect on the performance of SOEs. The agency theory proposes that debt can motivate efficiency in firms. The negative and positive effect of leverage on firm performance suggests a non-monotonic relationship between capital structure and firm performance. In a situation such as this, the relationship is negative at excessively high debt levels due to the increased agency costs resulting from the possibility of bankruptcy and increased distress costs. However, it is positive if the debt is used efficiently and employed moderately (Jensen and Meckling, 1976). Furthermore, the research findings indicate a statistically negative relationship between capital structure and financial performance when the government subsidy is included as an additional control variable. This has enabled the survival of poorly performing SOEs. However, despite government assistance, South African SOEs' performance continues to decline. This misalignment between government support and performance could contribute to poor performance. The findings suggest that government assistance is not a sound option for the development of SOEs as it causes management to be more reliant on such support to meet operational needs and respond to growth opportunities rather than being concerned about the level of financial strength. Furthermore, increased government guarantees increase the use of debt, which places a strain on government finances. These findings could inform strategies to alleviate this financial burden on government. They also highlight key performance indicators that affect performance among South African SOEs, which offer a foundation for key stakeholders' efforts to improve such performance.

Chapter six addressed the study's third research objective, namely, to determine if there was alignment between executive remuneration and financial performance within SOEs. The findings confirmed public perceptions that executive remuneration is excessive and is misaligned with the financial performance of SOEs. This implies that the remuneration of executives in many SOEs is not justified by their performance. The results showed a statistically significant and negative relationship between executive remuneration in South African SOEs and their financial performance proxied by three different accounting-based performance measures. These findings undermine the core principles of the agency theory, resulting in poor performance. Government should therefore ensure that there is strict adherence to the pay-for-performance system and should act punitively when directives are not followed.

7.3 Conclusions

This study contributes to the body of knowledge on two key areas in relation to SOEs, namely capital structure and financial performance. The findings indicated that capital structure significantly affects the financial performance of South African SOEs. The investigation of the influence of government support on these firms' financial performance revealed significant findings. The study also concluded that South African SOEs follow the predictions of the trade-off theory when making financing decisions.

Other conclusions are that executive remuneration and financial performance are misaligned and that executive remuneration is not justified by the performance of the SOEs that they manage.

7.4 Policy recommendations

The study's findings will be useful to government, policymakers, regulatory bodies, the general South African public and other researchers. The government should encourage SOEs to explore other sources of financing in local and international capital markets. This could assist them in adjusting their capital structure until it is at an optimal level, and to achieve a faster SOA within a shorter period.

The negative relationship between capital structure and firm performance can be attributed to the lack of proper monitoring of SOEs' debt levels as well as increased government support. These findings serve as a confirmation to government, policymakers and regulatory bodies that public sector reforms have yet to come to fruition. The statistically negative relationship between capital structure and financial performance, especially when the government subsidy is included as an additional control variable, is cause for concern. Poor SOE performance has led to government intervention in the form of grants, funds, rebates and subsidies. This has had a negative effect on the performance on these SOEs and has enabled poorly performing entities to survive. It is thus recommended that the government should review its financial assistance to SOEs and implement strict policies whereby if performance continues to decline despite financial assistance, it should be revoked. Furthermore, government assistance to SOEs is not supported by any funding policy, but is based on crisis situations and the seriousness of their financial needs. Decisions to grant guarantees are made by Parliament and National Treasury guided by the PFMA (Sadiki, 2015). While it is necessary for government to assist SOEs to enable them to fulfil their role as catalysts of economic growth and development, it is equally important that a funding policy is formulated to guide such support. Furthermore, as recommended by the IMF, the authorities need to step up the fight against corruption by rigorously applying the provisions of the PFMA (Business Tech, 2018).

It is also recommended that the excessively high debt levels should be reduced until the marginal costs of debt equal the marginal benefits of debt, at which point the agency theory proposes that debt can motivate efficiency. Policies should be put in place to restrict guarantees and subsidies to SOEs as they should be encouraged to enhance their strength by introducing innovation and best practices.

In view of the finding of a statistically negative relationship between executive remuneration and financial performance amongst South African SOEs, the following recommendations are made:

- The executive remuneration system in South Africa's public sector should be reviewed in order to enhance SOEs' performance. Executive perks should be based on the pay-for-performance system.
- The Department of Public Service and Administration (DPSA) guidelines on the appointment of boards and executive management should be implemented, especially considering that the majority of the boards will reach the end of their term of office in 2018/19 (Department of Public Enterprises, 2018) and new boards will be appointed. Executives appointed to serve on these new boards should have the requisite expertise, experience and integrity.
- Given that executive remuneration frameworks and practices are inconsistent amongst SOEs, the "*SOC Remuneration and Incentives Standards for Non-Executive Directors, Executive Directors and Prescribed Officers*" framework that was approved by Cabinet in November 2018 (Department of Public Enterprises, 2018) should be strictly implemented across government. Furthermore, a central remuneration authority should be established to ensure that consistent and accountable remuneration frameworks and practices are adopted across SOE boards and executives.

7.5 Contribution to knowledge

This study's primary contribution is to add new knowledge to the limited literature on the capital structure and financial performance of South African SOEs. This offers potentially fruitful avenues for further research on South African SOEs.

Capital structure theories, the determinants of capital structure and determinants of financial performance have not been investigated in South African state-owned entities. Other key independent variables investigated include the country's corruption index and credit ratings on financial performance. These variables have not been studied in the context of South Africa.

Given that SOEs' debt levels have increased considerably in recent years, analysis of the impact of these debt levels on financial performance is important. This study investigated

whether the trade-off theory or pecking order theory explains the financing decisions of SOEs. This investigation has also not been conducted using data from South Africa's public sector. The results of this study could assist SOEs to make appropriate capital structure decisions that do not adversely affect their financial performance.

The study concluded that government assistance is not a sound option for the development of SOEs as it causes management to be more reliant on such support to meet operational needs and take advantage of growth opportunities rather than being concerned with the level of financial strength. Increased government guarantees increase the use of debt which places a strain on government finances. These findings could be used to develop strategies to alleviate the financial burden on government by setting up funding for SOEs. The findings also highlight key performance indicators that affect South African SOEs' performance, laying a foundation for efforts by key stakeholders to improve such performance.

This study extended previous studies on capital structure and financial performance in developed and developing economies by employing dynamic panel data models estimated using the two-step GMM. This addressed the issue of endogeneity in the relationship between capital structure and financial performance which previous studies that used the OLS estimator and pooled regression methods suffered from.

Other South African studies on executive remuneration and financial performance focused on a limited number of Schedule 2 SOEs. This study expanded the sample to include all commercial Schedule 2, 3B and 3D SOEs using a dynamic panel data model estimated using the two-step GMM. The excessive remuneration levels of SOE executives in South Africa has been scrutinised by the media and the public as a result of their perceived underperformance. The study contributes to knowledge by providing empirical support to the perceptions of the public and media that executive remuneration is excessive and unmerited when measured against the firm's performance. The study can inform government and other decision-makers that serious intervention is required to ensure that there is strict adherence to the pay for performance system and punitive measures should be taken when directives are not followed.

7.6 Limitations of the study

- The CEO remuneration package was not available for all SOEs, hence executive remuneration, sourced from the annual financial statements was used instead.
- Executives can manipulate profitability measures; hence, these measures have been criticised as a measure of firm performance, which may influence the results. Other measures are recommended for future research.
- The use of audited financial statements does not ensure that accounting policies are standardised; hence, practices may vary from one SOE to another. This may have a material effect on the results.
- CEO turnover in several SOEs over the study period could have led to new or revised remuneration systems during the study period. This may have influenced the results and caused potential outliers.
- The accounting standards set by the International Accounting Standards Board changed over the study period. This may have influenced the results reported in the annual financial statements, hence influencing the dataset.
- The study was limited to commercial SOEs whose data was available for the reporting period on the McGregor database or the SOE's website. Hence, the findings may not be generalisable to all SOEs without additional research.
- The value of government guarantees was not available for all SOEs, with some citing the value in their annual reports while others simply stated that they received a guarantee from government. Hence, the researcher was limited to using a dummy variable for the government guarantee variable.
- The study employed only quantitative methods to explain the observed phenomena, that is, capital structure and financial performance. Qualitative methods such as interviews with management could unearth different reasons for increased debt levels and the effects on financial performance.

7.7 Suggestions for further research

The study has laid the foundation for future research on the subject of the capital structure and firm performance of South African SOEs. Research could be conducted in the following areas:

- The effect of the value of government guarantees (instead of using a dummy variable) on financial performance.
- Given that government guarantees impose a serious burden on the fiscus, research could be conducted on the influence of issued and exposed government guarantees on central government debt.
- The effects of corruption as well the credit ratings of individual SOEs on their financial performance.
- This study could be expanded to cover financial SOEs as it considered only non-financial SOEs.
- Future research could focus on SOEs classified into the specific industries within which they operate as the type of industry may influence a firm's capital structure, financial performance and executive remuneration.
- Other researchers could explore the impact of the global financial crisis on the various research constructs used in this study, that is, before, during and after the financial crisis.
- The demographic characteristics of executives could be incorporated in order to determine their effects on executive remuneration in addition to the financial performance of the SOE.
- Researchers can obtain CEO remuneration packages comprising details of individual components and investigate the relationship between CEO remuneration and financial performance.

REFERENCES

- ABATA, M. A., MIGIRO, S. O., AKANDE, J. O. & LAYTON, R. 2017. Does Capital Structure Impact on the Performance of South African Listed Firms? *Acta Universitatis Danubius. Œconomica*, 13.
- ABDELJAWAD, I., MAT-NOR, F., IBRAHIM, I. & ABDUL-RAHIM, R. 2013. Dynamic capital structure trade-off theory: Evidence from Malaysia. *International Review of Business Research Papers*, 9, 102-110.
- ABOR, J. 2005. The effect of capital structure on profitability: an empirical analysis of listed firms in Ghana. *The journal of risk finance*, 6, 438-445.
- ABOR, J. 2007a. Corporate governance and financing decisions of Ghanaian listed firms. *Corporate Governance: The international journal of business in society*, 7, 83-92.
- ABOR, J. 2007b. Debt policy and performance of SMEs: Evidence from Ghanaian and South African firms. *The Journal of Risk Finance*, 8, 364-379.
- ABUTAWAHINA, M. 2015. *Capital Structure and Firms Financial Performance: Evidence from Palestine (Unpublished master thesis)* [Online]. Islamic University–Gaza, Palestine. [Accessed].
- AĞCA, Ş., MOZUMDAR, A. & FRANK, E. F. M. 2010. Corporate Financing Choices Constrained by the Amount of Debt Firms Can Support.
- AGSA 2017. General report on the national and provincial audit outcomes for 2016-17. *PFMA Reports*. Auditor-General of South Africa.
- AGSA 2018. General report on the national and provincial audit outcomes for 2017-18. *PFMA Reports*. Auditor-General of South Africa.
- AHMAD, W., SHAH, N. S. B. & YUSUF, N. H. M. 2017. The capital structure: Government-linked and non-government-linked companies in the trading and services industry in Malaysia. *Jurnal Intelek*, 12.
- AL - NAJJAR, B. 2011. The inter - relationship between capital structure and dividend policy: empirical evidence from Jordanian data. *International Review of Applied Economics*, 25, 209-224.
- ALVES, P., COUTO, E. B. & FRANCISCO, P. M. 2016. Executive pay and performance in Portuguese listed companies. *Research in International Business and Finance*, 37, 184-195.
- ALZOMAIA, T. 2014. Capital structure determinants of publicly listed companies in Saudi Arabia.
- ANTONIOU, A., GUNNEY, Y. & PAUDYAL, K. 2008. The Determinants of Capital Structure: Capital Market-Oriented versus Bank-Oriented Institutions. *Journal of Financial and Quantitative Analysis*, 43, 59-92.
- APPELBAUM, E. 1993. Government policy and the firm's capital structure. *European Economic Review*, 37, 1185-1196.
- ARELLANO, M. & BOND, S. 1991. Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. *The review of economic studies*, 58, 277-297.
- ARELLANO, M. & BOVER, O. 1995. Another look at the instrumental variable estimation of error-components models. *Journal of econometrics*, 68, 29-51.
- ASSAGAF, A. & ALI, H. 2017. Determinants of Financial Performance of State-Owned Enterprises with Government

- Subsidy as Moderator. *International Journal of Economics and Financial Issues*, 7, 330-342.
- ASSAGAF, A., YUSOFF, Y. M. & HASSAN, R. 2017. GOVERNMENT SuBSIDY, STRATEGIC PROFITABILITY AND ITS IMPACT ON FINANCIAL PERFORMANCE: EMPIRICAL EVIDENCE FROM INDONESIA.
- ATTAWAY, M. C. 2000. A study of the relationship between company performance and CEO compensation. *American business review*, 18, 77.
- AUDITOR GENERAL 2017. PFMA 2016-2017. Pretoria.
- BAJO, A. & PRIMORAC, M. 2011. Government guarantees and public debt in Croatia. *Financial theory and practice*, 35, 253-276.
- BAKER, M. & WURGLER, J. 2002. Market timing and capital structure. *The journal of finance*, 57, 1-32.
- BALTACI, N. & AYAYDIN, H. 2014. Firm, country and macroeconomic determinants of capital structure: Evidence from Turkish banking sector. *EMAJ: Emerging Markets Journal*, 3, 47-58.
- BERGER, A. N. & BONACCORSI DI PATTI, E. 2006. Capital structure and firm performance: A new approach to testing agency theory and an application to the banking industry. *Journal of Banking and Finance*, 30, 1065-1102.
- BERNIER, L. 2011. The future of public enterprises: Perspectives from the Canadian experience. *Annals of Public and Cooperative Economics*, 82, 399-419.
- BEZUIDENHOUT, M. L. 2016. *The relationship between CEO remuneration and company performance in South African state-owned entities*. University of South Africa.
- BEZUIDENHOUT, M. L., BUSSIN, M. H. & COETZEE, M. 2018. The chief executive officer pay–performance relationship within South African state-owned entities. *SA Journal of Human Resource Management*, 16, 1-13.
- BHARATH, S. T., PASQUARIELLO, P. & WU, G. 2008. Does asymmetric information drive capital structure decisions? *The Review of Financial Studies*, 22, 3211-3243.
- BHATTI, B. & SARWET, A. 2012. Financial performance of state owned enterprises in emerging economies. *Chartered Institute of management accountants*, 8.
- BLUNDELL, R. & BOND, S. 1998. Initial conditions and moment restrictions in dynamic panel data models. *Journal of econometrics*, 87, 115-143.
- BLUNDELL, R. & BOND, S. 2000. GMM estimation with persistent panel data: an application to production functions. *Econometric reviews*, 19, 321-340.
- BLUNDELL, R., BOND, S. & WINDMEIJER, F. 2001. Estimation in dynamic panel data models: improving on the performance of the standard GMM estimator. *Nonstationary panels, panel cointegration, and dynamic panels*. Emerald Group Publishing Limited.
- BOND, S. R. 2002. Dynamic panel data models: a guide to micro data methods and practice. *Portuguese economic journal*, 1, 141-162.
- BOOTH, L., AIVAZIAN, V., DEMIRGUC - KUNT, A. & MAKSIMOVIC, V. 2001. Capital structures in developing countries. *The journal of finance*, 56, 87-130.
- BOUVIER, A. 2010. *The Effect of Age upon CEO Compensation: A Cross-Industry Study*. CMC Senior Theses

Claremont McKenna College.

- BRADLEY, M., JARRELL, G. A. & KIM, E. H. 1984. On the existence of an optimal capital structure: Theory and evidence. *The Journal of Finance*, 39, 857-878.
- BRADLEY, S. 2013. The relationship between CEO compensation and company performance in a South African context. *Journal of Economic and Financial Sciences*, 6, 539-564.
- BREALEY, R. A., MYERS, S. C., ALLEN, F. & MOHANTY, P. 2012. *Principles of corporate finance*, Tata McGraw-Hill Education.
- BRIGHAM EUGENE, F. & ERHARDT MICHAEL, C. 2010. *Financial management: Theory and practice*, Cengage Learning.
- BUSINESS TECH 2017. One graph showing South Africa's credit rating history: 1994 – 2017. Business Tech.
- BUSINESS TECH. 2018. *Corruption, poorly-run SOEs and 4 other major obstacles holdings SA back* [Online]. Business Tech. Available: <https://businesstech.co.za/news/business/262031/corruption-poorly-run-soes-and-4-other-major-obstacles-holdings-sa-back/> [Accessed].
- BUSINESS TECH. 2019. Corruption and democracy in South Africa. *Business Tech*.
- BUSSIN, M., H. R. & NCUBE, M. 2017. Chief Executive Officer and Chief Financial Officer compensation relationship to company performance in state-owned entities. *South African Journal of Economic and Management Sciences*, 20, e1-e10.
- CAMPELLO, M. 2007. Asset tangibility and firm performance under external financing: evidence from product markets. *Available at SSRN 971170*.
- CANARELLA, G. & GASPARYAN, A. 2008. New insights into executive compensation and firm performance: Evidence from a panel of “new economy” firms, 1996 - 2002. *Managerial Finance*, 34, 537-554.
- CANARELLA, G. & NOURAYI, M. M. 2008. Executive compensation and firm performance: adjustment dynamics, non - linearity and asymmetry. *Managerial and Decision Economics*, 29, 293-315.
- CAPALBO, F. & PALUMBO, R. 2012. The imperfect match of public accountability of state-owned enterprises and private-sector-type financial reporting: The case of Italy.
- CHADHA, S. & SHARMA, A. K. 2015. Capital Structure and Firm Performance: Empirical Evidence from India. *Vision: The Journal of Business Perspective*, 19, 295-302.
- CHANG, F.-M., WANG, Y., LEE, N. R. & LA, D. T. 2014. Capital Structure Decisions and Firm Performance of Vietnamese Soes. *Asian Economic and Financial Review*, 4, 1545.
- CHANG, X. & DASGUPTA, S. 2009. Target Behavior and Financing: How Conclusive Is the Evidence? 64, 1767-1796.
- CHEN, J. & STRANGE, R. 2005. The determinants of capital structure: Evidence from Chinese listed companies. *Economic Change and Restructuring*, 38, 11-35.
- CHEN, L.-J. & CHEN, S.-Y. 2011. How the Pecking Order Theory Explain Capital Structure. *Journal of International Management Studies*, 6, 1-9.
- CHEN, S. 2013. How do leverage ratios affect bank share performance during financial crises: The Japanese experience of the late 1990s. *Journal of The Japanese and International Economies*, 30, 1-18.

- CHENG, H. 2015. *Determinants of capital structure in Asian firms: new evidence on the role of firm level factors, industry characteristics, and institutions*. School of Management.
- CHENHALL, R. H. 1997. Reliance on manufacturing performance measures, total quality management and organizational performance. *Management Accounting Research*, 8, 187-206.
- CHETENI, P. & KHAMFULA, Y. 2018. State owned enterprises In South Africa : A Pinocchio paradox. *Africa Growth Agenda*, 15, 4-7.
- CHILENGA, A. 2016. *State owned enterprises: a policy analysis of South African Airways (SAA)*. Masters in Social Sciences (Policy and Development Studies) University of KwaZulu-Natal.
- CHIRINKO, R. S. & SINGHA, A. R. 2000. Testing static tradeoff against pecking order models of capital structure: a critical comment. *Journal of Financial Economics*, 58, 417-425.
- CONNELLY, B. L., CERTO, S. T., IRELAND, R. D. & REUTZEL, C. R. 2011. Signaling Theory: A Review and Assessment. *Journal of Management*, 37, 39-67.
- CONYON, M. J. & HE, L. 2012. CEO Compensation and Corporate Governance in China. *Corporate Governance: An International Review*, 20, 575-592.
- CORDELLA, T., ARICCIA, G. D. & MARQUEZ, R. 2016. Government guarantees, transparency, and bank risk-taking preliminary. International Monetary Fund.
- CORE, J. E., HOLTHAUSEN, R. W. & LARCKER, D. F. 1999. Corporate governance, chief executive officer compensation, and firm performance. *Journal of financial economics*, 51, 371-406.
- CORREIA, C., FLYNN, D., ULIANA, E. & WORMALD, M. 2015. *Financial management*, Cape Town, Juta.
- CRESWELL, J. W. 2013. *Research design: Qualitative, quantitative, and mixed methods approaches*, Sage publications.
- CROSS, R. 2010. *Capital structure and financing choices: an Australian study: a thesis submitted in partial fulfilment of the requirements for the degree of Master of Business Studies in Finance at Massey University*. Massey University.
- DANG, V. A., KIM, M. & SHIN, Y. 2012. *Testing the Dynamic Trade-off Theory of Capital Structure: An Empirical Analysis* [Online]. [Accessed].
- DANSO, A. 2014. *Dimensions of Capital Structure of Companies: Evidence from Sub-Saharan Africa*. University of York.
- DARROUGH, M. N. & STOUGHTON, N. M. 1986. Moral Hazard and Adverse Selection: The Question of Financial Structure. *The Journal of Finance*, 41, 501-513.
- DASILAS, A. & PAPASYRIOPOULOS, N. 2015. Corporate governance, credit ratings and the capital structure of Greek SME and large listed firms. *Small Business Economics*, 45, 215-244.
- DAVIES, T. 2018. Chief executives' pay is no small issue. In: GUARDIAN, M. (ed.).
- DAWAR, V. 2014. Agency theory, capital structure and firm performance: some Indian evidence. *Managerial Finance*, 40, 1190-1206.
- DE ANDRES, P., AZOFRA, V. & LOPEZ, F. 2005. Corporate boards in OECD countries: Size, composition, functioning and effectiveness. *Corporate Governance: An International Review*, 13, 197-210.

- 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 & Finance*, 32, 1954-1969.
- DE JONG, A., VERBEEK, M. & VERWIJMEREN, P. 2010. The impact of financing surpluses and large financing deficits on tests of the pecking order theory. *Financial Management*, 39, 733-756.
- DE JONG, A., VERBEEK, M. & VERWIJMEREN, P. 2011. Firms' debt–equity decisions when the static tradeoff theory and the pecking order theory disagree. *Journal of Banking & Finance*, 35, 1303-1314.
- DE KOK, J. 2012. Do firm size and firm age affect employee remuneration in Dutch SMEs? : EIM Business and Policy Research.
- DE VRIES, A. 2010. The effect of firm characteristics and economic factors on capital structures: a South African study.
- DE WET, J. V. 2006. Determining the optimal capital structure: a practical contemporary approach. *Meditari Accountancy Research*, 14, 1-16.
- DEANGELO, H. & MASULIS, R. W. 1980. Optimal capital structure under corporate and personal taxation. *Journal of financial economics*, 8, 3-29.
- DEESOMSAK, R., PAUDYAL, K. & PESCIOTTO, G. 2004. The determinants of capital structure: evidence from the Asia Pacific region. *Journal of multinational financial management*, 14, 387-405.
- DEPARTMENT OF NATIONAL TREASURY 2016. Debt management report. *In: TREASURY, N. (ed.)*. Pretoria.
- DEPARTMENT OF PUBLIC ENTERPRISES 2007. State owned enterprises remuneration guidelines. *In: DEPARTMENT OF PUBLIC ENTERPRISES (ed.)*. Pretoria.
- DEPARTMENT OF PUBLIC ENTERPRISES 2018. Annual performance plan 2018/19. *In: ENTERPRISES, D. O. P. (ed.)*. Pretoria.
- DONALDSON, G. 1961. *Corporate debt capacity*.
- DONALDSON, L. 1990. The ethereal hand: Organizational economics and management theory. *Academy of management Review*, 15, 369-381.
- DPE 2015. Department of Public Enterprises Strategic Plan 2015-2019.
- DROBETZ, W., PENSA, P. & WANZENRIED, G. 2007. Firm characteristics, economic conditions and capital structure adjustments.
- DUBE, T. 2009. *An analysis of effects of ownership on capital structure and corporate performance of South African firms*. University of Pretoria.
- DUDLEY, E. 2007. Testing models of dynamic trade off theory.
- ECONOMISTS 2016. Government guarantees to SOEs and Agencies.
- EISENHARDT, K. M. 1989. Agency theory: An assessment and review. *Academy of management review*, 14, 57-74.
- EL-SAYED EBAID, I. 2009. The impact of capital-structure choice on firm performance: empirical evidence from Egypt. *The Journal of Risk Finance*, 10, 477-487.
- EL-SAYED, N. & ELBARDAN, H. 2016. Executive Compensation, Corporate Governance and Corporate

- Performance: Evidence from the UK. *Journal of Organisational Studies and Innovation*, 3, 31-49.
- ELOMO, P. N. 2014. *Determinants of capital structure of start-up firms in South Africa*. UNIVERSITY OF THE WITWATERSRAND.
- FAMA, E. F. & FRENCH, K. R. 2002. Testing trade-off and pecking order predictions about dividends and debt. *The review of financial studies*, 15, 1-33.
- FAMA, E. F. & FRENCH, K. R. 2005. Financing decisions: who issues stock? *Journal of financial economics*, 76, 549-582.
- FERRARINI, B., HINOJALES, M. & SCARAMOZZINO, P. 2017. Leverage and Capital Structure Determinants of Chinese Listed Companies.
- FERREIRA, D. 1993. The performance of public enterprises in South Africa, Zambia and Zimbabwe during the last two decades.
- FIRER, C., ROSS, S. A., WESTERFIELD, R. W. & JORDAN, B. D. 2012. *Fundamentals of corporate finance*, Maidenhead, Mc Graw Hill.
- FLANNERY, M. J. & HANKINS, K. W. 2007. A theory of capital structure adjustment speed. *Unpublished Manuscript, University of Florida*.
- FLANNERY, M. J. & RANGAN, K. P. 2006. Partial adjustment toward target capital structures. *Journal of Financial Economics*, 79, 469-506.
- FOSU, S. 2013a. Banking competition in Africa: Subregional comparative studies. *Emerging Markets Review*, 15, 233.
- FOSU, S. 2013b. Capital structure, product market competition and firm performance: Evidence from South Africa. *Quarterly Review of Economics and Finance*, 53, 140-151.
- FOURIE, D. 2001. The restructuring of state-owned enterprises: South African initiatives. *Asian Journal of Public Administration*, 23, 205-216.
- FRANK, M. Z. & GOYAL, V. K. 2003. Testing the pecking order theory of capital structure. *Journal of Financial Economics*, 67, 217-248.
- FRANK, M. Z. & GOYAL, V. K. 2004. The effect of market conditions on capital structure adjustment. *Finance Research Letters*, 1, 47-55.
- FRANK, M. Z. & GOYAL, V. K. 2007. Trade-off and pecking order theories of debt. *Handbook of empirical corporate finance*, 2, 135-202.
- FRANK, M. Z. & GOYAL, V. K. 2008. Trade-off and pecking order theories of debt. *Handbook of empirical corporate finance*. Elsevier.
- FRANK, M. Z. & GOYAL, V. K. 2009. Capital Structure Decisions: Which Factors Are Reliably Important? *Financial Management*, 38, 1-37.
- GAO, R. 2016. An Empirical Study on the Influence of Non-Debt Tax Shield on the Choice of Corporate Debt Levels---Based On the Tax Preference Policy. *International Journal of Business and Social Science*, 7, 201-212.
- GARCIA-TABUENCA, A. & CRESPO-ESPERT, J. L. 2010. Credit guarantees and SME efficiency. *Small Business Economics*, 35, 113-128.

- 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, 51-69.
- GHOSH, A. & PATERSON, W. 2011. Capital Structure and Executive Compensation. *The International Business and Economics Research Journal*, 1, 43-48.
- GITMAN, L. J. & ZUTTER, C. J. 2014. *Principles of managerial finance*, Pearson Education.
- GUILDING, C., WARNKEN, J., ARDILL, A. & FREDLINE, L. 2005. An agency theory perspective on the owner/manager relationship in tourism-based condominiums. *Tourism Management*, 26, 409-420.
- GUNASEKHAR, S. & DINESH, K. G. S. The impact of corporate governance and firm performance on chief executive officer's compensation: Evidence from central state owned enterprises in India. International Conference on Data Management, Analytics and Innovation, 2017 2017 India. IEEE, 87-92.
- GUNGORAYDINOGLU, A. & ÖZTEKIN, Ö. 2011. Firm-and country-level determinants of corporate leverage: Some new international evidence. *Journal of Corporate Finance*, 17, 1457-1474.
- GWATIDZO, T., NTULI, M. & MLILO, M. 2016. Capital structure determinants in South Africa: A quantile regression approach. *Journal of Economic and Financial Sciences*, 9, 275-290.
- HADEN, A. 2017. Moody's downgrades South Africa's credit rating one notch. *The South African*.
- HAGEL, J., BROWN, J. S. & DAVISON, L. 2010. The best way to measure company performance. *Harvard Business Review*, 4.
- HAILEMARIAM, S. 2001. *Corporate value creation, governance and privatisation: restructuring and managing enterprises in transition*. University of Groningen.
- HALKOS, G. 2002. State owned enterprises, privatization and the public interest: evidence of SOE performance in the Greek manufacturing.
- HARRIS, M. & RAVIV, A. 1991. The Theory of Capital Structure. *The Journal of Finance*, 46, 297-355.
- HASTORI, H., SIREGAR, H., SEMBEL, R. & MAULANA, T. N. A. 2015. Agency costs, corporate governance and ownership concentration: The case of agro-industrial companies in Indonesia. *Asian Social Science*, 11, 311.
- HEALD, D. & HODGES, R. 2018. Accounting for government guarantees: perspectives on fiscal transparency from four modes of accounting. *Accounting and Business Research*, 48, 782-804.
- HEYMAN, F. 2007. Firm size or firm age? The effect on wages using matched employer-employee data. *Labour*, 21, 237-263.
- HOVAKIMIAN, A., HOVAKIMIAN, G. & TEHRANIAN, H. 2004. Determinants of target capital structure: The case of dual debt and equity issues. *Journal of Financial Economics*, 71, 517-540.
- HOVAKIMIAN, A. & LI, G. 2011. In search of conclusive evidence: How to test for adjustment to target capital structure. *Journal of Corporate Finance*, 17, 33-44.
- HOVAKIMIAN, A., OPLER, T. & TITMAN, S. 2001. The Debt-Equity Choice. *Journal of Financial and Quantitative Analysis*, 36, 1-24.
- HUANG, G. & SONG, F. M. 2006. The determinants of capital structure: Evidence from China. *China Economic Review*, 17, 14-36.

- HUANG, R. & RITTER, J. R. 2009. Testing theories of capital structure and estimating the speed of adjustment. *Journal of Financial and Quantitative analysis*, 44, 237-271.
- HUANG, X., KABIR, R. & ZHANG, L. 2018. Government ownership and the capital structure of firms: Analysis of an institutional context from China. *China journal of accounting research*, 11, 171-185.
- IAVORSKYI, M. 2013. The impact of capital structure on firm performance: Evidence from Ukraine. *Kyiv School of Economics*, 36.
- INTERNATIONAL MONETARY FUND 2014. Government finance statistics manual 2014. Washington, D.C.
- ISLAM, S. 2012. Manufacturing firms' cash holding determinants: Evidence from Bangladesh. *International Journal of Business and Management*, 7, 172.
- JARDINE, A. 2014. *Financing practices on the JSE-an empirical test of the trade-off and pecking order theories of capital structure*. M.Com (Finance), University of The Witwatersrand.
- JENSEN, M. C. 1986. Agency costs of free cash flow, corporate finance, and takeovers. *The American economic review*, 76, 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.
- JEPSON, C. T., SMITH, W. W. & STONE, R. S. 2009. CEO compensation and firm performance: Is there any relationship. *Journal of Business and Economics Research*, 7, 81-93.
- JIN, Z., SHANG, Y. & XU, J. 2018. The Impact of Government Subsidies on Private R&D and Firm Performance: Does Ownership Matter in China's Manufacturing Industry? *Sustainability*, 10, 2205.
- JÖEVEER, K. 2013. Firm, country and macroeconomic determinants of capital structure: Evidence from transition economies. *Journal of Comparative Economics*, 41, 294-308.
- JOHANSSON, E. & LUNDBLAD, J. Y. 2011. Financing Growth: Pecking Order and Determinants of Capital Structure.
- KANYANE, M. 2013. Landscape of the true extent of state-owned entities. Human Sciences Research Council.
- KANYANE, M. H. & SAUSI, K. 2015. Reviewing state-owned entities' governance landscape in South Africa. *African Journal of Business Ethics*, 9.
- KARANJA, M. G. 2014. The Effect of Capital Structure on Financial Performance of Small and Medium Enterprise in Dairy sector in Kiambu County. *University of Nairobi*.
- KAYHAN, A. & TITMAN, S. 2007. Firms' histories and their capital structures. *Journal of Financial Economics*, 83, 1-32.
- KAZAN, E. 2016. *The impact of CEO compensation on firm performance in Scandinavia*. University of Twente.
- KEMPER, K. J. 2011. *Do credit ratings really affect capital structure?* Dissertation/Thesis, ProQuest Dissertations Publishing.
- KHANNA, V. 2016. Determinants of CEO Compensation. *International Journal of Management Excellence*, 6, 679-683.
- KHATOON, T. & HOSSAIN, M. 2017. Capital Structure and Firm's Financial Performance: Evidence from Listed

- Cement Companies of Dhaka Stock Exchange of Bangladesh. *International Journal of Business and Statistical Analysis*, 4, 29-37.
- KIKERI, S. 2018. *Corporate Governance in South African State-Owned Enterprises* [Online]. World Bank. [Accessed].
- KIM, J. & CHUNG, H. 2007. Empirical study on the performance of state-owned enterprises and the privatizing pressure: The case of Korea. *Graduate School of Public Administration, Seoul National University*.
- KISGEN, D. J. 2006. Credit Ratings and Capital Structure. *The Journal of Finance*, 61, 1035-1072.
- KOBUS, M. 2012. *First steps in research*, Pretoria, Van Schaik.
- KRAUS, A. & LITZENBERGER, R. H. 1973. A STATE-PREFERENCE MODEL OF OPTIMAL FINANCIAL LEVERAGE. *The Journal of Finance*, 28, 911-922.
- KYALO, B. M. & LISHENGA, J. L. 2017. Relationship between executive compensation and financial performance of commercial state owned enterprises in the energy sector in Kenya. *African Development Finance Journal (ADFJ)*, 1.
- KYTHREOTIS, A., NOURI, B. A. & SOLTANI, M. 2017. Determinants of Capital Structure and Speed of Adjustment: Evidence from Iran and Australia. *International Journal of Business Administration*, 9, 88.
- LEARY, M. T. & ROBERTS, M. R. 2005. Do firms rebalance their capital structures? *The journal of finance*, 60, 2575-2619.
- LEARY, M. T. & ROBERTS, M. R. 2010. The pecking order, debt capacity, and information asymmetry. *Journal of financial economics*, 95, 332-355.
- 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, 1575-1608.
- LEMMON, M. L. & ZENDER, J. F. 2010. Debt Capacity and Tests of Capital Structure Theories. *Journal of Financial and Quantitative Analysis*, 45, 1161-1187.
- LEW, S. H. 2013. An investigation of the most appropriate capital structure theory and leverage level determinants. *SSRN*.
- LI, S. & XIA, J. 2008. The roles and performance of state firms and non-state firms in China's economic transition. *World Development*, 36, 39-54.
- LILLING, M. S. 2006. The link between CEO compensation and firm performance: Does simultaneity matter? *Atlantic Economic Journal*, 34, 101-114.
- MAHAKUD, J. & MUKHERJEE, S. Determinants of adjustment speed to target capital structure: evidence from Indian manufacturing firms. *International Conference on Economics and Finance Research*, 2011. 67-71.
- MAJANGAZA, S. 2015. SAA CEO settles for R2.7m pay-out. *In: LIVE, D. (ed.)*.
- MALOA, F. & BUSSIN, M. 2016. Determinants of executive compensation in South African state-owned enterprises. *South African Journal of Labour Relations*, 40, 8-24.
- MARGARITIS, D. & PSILLAKI, M. 2010. Capital structure, equity ownership and firm performance. *Journal of banking & finance*, 34, 621-632.

- MARREZ, H. 2015. The role of State-Owned Enterprises in Romania, ECFIN Country Focus.
- MAT NAWI, H. 2015. *Determinants of capital structure in small and medium sized enterprises in Malaysia*. Brunel University London.
- MBO, M. 2017. *Drivers of organisational performance: a state owned enterprise perspective*. Stellenbosch: Stellenbosch University.
- MBO, M. & ADJASI, C. 2017. Drivers of organizational performance in state owned enterprises. *International Journal of Productivity and Performance Management*, 66, 405-423.
- MCKENZIE, J. & WALLS, W. D. 2013. Australian films at the Australian box office: performance, distribution, and subsidies. *Journal of Cultural Economics*, 37, 247-269.
- MCKNIGHT, P. & TOMKINS, C. 2004. The implications of firm and individual characteristics on CEO pay. *European Management Journal*, 22, 27-40.
- MEKWE, L. 2015. *A critical review of corporate governance reforms relating to South African state-owned enterprises*. University of the Western Cape.
- MENG, Q. 2012. *Delayed Credit Rating Changes, Firm Financing and Firm Performance*. Durham University.
- MENGISTAE, T. & XU, L. C. 2004. Agency Theory and Executive Compensation: The Case of Chinese State - Owned Enterprises. *Journal of Labor Economics*, 22, 615-637.
- MIGLO, A. 2017. Timing of earnings and capital structure. *North American Journal of Economics and Finance*, The, 40, 1-15.
- MIRZA, S. S. & XIANZHI, Z. 2016. ADJUSTMENT BEHAVIOUR OF LEVERAGE IN CHINESE FIRMS: AN EMPIRICAL ANALYSIS OF OVERALL FIRMS, STATE-OWNED AND NON STATE-OWNED ENTERPRISES. *Asian Academy of Management Journal of Accounting & Finance*, 12.
- MODIGLIANI, F. & MILLER, M. H. 1958. The cost of capital, corporation finance and the theory of investment. *The American economic review*, 48, 261-297.
- MODIGLIANI, F. & MILLER, M. H. 1963. Corporate income taxes and the cost of capital: a correction. *The American economic review*, 53, 433-443.
- MOETI, K. 2013. The role of government in ensuring an affordable supply of electricity in South Africa: challenges and future prospects. *Journal of Public Administration*, 48, 334-341.
- MORTON, B. & BLAIR, C. 2016. *Private versus public pay practices* [Online]. 21st Century. Available: <https://www.21century.co.za/private-vs-public-pay-practices/> [Accessed].
- MOUTON, M. & SMITH, N. 2016. Company determinants of capital structure on the JSE Ltd and the influence of the 2008 financial crisis. *Journal of Economic and Financial Sciences*, 9, 789-806.
- MPHAPHULI, V. 2017. South Africa's Credit Rating History – 1994 to 2017. Business Brief.
- MTSHALI, M. S. 2016. *A policy analysis of state-owned enterprises: the case study of South African national road agency limited (SANRAL)*.
- MUKHERJEE, T. & WANG, W. 2013. Capital structure deviation and speed of adjustment. *Financial Review*, 48, 597-615.

- MUTIZE, M. 2018. Why listing South Africa's state-owned enterprises is not the solution UCT Graduate School of Business: University of Cape Town.
- MYERS, S. C. 1977. Determinants of corporate borrowing. *Journal of financial economics*, 5, 147-175.
- MYERS, S. C. 1984. The capital structure puzzle. *The journal of finance*, 39, 574-592.
- MYERS, S. C. 2001. Capital structure. *Journal of Economic perspectives*, 15, 81-102.
- 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.
- NAGEL, B. & SAUVAGERD, M. 2013. Capital structure determinants and dynamics: A comparison of China and the United States. Department of Finance Stockholm School of Economics.
- NATIONAL PLANNING COMMISSION 2010. National Development Plan 2030 Our Future-make it work. *In: PRESIDENCY, T. (ed.)*. Pretoria.
- NATIONAL TREASURY 2005. Governance oversight role over state-owned entities *In: TREASURY, N. (ed.)*. Pretoria.
- NATIONAL TREASURY 2010. Budget Vote Speech for National Treasury by Pravin Gordhan, Minister of Finance. *In: NATIONAL TREASURY (ed.)*. Pretoria.
- NATIONAL TREASURY 2015a. Budget review.
- NATIONAL TREASURY 2015b. Public Finance Management Act No. 1 Of 1999,. *In: TREASURY, N. (ed.)*. Pretoria.
- NATIONAL TREASURY 2015c. Public institutions listed in PFMA schedule 1, 2, 3a, 3b, 3c and 3d as at 30 April 2015. *In: TREASURY, N. (ed.)*. Pretoria.
- NATIONAL TREASURY 2017a. 2017 Budget speech. *In: TREASURY, N. (ed.)*. Pretoria.
- NATIONAL TREASURY 2017b. Budget review *In: TREASURY, N. (ed.)*. Pretoria.
- NATIONAL TREASURY 2018a. 2018 Budget Speech. Pretoria.
- NATIONAL TREASURY 2018b. Budget Review *In: TREASURY, N. (ed.)*. Pretoria.
- NEWS24WIRE. 2015. Broadband Infracore begs for R1 billion govt bailout. *Business Tech*.
- NGWENYA, S. & KHUMALO, M. 2012. CEO compensation and performance of state owned enterprises in South Africa. *Corporate Ownership and Control*, 10.
- NYAMITA, M., MICAH ODHIAMBO, N., NIRMALA, D. & HARI LALL, G. 2015. How Debt Financing Decisions Relate With Financial Performance Of State-Owned Corporations In Kenya. *The international business & economics research journal*, 14, 701.
- NYAMITA, M. O. 2014. *Factors influencing debt financing and its effects on financial performance of state corporations in Kenya*. Doctorate degree in Technology, Durban University of Technology.
- NYAMITA, M. O., GARBHARRAN, H. L. & DORASAMY, N. 2014a. Factors influencing debt financing decisions of corporations – theoretical and empirical literature review.

- NYAMITA, M. O., GARBHARRAN, H. L. & DORASAMY, N. 2014b. Factors influencing debt financing within State-owned corporations in Kenya.
- OECD 2015. OECD guidelines on corporate governance of state-owned enterprises. *In: DEVELOPMENT, O. F. E. C.-O. A. (ed.) 2015 ed.*
- OECD 2018. Professionalising Boards of Directors of State-Owned Enterprises: Stocktaking of National Practices.
- OMARJEE, L. 2018. SOEs must reduce their reliance on government guarantees News 24.
- OTIENO, D. O. A. 2012. *The relationship between financial performance and executive remuneration in South African State Owned Enterprises: An agency theory perspective.* University of Johannesburg.
- OZKAN, N. 2007. Do corporate governance mechanisms influence CEO compensation? An empirical investigation of UK companies. *Journal of Multinational Financial Management, 17, 349-364.*
- OZKAN, N. 2011. CEO compensation and firm performance: An empirical investigation of UK panel data. *European Financial Management, 17, 260-285.*
- PALCIC, D. & REEVES, E. 2013. State-owned enterprise policy and the loss of economic sovereignty: the case of Ireland. *Public Organization Review, 13, 117-130.*
- PANDA, B. & LEEPSA, N. 2017. Agency theory: Review of Theory and Evidence on Problems and Perspectives. *Indian Journal of Corporate Governance, 10, 74-95.*
- PENG, M. W., BRUTON, G. D., STAN, C. V. & HUANG, Y. 2016. Theories of the (state-owned) firm. *Asia Pacific Journal of Management, 33, 293-317.*
- PERGELOVA, A. & ANGULO-RUIZ, F. 2014. The impact of government financial support on the performance of new firms: the role of competitive advantage as an intermediate outcome. *Entrepreneurship & Regional Development, 26, 663-705.*
- PERROW, C. 1986. Economic Theories of Organization. *Theory and Society, 15, 11-45.*
- PEYPER, L. 2016. No raise on top of Eskom boss Brian Molefe's R9.4m salary. Fin24.
- PRESIDENTIAL REVIEW COMMITTEE 2012. Presidential review committee on state-owned entities. *Executive summary of the final report.* South Africa.
- PUBLIC SECTOR RESEARCH CENTRE 2015. State-owned enterprises: Catalysts for public value creation? : PWC.
- PWC 2018. Executive directors practices and remuneration trends report. 10th edition ed.
- QIAN, Y., TIAN, Y. & WIRJANTO, T. S. 2009. Do Chinese publicly listed companies adjust their capital structure toward a target level? *China Economic Review, 20, 662-676.*
- QOBO, M. 2018. Governance of state-owned enterprises: reforming the unreformable? *Daily Maverick.*
- RABILALL, T. 2017. *The CIPC as the regulator of state owned companies "Boards of SOCS"* [Online]. Companies and Intellectual Property Commission. Available: http://www.cipc.co.za/files/6915/2688/9205/PPT_Boards_of_SOCs_Publication_11_August_2017.pdf [Accessed].
- RAITHATHA, M. & KOMERA, S. 2016. Executive compensation and firm performance: Evidence from Indian firms. *IIMB Management Review, 28, 160-169.*

- RAJAN, R. G. & ZINGALES, L. 1995. What do we know about capital structure? Some evidence from international data. *The Journal of Finance*, 50, 1421.
- RAMJEE, A. & GWATIDZO, T. 2012. Dynamics in capital structure determinants in South Africa. *Meditari Accountancy Research*, 20, 52.
- RATINGS, S. & GLOBAL, P. 2016. S&P Global Ratings Definitions. URL: [https://www. standardandpoors. com/en_US/web/guest/article/-/view/sourceId/504352](https://www.standardandpoors.com/en_US/web/guest/article/-/view/sourceId/504352), Accessed on, 15.
- RITCHKEN, E. 1997. The RDP, governance, and rural development. *FitzGerald, P. McLennan, A. and Munslow, B.(Eds) Managing Sustainable Development in South Africa. 2nd Ed. Cape Town: Oxford University Press Southern Africa*, 192-218.
- ROSS, S. A. 1977. The Determination of Financial Structure: The Incentive-Signalling Approach. *The Bell Journal of Economics*, 8, 23-40.
- RYAN, B. 2007. *Corporate finance and valuation*, Cengage Learning EMEA.
- SADIKI, M. 2015. *Financial assistance to state-owned enterprises by the state in South Africa: A case study of Eskom*.
- SAHAKYAN, N. & STIEGERT, K. W. 2012. Corruption and Firm Performance. *Eastern European economics*, 50, 5-27.
- SAIFADIN, R. 2015. The impact of capital structure on firm performance: evidence from Iraq Bahcesehir University.
- SAMOUR, S. & HASSAN, L. 2016. *Capital Structure and Firm Performance: Did the Financial Crisis Matter?: A cross-industry study* [Online]. [Accessed].
- SAUNDERS, M., LEWIS, P. & THORNHILL, A. 2012. *Research Methods for Business Students*, 6th edn, sn. SI.
- SEKARAN, U. A. B., R 2015. *Research methods for business: A skill building approach*, United Kingdom, Wiley.
- SHAH, A. & KHAN, S. 2007. Determinants of capital structure: Evidence from Pakistani panel data.
- SHAHEEN, R. & JAVID, A. Y. 2014. Effect of Credit Rating on Firm Performance and Stock Return: Evidence form KSE Listed Firms. *Pakistan Institute of Development Economics*.
- SHAW, P. A. 2011. *CEO pay-performance sensitivity in South African financial services companies*. University of Pretoria.
- SHYAM-SUNDER, L. & MYERS, S. C. 1999. Testing static tradeoff against pecking order models of capital structure. *Journal of financial economics*, 51, 219-244.
- SIA, L. L., ONG, G. W., TAN, E. K. K., TEO, Y. L. & WONG, A. Y. 2016. *The Determinants of Capital Structure of Government Linked Companies in Malaysia*. UTAR.
- SIBINDI, A. B. 2017. *Determinants of capital structure: an empirical study of South African financial firms*.
- SIKHAKHANE, Z. 2018. SOEs need to tackle leadership, capital structure and governance BizNis Africa.
- SIXOLILE, T. 2018. *Governance in state-owned enterprises – How they are held accountable* [Online]. Schoeman Law Inc. Available: <https://www.polity.org.za/article/governance-in-state-owned-enterprises-how-they-are-held-accountable-2018-09-06> [Accessed].
- SLIDEPLAYER 2016. Capital Structure: Basic concepts - Chapter 15.

- SOEKARNO, S., KITRI, M. L. & UTOMO, S. 2016. Capital structure determinants and the speed of adjustment towards capital structure target: evidence from Indonesian state-owned enterprises. *International Journal of Monetary Economics and Finance*, 9, 388-400.
- SOTO, M. 2009. System GMM estimation with a small sample.
- SOUTH AFRICAN GOVERNMENT NEWS AGENCY 2019. Cabinet mulls government guarantees proposal. *In: MOODLEY, R. (ed.)*.
- SOUTH AFRICAN RESERVE BANK 2018. Financial Stability Review. *In: BANK, S. A. R. (ed.) First Edition ed.* Pretoria.
- SPENCE, A. M. 1974. *Market signaling: Informational transfer in hiring and related screening processes*, Harvard Univ Pr.
- STANDARD & POOR'S RATINGS SERVICES 2001. *Standard & Poor's Corporate Ratings Criteria*, New York, McGraw-Hill.
- STATA. 2019. *Panel-data unit-root tests* [Online]. STATA. Available: <https://www.stata.com/features/overview/panel-data-unit-root-tests/> [Accessed].
- STATISTICS SOUTH AFRICA. 2018. *The economy shrinks by 0,7% in Q2: 2018* [Online]. STATS SA. Available: <http://www.statssa.gov.za/?p=11507> [Accessed].
- SUN, W.-Z. & GAN, S.-D. 2014. The impact of government subsidy on listed companies' R&D investment and performance in IT industry. *Econ. Probl*, 35, 83-88.
- SYED MUHAMMAD JAVED, I., MUNEEB, S., JAHANZEB, A. & SAIF UR, R. 2012. A Critical Review of Capital Structure Theories. *Information Management and Business Review*, 4, 553.
- TADDESE LEMMA, T. & NEGASH, M. 2013. Institutional, macroeconomic and firm-specific determinants of capital structure: The African evidence. *Management Research Review*, 36, 1081-1122.
- TAMIRAT, A. S., BARRERA, A. T. & PENNING, J. M. 2017. Dynamic Capital Structure: Dynamics, Determinants and Speed of Adjustment.
- THOMAS, A. 2012. Governance at South African state-owned enterprises: what do annual reports and the print media tell us? *Social Responsibility Journal*, 8, 448-470.
- THOMAS, A. E. 2013. Capital Structure and Financial Performance of Indian Cement Industry. *BVIMR Management Edge*, 6.
- TING, I. W. K. & LEAN, H. H. 2011. CAPITAL STRUCTURE OF GOVERNMENT-LINKED COMPANIES IN MALAYSIA. *Asian Academy of Management Journal of Accounting & Finance*, 7.
- TITMAN, S. 1984. The effect of capital structure on a firm's liquidation decision. *Journal of financial economics*, 13, 137-151.
- TITMAN, S. & WESSELS, R. 1988. The determinants of capital structure choice. *The Journal of finance*, 43, 1-19.
- TRANSPARENCY INTERNATIONAL 2018. South Africa's corruption index. Trading Economics.
- TROCHIM, W. M. 2006. *The Research Methods Knowledge Base* [Online]. Available: <http://www.socialresearchmethods.net/kb/> [Accessed].

- TUDOSE, M. B. 2012. CORPORATE FINANCE THEORIES. CHALLENGES AND TRAJECTORIES. *Management & Marketing*, 7, 277.
- TUHAIKA JR, J. A. 2007. State-owned enterprises and the principal-agent problem: A case study of the Solomon Islands water authority. *Pacific Economic Bulletin*, 22, 131-9.
- TURNER, M., HULME, D. & MCCOURT, W. 2015. *Governance, management and development: Making the state work*, Macmillan International Higher Education.
- UWUIGBE, U., UWUIGBE, O. R., IGBINOBA, E., OLUGBENGA, J. & ADEGBOLA, O. 2016. The effect of financial performance and board size on corporate executive compensation: a study of selected listed banks in Nigeria. *The Journal of Internet Banking and Commerce*, 21.
- VAN BERLEKOM, J., BOJMAR, E. & LINNARD, J. 2012. The impact of credit ratings on firms' capital structure decisions—A study on the European market.
- VAN DEN EIJNDEN, P. P. J. P. 2010. *The effect of board of directors characteristics on pay for performance compensation*. Tilburg University.
- VAN, H. V., TRAN, T. Q., VAN NGUYEN, T. & STEVEN, L. 2017. Corruption and Firm Financial Performance: New Evidence from Vietnam.
- VANEYLEN, M. 2017. *The relationship between ceo compensation and company performance and risk*. Master of Science in Business Economics, University of Ghent.
- VATAVU, S. 2013. Current challenges in capital structure decisions: Evidence from Romanian companies operating in different sectors. *Managerial Challenges of the Contemporary Society. Proceedings*, 5, 181.
- VĂTAVU, S. 2012. Trade-off versus pecking order theory in listed companies around the world. *OF THE UNIVERSITY OF PETROȘANI~ ECONOMICS~*, 285.
- VERWIJMEREN, P. 2008. *Empirical Essays on Debt, Equity, and Convertible Securities*.
- VICOL, M. 2010. Capital structure: testing pecking order theory and static trade-off theory in the current crisis.
- VOS, E. & FORLONG, C. 1996. The agency advantage of debt over the lifecycle of the firm. *The Journal of Entrepreneurial Finance*, 5, 193.
- VU VAN, H. & BARTOLACCI, F. 2017. Government support and firm financial performance: New evidence from a transitional economy.
- WENZEL, P. 2007. Public-sector transformation in South Africa: getting the basics right. *Progress in Development Studies*, 7, 47-64.
- WESSELS, D. 1999. South Africa's Reconstruction and Development Programme: "A Better Life for All". *Journal of Social Sciences*, 3, 235-243.
- WHITE PAPER 1987. White Paper on Privatisation and Deregulation in the Republic of South Africa. Government Printer Pretoria.
- WIAGUSTINI, N. L. P., RAMANTHA, I. W., SEDANA, I. B. P. & RAHYUDA, H. 2017. Indonesia's Capital Structure: Pecking Order Theory or Trade-Off Theory. *International Journal of Applied Business and Economic Research*, 15, 119-132.
- WITS. 2010. *Rationale for partial equilibrium modeling* [Online]. The World Bank. Available:

<https://wits.worldbank.org/wits/wits/witshelp/Content/SMART/Rationale%20for%20Partial%20Equilibrium.htm> [Accessed].

- WOOLDRIDGE, J. M. 2010. *Econometric analysis of cross section and panel data*, MIT press.
- WORLD BANK GROUP 2014. Corporate Governance of State-Owned Enterprises: A Toolkit. *Washington DC, World Bank*.
- XIANG, D. & WORTHINGTON, A. C. 2017. The impact of government financial assistance on the performance and financing of Australian SMEs. *ARJ Accounting Research Journal*, 30, 447-464.
- YAZDANFAR, D. & ÖHMAN, P. 2015. Debt financing and firm performance: an empirical study based on Swedish data. *The Journal of Risk Finance*, 16, 102-118.
- YINUSA, O. 2015. Dynamic Analysis of the impact of Capital Structure on Firm Performance in Nigeria.
- YUAN, K. 2005. Asymmetric price movements and borrowing constraints: A rational expectations equilibrium model of crises, contagion, and confusion. *The Journal of Finance*, 60, 379-411.
- YULIANTO, A., SUSENO, D. A. & WIDIYANTO, W. 2016. Testing Pecking Order Theory and Trade off Theory Models in Public Companies in Indonesia. *International Journal of Economic Perspectives*, 10, 21-28.
- ZHOU, T. & XIE, J. 2016. Ultimate Ownership and Adjustment Speed Toward Target Capital Structures: Evidence from China. *Emerging Markets Finance and Trade*, 52, 1956-1965.
- ZVAVAHERA, P. & NDODA, G. R. 2014. Corporate governance and ethical behaviour: The case of the Zimbabwe Broadcasting Corporation. *Journal of Academic and Business Ethics*, 9, 1.
- ZYL, G. V. 2018. Massive SOE debt now threatens South Africa's financial stability – SARB. *BizNews*.
- ZYL, G. V. 2019a. Eskom CEO wants government take on some of its massive debt. *BizNews*.
- ZYL, G. V. 2019b. SOE's state of play – grim reading from Public Enterprises. *BizNews*.

APPENDICES

APPENDIX 1

Table 0-1: Final sample of state-owned entities

	SAMPLE OF SOUTH AFRICAN STATE-OWNED ENTITY
1	AIR TRAFFIC & NAVIGATION SERVICES COMPANY LTD
2	AIRPORTS COMPANY SOUTH AFRICA SOC LTD
3	ALEKOR SOC LTD
4	AMATOLA WATER BOARD
5	ARMAMENTS CORPORATION OF SOUTH AFRICA SOC LTD
6	BLOEM WATER BOARD
7	BROADBAND INFRACO SOC (PTY) LIMITED
8	CEF SOC LTD
9	COUNCIL FOR MINERAL TECHNOLOGY (MINTEK)
10	COUNCIL FOR SCIENTIFIC & INDUSTRIAL RESEARCH
11	DBSA DEVELOPMENT FUND
12	DENEL SOC LTD
13	ESKOM HOLDINGS SOC LTD
14	INDEPENDENT DEVELOPMENT TRUST
15	INDUSTRIAL DEVELOPMENT CORPORATION OF SOUTH AFRICA SOC
16	LAND & AGRICULTURAL DEVELOPMENT BANK OF SA
17	ONDERSTEPOORT BIOLOGICAL PRODUCTS SOC LTD
18	PASSENGER RAIL AGENCY OF SOUTH AFRICA
19	PUBLIC INVESTMENT CORPORATION SOC LTD
20	RAND WATER
21	SEDIBENG WATER
22	SENTECH SOC LTD
23	SOUTH AFRICAN AIRWAYS (SOC) LTD

24	SOUTH AFRICAN BROADCASTING CORPORATION LTD
25	SOUTH AFRICAN BUREAU OF STANDARDS
26	SOUTH AFRICAN EXPRESS SOC LTD
27	SOUTH AFRICAN FORESTRY COMPANY SOC LTD
28	SOUTH AFRICAN NUCLEAR ENERGY CORPORATION SOC LTD (THE)
29	SOUTH AFRICAN POST OFFICE (SOC) LTD
30	TELKOM SA SOC LTD
31	TRANS-CALEDON TUNNEL AUTHORITY
32	TRANSNET SOC LTD
33	UMGENI WATER

Source: own contribution

Table 0-2: Schedule 2 - Major public entities

SCHEDULE 2	DEPARTMENT
1 Air Traffic and Navigation Service Company	Transport
2 Airport Company of South Africa	Transport
3 Alexkor	Public Enterprises
4 Armaments Corporation of South Africa	Defence
5. Broadband Infraco Limited	Communications
6 Central Energy Fund	Minerals and Energy
7 Denel	Public Enterprises
8 Development Bank of Southern Africa	National Treasury
9 Eskom Holding (Pty) Ltd	Public Enterprises
10 Industrial Development Trust	Public Works
11 Industrial Development Corporation of SA	Trade and Industry
12 Land and Agricultural Bank of South Africa	Agriculture
13 South African Broadcasting Corporation	Communications
14. South African Express (Proprietary) Limited	Transport
15 South African Forestry Company	Public Enterprises
16 South African Nuclear Energy Corporation	Minerals and Energy
17 South African Post Office Limited	Communications
18 South African Airways Limited	Transport
19 Telkom SA Limited	Communications
20 Trans-Caledon Tunnel Authority	Water Affairs and Forestry
21 Transnet Limited	Public Enterprises

Source: (National Treasury, 2005)

Table 0-3: Schedule 3B – National government business enterprises

SCHEDULE 3B	DEPARTMENT
1 Albany Coast Water Board	Water Affairs and Forestry
2 Amatola Water Board	Water Affairs and Forestry
3 Aventura	Public Enterprises
4 Bloem Water	Water Affairs and Forestry
5 Botshelo Water Board	Water Affairs and Forestry
6. Bushbuckridge Water Board	Water Affairs and Forestry
7 Council for Minerals Technology (MINTEK)	Minerals and Energy
8 Council for Scientific and Industrial Research (CSIR)	Trade and Industry
9 Export Credit Insurance Corporation of SA Limited (ECIC)	Trade and Industry
10 Inala Farms (Pty) Ltd	Land Affairs
11 Khula Enterprises	Trade and Industry
12 Lepelle Northern Water	Water Affairs and Forestry
13 Magalies Water	Water Affairs and Forestry
14 Mhlathuze Water	Water Affairs and Forestry
15 Ncera Farms (Pty) Ltd	Agriculture
16 Onderstepoort Biological Products	Agriculture
17 Overberg Water	Water Affairs and Forestry
18. Passenger Rail Agency of South Africa	Transport
19 Pelladrift Water Board	Water Affairs and Forestry
20. Public Investment Corporation Limited	Trade and Industry
21 Rand Water	Water Affairs and Forestry
22 SA Bureau of Standards – SABS	Trade and Industry
23 SASRIA	National Treasury
24 Sedibeng Water	Water Affairs and Forestry
25 Sentech	Communications

26 State Diamond	Trade and Industry
27.Umgeni Water Affairs and Forestry	Water Affairs and Forestry

Source: (National Treasury, 2005)

Table 0-4: Debt ratios of South African SOEs during the period 1995-2017

YEAR	TD	LTD	STD
1995	59%	37%	21%
1996	56%	35%	21%
1997	58%	35%	23%
1998	55%	32%	23%
1999	55%	32%	23%
2000	56%	32%	24%
2001	57%	28%	29%
2002	57%	31%	27%
2003	60%	33%	27%
2004	63%	34%	28%
2005	61%	32%	29%
2006	58%	32%	25%
2007	57%	28%	30%
2008	54%	27%	27%
2009	52%	27%	25%
2010	52%	25%	27%
2011	53%	27%	26%
2012	54%	27%	27%
2013	55%	27%	28%
2014	57%	28%	29%
2015	62%	30%	31%
2016	62%	31%	31%
2017	62%	33%	29%

(source: own contribution)

Table 0-5: Average ROE, ROA, ROI for period 1995-2017

YEARS	ROE	%CHANGE	ROA	% CHANGE	ROI	% CHANGE
1995	15%		1%		-1%	
1996	9%	-44%	5%	404%	4%	-533%
1997	-4%	-146%	2%	-53%	2%	-45%
1998	2%	-146%	2%	-17%	1%	-54%
1999	299%	16385%	-5%	-386%	-6%	-682%
2000	-27%	-109%	0%	-92%	-2%	-67%
2001	82%	-402%	-2%	271%	-2%	18%
2002	1225%	1391%	2%	-216%	14305%	-618294%
2003	20%	-98%	-1%	-141%	-1%	-100%
2004	13%	-31%	-1%	22%	-1%	26%
2005	2%	-85%	4%	-583%	3%	-339%
2006	9%	369%	2%	-48%	1%	-74%
2007	43%	365%	5%	112%	4%	435%
2008	18%	-59%	11%	120%	9%	121%
2009	10%	-41%	5%	-52%	5%	-45%
2010	75%	613%	2%	-65%	2%	-62%
2011	18%	-76%	1%	-32%	1%	-28%
2012	16%	-13%	-1%	-182%	-1%	-142%
2013	1%	-96%	-2%	79%	-1%	159%
2014	113%	17271%	1%	-146%	1%	-173%
2015	-9%	-108%	-1%	-258%	-1%	-200%
2016	9%	-198%	1%	-183%	1%	-202%
2017	-1%	-114%	-1%	-147%	0%	-109%

(source: own contribution)

Table 0-6: Average executive compensation for the period 1995-2017

YEAR	EXECUTIVE COMPENSATION (MEAN VALUES)
	R
1995	9,087,846
1996	2,032,571
1997	2,093,600
1998	3,019,412
1999	3,238,158
2000	3,705,263
2001	2,995,045
2002	3,870,200
2003	6,416,222
2004	6,977,846
2005	9,896,074
s2006	8,693,037
2007	8,293,138
2008	11,713,871
2009	11,369,030
2010	11,239,818
2011	10,988,333
2012	11,535,212
2013	13,381,455
2014	15,821,636
2015	16,749,091
2016	18,375,875
2017	19,799,548

(source: own contribution)

APPENDIX 2

ETHICAL CLEARANCE



26 November 2018

Mrs Ferina Marimuthu (200001774)
School of Accounting, Economics & Finance
Westville Campus

Dear Mrs Marimuthu,

Protocol reference number: HSS/2127/018D

Project title: Capital structure and financial performance of South African state-owned entities

Full Approval – No Risk / Exempt Application

In response to your application received on 19 November 2018, the Humanities & Social Sciences Research Ethics Committee has considered the abovementioned application and the protocol has been granted **FULL APPROVAL**.

Any alteration/s to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach and Methods must be reviewed and approved through the amendment/modification prior to its implementation. In case you have further queries, please quote the above reference number. **PLEASE NOTE:** Research data should be securely stored in the discipline/department for a period of 5 years.

The ethical clearance certificate is only valid for a period of 3 years from the date of issue. Thereafter Recertification must be applied for on an annual basis.

I take this opportunity of wishing you everything of the best with your study.

Yours faithfully

.....
Professor Shenuka Singh (Chair)

/ms

Cc Supervisor: Dr Farai Kwenda
Cc Academic Leader Research: Professor Josue Mbonigaba
cc School Administrator: Ms Seshni Naidoo

Humanities & Social Sciences Research Ethics Committee

Professor Shenuka Singh (Chair)

Westville Campus, Govan Mbeki Building

Postal Address: Private Bag X54001, Durban 4000

Telephone: +27 (0) 31 260 3587/8350/4557 Facsimile: +27 (0) 31 260 4809 Email: ximbsp@ukzn.ac.za / snymann@ukzn.ac.za / mohunp@ukzn.ac.za

Website: www.ukzn.ac.za

 1910 - 2010
100 YEARS OF ACADEMIC EXCELLENCE

Founding Campuses:  Edgewood  Howard College  Medical School  Pietermaritzburg  Westville