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MMFI THESIS

The relationship between Capital Structure and Financial Performance of South Africa's Schedule 2 State Owned Entities

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Johannesburg, South Africa

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Declaration

“I hereby declare that the dissertation submitted for the degree Master of Management in Finance and Investment, at Witwatersrand Business School, is my own original work and has not previously been submitted to any other institution of higher education. I further declare that all sources cited or quoted are indicated and acknowledged by means of a comprehensive list of references”.

…….

Tsholofelo Marotholi

1538478

Dedication

This study is dedicated in the loving memory of my father in-law, Matong Johannes Marotholi and mother-in-law, Lillian Mathapelo Marotholi as well as our little prince, Aobokoe Lwandile Marotholi. I will forever, hold you in my heart.

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I would like to express my gratitude to:

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My parents Solly Solomon and Disebo Jeanette Makgothi, my siblings Goutlwa, Gogakgamatsamang Onkabetswe and Relebogile Gadibolae Makgothi, thank you for your invaluable support. No one compares to you. To my siblings' in-law, Nthabiseng Diba, Maleke and Palesa Marotholi, thank you so much for being there.

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Abstract

In South Africa, State-Owned Entities (SOEs) are used as instruments to advance government's developmental objectives, which are aimed at eliminating unemployment, poverty and inequality. In doing so, these public entities are expected to remain financial sustainable over the long-term, without posing a risk to the national resources. To address this dual mandate, public entities require an optimal capital structure mix (equity and debt) to fund long-term assets that will generate sufficient funds to allow the public entities to remain financially sustainable over the long term. Various empirical studies have indicated that there is some kind of association between capital structure and financial performance. This study attempts to explore the relationship that exists between capital structure and the financial performance of Schedule 2 SOEs. Understanding the effect that the capital structure has on the performance of SOEs could assist public entities and/or the government to arrive at the appropriate level of capital structure that would enable these SOEs to pursue their respective mandates effectively. To explore this relationship, a sample of 18 SOEs from a population of 21 Schedule 2 public entities, was used. The data from the study was extracted from the audited annual reports of the respective entities, covering the period from 2005 to 2015. The dynamic General Method of Moments (GMM) model was applied to the data employed in this research. The results of the study produced mixed results. Capital structure measures long-term debt to total assets is positively and significantly related to return on assets (ROA), but negatively and significantly associated to return on equity (ROE), net profit margin (NPM) and operating margin (OM). With respect to short-term debt to total assets (STDA), there is a significantly negative relationship between ROA and OM. However, STDA is positively and significantly related to ROE and NPM. Furthermore, the study results are in line with the trade-off theory and traditional theory on capital structure, which advocate that there are benefits to the usage of debt. However, excessive application of debt could erode the benefits associated with its usage. Therefore, the management of SOEs will need to continuously rebalance the combination of equity and debt within the entities as they undertake different projects that will satisfy government's developmental objectives, thus ensuring that the firms' capital structure is at its optimal level.

Key words: *Capital Structure, Financial Performance, State-Owned Entities, South Africa*

Acronyms

DPE – Department of Public Enterprises

DPS – Dividends Per Share

DTA – Debt to Assets

DTI – Department of Trade and Industry

EPS – Earning Per Share

ETA – Equity to Total Assets

GDP – Gross Domestic Product

GM – Gross Margin

LTDA – Long-Term Debt to Total Assets

LTDTA – Long-Term Debt to Total Capital

LTDTC – Long-Term Debt to Total Capita

LTDTD – Long-term Debt to Total Debt

NDP – National Development Plan

NIPF – National Industrial Policy Framework

NRF – National Revenue Fund

OECD – Organisation for Economic Cooperation and Development

PFMA – Public Finance Management Act

ROA – Return on Assets

ROE – Return on Equity

ROS – Return on Sales

RSA – Republic of Southern Africa

SME – Small and Medium Sized Enterprises

SOE – State-Owned Enterprise

SOEs – State-Owned Enterprises

STDA – Short-Term Debt to Total Assets

STDTA – Short-term Debt to Total Assets

STDTC – Short-Term Debt to Capital

TDTA – Total Debt to Total Assets

TDTC – Total Debt to Total Capital

TDTE – Total Debt to Total Equity

WACC – Weighted Average Cost of Capital

Chapter One

1.1. Introduction

In South Africa, State-Owned Entities (SOEs) are established with the aim of addressing government's developmental agenda. In doing so, SOEs are expected to also remain financially sustainable, this therefore, amounts to entrusting SOEs with a dual mandate. Thus, the manner in which SOEs finance their business activities is crucial as it could determine the entities' growth potential and/or firm performance that will enable the achievement of their dual mandate.

In line with this background, the objective of this research is to examine the relationship between capital structure and the performance of South Africa's selected Schedule 2 public entities. It is important to determine whether there is an association between the capital structure of SOEs that have a dual mandate, and the performance of those SOEs. Understanding the effect that capital structure has on the performance of organisations could assist them (SOEs) and/or government to arrive at the appropriate level of capital structure that would enable these SOEs to pursue their respective mandates effectively.

In exploring the relationship between SOEs' financial performance and capital structure, a background on the purpose of SOEs will be provided. This will be followed by the definition and classification of SOEs. Moreover, the purpose of the research, including its objectives, will be outlined and the research methodology that has been applied in this study will be briefly discussed. Lastly, a literature review on access to finance, theoretical and evidence literature on capital structure and firm performance, will be discussed.

1.2. Background

SOEs have gone through the phase of privatisation; however, governments around the globe have maintained ownership thereof (World Bank, 2014). Retention of state ownership in entities has generally been motivated by market failures, the need for natural monopolies, externalities (positive spillovers), including the usage thereof as instruments to develop and industrialise certain sectors of the economy (Fourie, 2001; World Bank, 2014). SOEs are usually established in “strategic sectors” which range from infrastructure, utilities, manufacturing, mining, transport, defence and finance. Strategic sectors are regarded as those that contribute towards the prosperity and/or strengthening of countries’ sovereignty and the advancement of their industries (Mattlin, 2009).

The Indonesian government established its SOEs to promote economic growth and advance the welfare of its people; in 2011, the SOEs contributed 15% to Indonesia’s GDP (Warganegaral, Supatra and Anggraini, (2013). Indonesian SOEs are active in sectors such as telecommunications, banking and mining. In China, SOEs are used as instruments of national building, job creation and the offering of public services, while others have been created for profit-seeking initiatives. China’s SOEs operate in strategic sectors such as electricity, petroleum, aviation and banking as well as competitive sectors, which include wholesale and trade (Gang and Hope, 2013). The contribution of China’s SOEs to industrial output has been estimated to fall between 25% and 30% (Leutert,2016).

In India, SOEs play a pivotal role in the country’s industrialisation strategy which is geared towards ensuring that India is self-sufficient (Khanna, 2012). India’s SOEs are present in various sectors, which include coal, oil or natural gas and steel. The Indian government received contributions from SOEs in the form of dividends, duties and tax payments. The SOEs’ total contributions increased to IND 162 761 crore in 2012/13 from IND 160 801 crore in 2011/12 (OECD, 2015).

In South Africa, there are SOEs that have been established with a dual mandate. This requires that an SOE pursues commercial activities, whilst contributing to government's developmental agenda. The government's developmental priorities are outlined in various policy documents which include the National Development Plan (NDP) and the National Industrial Policy Framework (NIPF). These developmental objectives include improving the quality of education, job creation, ensuring that South African households have access to electricity and clean water as well as industrialising the country's sectors (DTI, 2007). The NDP advocates the elimination of poverty and reducing inequality by 2030 (The Presidency: National Planning Commission, 2011).

The NIPF advocates the need to intensify, diversify and build on Southern Africa's industrialisation processes to facilitate the creation of employment opportunities for previously disadvantaged individuals and the establishment of a knowledge-based economy (DTI, 2007). Overall, SOEs' contribution to South Africa's GDP is estimated at 8.5%; sector contribution in the transport industry is 28.8%; energy is 27.3%; communication accounts for 16.2%; and financial services represent a revenue input of 8.03% to GDP (Presidential Review Committee, Volume 2).

In light of the above, it is evident that overall participation of SOEs in their respective countries' economies, whether it is the development of industries or the financing and development of infrastructure, it is expected to aid governments in achieving developmental goals that are geared towards growing their countries' economies, creating employment and reducing income disparities. In order to address the various developmental objectives of the government, SOEs are required to be financially sustainable. Thus, SOEs would need to be in a financial position that would capacitate them to consistently maintain the organisations' business activities over the long term, while satisfying government's overall developmental objectives. This would require that SOEs have appropriate financial resources in place, either generated from business activities and/or obtained from external sources.

In order to obtain external funding access thereto is crucial. Access to finance contributes positively to firms' growth as it provides much needed capital for investment in new assets that will add value to the businesses and allow them to expand further. Growth of entities may be impacted by several factors ranging from legislation, infrastructure and corruption; however, finance weighs heavily on companies' growth prospects (Beck and Demirgu-Kunt, 2008; Dalberg, 2011). Beck and Demirgu-Kunt (2008) further highlight that availability of finance could assist companies to circumvent liquidity challenges. Barriers to finance may impede organisations' ability to obtain the required capital to support further organisational growth (Chimucheka and Rungani, 2013).

Love's (2003) study on various developed and developing countries discovered that the alleviation of finance constraints will empower firms to augment their capital allocation, and enable investment in bankable projects that will enhance the entities' growth. A study conducted by Banerjee and Duflo (2014) on Indian firms indicate that subsequent to policy deregulation, companies were able to get access to credit facilities resulting in increased sales and profit growth rates of the respective companies.

Access to funding does not only impact the growth prospects of entities and/or ability to invest in appropriate assets, but will also secure the long-term financial sustainability of organisations. Access to funding also has a bearing on firms' capital structure (Cheng, Ioannou and Serafeim, 2014). When investing in long-term assets, entities need to ensure that they are sufficiently funded. The funding should ideally be split between debt and equity in an optimum proportion. This represents the capital structure of entities. Although access to finance is an important factor to entities' capital structure, it should be noted that the focus of this research is mainly on examining the influence that capital structure has on the financial performance of companies.

1.3. Definition and Classification of State-Owned Enterprises

In carrying out the study on South Africa's Schedule 2 SOEs, it is important to review how the public entities are generally defined, including how they are categorised from a global and South African perspective.

The Organisation for Economic Cooperation and Development (2009) has defined SOEs according to the narrow and expanded definition − under the narrow definition, SOEs can be defined and classed as business entities that have been established by the government(s) and whose chain of command is vested in the personnel of the respective government(s). This definition mainly refers to SOEs that are wholly owned and funded by the government. This definition is mostly applicable to SOE structures before reform initiatives. Subsequent to the restructuring of SOEs, the narrow definition was expanded to include both State-owned and State-holding entities, where majority shareholding belonged to the government with participation from the private sector.

From a South African perspective, state ownership in respect of an entity refers to the ability of the government to exercise certain powers to govern the financial sustainability and operational policies to attain benefits from the entity; these powers range from exercising all or enjoy considerable rights to vote in the firm, having powers on the removal or appointment of individuals that sit on the board, including the appointment of the chief executive officer (Public Finance Management Act, 1999). The Public Finance Management Act (PFMA) further classifies SOEs in accordance with their respective Schedules as outlined below:

i. Schedule 2 SOEs are regarded as main public entities, which are funded from internally generated funds from commercial activities. These entities may also be funded fully or partially from the National Revenue Fund (NRF), through taxes, levies and/or alternative statutory funds. Moreover, Schedule 2 public entities are

allowed to borrow on the strength of their balance sheets. These borrowings maybe sourced from both the domestic and foreign market. However, in an event that the public entities borrow from the foreign market, the entities concerned are required to obtain a foreign borrowing limit approval from the National Treasury.

ii. Schedule 3B represents state enterprises that bear similar characteristics to Schedule 2 public entities with regards to the manner in which they are funded. However, Schedule 3B public entities are required to request permission to borrow on both the domestic and foreign market.

iii. Schedule 3A encompasses national public entities that are service delivery entities that are fully funded from the NRF. Moreover, Schedule 3A public entities may not borrow and are required to obtain permission from the National Treasury to retain surplus cash. In addition, Schedule 3A public entities may not borrow funds without the appropriate approvals in place.

iv. Schedule 3C are known as provincial state firms that are mandated to undertake commercial business functions and are similar to Schedule 2 and 3B entities in terms of how they are financed. Like Schedule 3B public entities, these entities are not permitted to borrow without the necessary approvals in place.

v. Schedule 3D are known as provincial public entities, similar to Schedule 3C entities they are funded entirely or partially from the NRF via taxes, levies or through other options that may be deemed lawful by the state. Schedule 3D entities also generate funds from goods and services in terms of ordinary business principles.

1.4. Research purpose

1.4.1. Problem statement

In order to deliver on their developmental objectives, the South African government expects SOEs to remain financially sustainable over the long term. However, the performance of some SOEs that have been assigned a dual mandate has deteriorated over time, due to operational inefficiencies, reflecting poor governance structures and poor business plans. According to the National Treasury's 2016 Budget Review, SOEs have begun to be a drain on the 'fiscus' (i.e., government's budget balance), contributing a combined negative 2.5% in return on equity for the past five years as at 2014/15. In order to aid SOEs in advancing developmental objectives, the government has catered for their funding needs through budgetary allocations; these include shareholder contributions in the form of an equity injection, interest payable loans, subordinated loans and grant funding. These funds are normally provided to SOEs that are not able to generate enough funds from commercial activities to meet required funding on the strength of their balance sheet(s) as to fund long term assets, which in turn could add value to the entities, including the inhabitants of the country.

Additionally, the government also provides SOEs with guarantees that will enable them to raise funds from financial institutions. However, government support to State-Owned Enterprises has become unsustainable as several entities with government funding and/or support continue to pose a risk to budget balance and "bleed" national resources, without improving their financial performance. Moreover, rating agencies such as Standard and Poor and Fitch have expressed concerns with respect to SOEs' contingent liability exposures, which may negatively impact the sovereign credit rating of the country. According to Abedian (2016) sovereign credit rating downgrade could increase the cost of capital for SOEs and thus, the government in general. This will eventually lead to low levels of investment and therefore hinder the capacity of SOEs to deliver on government objectives as anticipated.

The poor performance of SOEs has sparked debates on the reform of public entities. The government anticipates that the reformation of public sector institutions will assist SOEs to be financially sustainable, while satisfying government's developmental objectives. This will require SOEs to invest in long-term assets that will generate sufficient funds to enable them to remain financially sustainable, without posing a risk to strategic national resources. To do so, the public entities will require an optimum capital structure; an appropriate mixture of equity and debt. This study therefore intends to review the possible relationship between capital structure and SOEs' financial performance.

Numerous researchers have investigated the relationship between the capital structure and financial performance of firms. They have recorded mixed results. Studies undertaken by Ebaid (2009) and Al-aani (2013) point out that capital structure has little to no impact on the performance of a firm. However, research by Berger and Baraccorsi di Patti (2006), Margaritis and Pillaki (2010), Chowdhury and Chowdhury (2010), Fosu (2013) and Nikoo (2015) points to a positive relationship between a firm's capital structure and financial performance. Studies conducted by Pratheekanth (2011), Umar, Tanveer, Aslam and Sajid (2012), Salim and Yadav (2012), Akeem, Terer, Kiyanjui and Kayode (2014) and Mahumudi (2015) point to a negative relationship between capital structure and firm performance.

Other research outcomes have indicated either the existence of a negative or a positive relationship between the capital structure and financial results of a firm (Abor, 2005; Abor, 2007; Saeedi and Mahmoodi, 2011; Javed, Younas and Imnan, 2014; Oladeji, Tolupe, Ikpefam and Olokoyo, 2015). In a South African context there are currently no empirical studies that have been carried out in this area, especially with respect to SOEs categorised as Schedule 2 public entities, operating in different sectors of the economy. Therefore, this will be the focus area of this study.

1.4.2. Research objectives

The focus of the study will be on selected South African public enterprises listed as Schedule 2 in the PFMA. The overall objectives of the research are:

I. Examining the existence of a relationship between the capital structure and financial performance of Schedule 2 SOEs and determining whether this relationship is negative or positive.
II. Evaluating if the capital structure of Schedule 2 SOEs has a significant and/or no impact on the financial performance of the SOEs.

1.5. Significance of the study

SOEs have been established with different mandates, their very existence seeks to meet various social needs of the public, which the government seeks to address. In the attainment of the developmental objectives, SOEs are expected to remain financially sustainable. The South African government's developmental expectations of SOEs remain, irrespective of its current stance, to pursue fiscal consolidation and to reduce the burden or the risk that SOEs pose to the fiscus. Therefore, this requires that SOEs have an optimal capital structure to fund long-term assets that would generate sufficient funds to allow the public entities to remain financially sustainable.

Studying the relationship between capital structure and the financial performance will enable SOEs as well as the government to understand the extent to which capital structure influences the performance results of the organisation. Through this understanding, SOEs can then model their capital structure in an optimal manner, allowing the public entities to reduce their cost of capital in order to meet their dual mandate (pursue commercial activities and satisfy government's developmental objectives). Herein lies the research gap that this study intends to fill – reviewing the

relationship between capital structure and the financial performance of South Africa's Schedule 2 public enterprises.

In completing this study, the following questions will be addressed:

I. Is there a relationship between capital structure and the financial performance of Schedule 2 SOEs?
II. And if one exists; is it negative or positive?
III. Does capital structure have a significant or insignificant impact on the performance of Schedule 2 SOEs?

1.6. Outline of the research approach

1.6.1. Sample and data

The focus of this research is on Schedule 2 SOEs because they are more in control of the debt component of their capital structure, relative to other public entities as defined by their respective schedules. A sample size of Schedule 2 public entities in various sectors will be selected from a population of 21 Schedule 2 public entities stated in Table 1 below:

Table 1: Schedule 2 SOEs public entities

Entity	Sector
Air Traffic and Navigation Services Company, Airports Company, South African Airways Limited, Transnet Limited, South African Express (Pty) Limited	Transport
Broadband Infraco Limited, South African Broadcasting Corporation, South African Post Office, Telkom SA Limited	Telecommunication
ESKOM, Central Energy Fund (Pty) Limited, South African Nuclear Energy Corporation	Energy
Armaments Corporation of South Africa and DENEL	Defence
Development Bank of South Africa Limited, Industrial Development Corporation of South Africa Limited, Land and Agricultural Bank of South Africa	Finance
Alexkor	Mining
South African Forestry Company Limited	Forestry
Trans-Caledon Tunnel Authority	Water
Independent Development Trust	Infrastructure

Source: PFMA Act No. 1 of 1999

The study will make use of data from secondary sources; the data will be gathered from audited annual financial statements of the selected SOEs. The data will cover the period from 2005 to 2015. Moreover, in conducting this study, not only the theory on capital structure, including various empirical exercises on the effect of capital structure on corporate performance, but also South African policy documents, will be considered. However, it should be noted that research papers to be examined will not be limited to the above-mentioned studies.

1.6.2. Measurement variables

The explanatory variable will be capital structure, whilst firm performance will be the explained variable. Additionally, firm size will be introduced as an independent control variable. The variables will be measured using accounting-based measures.

1.6.2.1. Capital structure measures

The ratios that will represent capital structure are as follows:

$$Short-term\ debt\ to\ total\ assets = \frac{Short-term\ debt}{Total\ assets}$$

$$Long-term\ debt\ to\ total\ assets = \frac{Long-term\ debt}{Total\ assets}$$

$$Total\ debt\ to\ total\ assets = \frac{Short-term\ debt + Long-term\ debt}{Total\ assets}$$

1.6.2.2. Firm performance measures

In measuring performance, the following ratio proxies will be used:

$$Return\ on\ Assets = \frac{Net\ profit\ after\ tax}{Total\ assets}$$

$$Return\ on\ equity = \frac{Net\ profit\ after\ tax}{Total\ assets}$$

$$Net\ profit\ margin = \frac{Net\ profit\ after\ tax}{Revenue}$$

$$Operating\ margin = \frac{Operating\ income}{Net\ sales}$$

These measures of capital structure and firm performance were utilised in several empirical studies testing the relationship between capital structure and firm performance (San and Heng, 2011; Pratheepkanth, 2011; Salim and Yadav, 2012; Khan, 2012; Umar et al., 2012; Al-Taani, 2013; Moscu, 2014; Chadha and Sharma, 2015).

1.6.2.3. Control variable

The size and growth of a firm will be applied as an independent control variable in the study. According to Salim and Yadav (2012) and Abor (2005) firm size and growth could impact the performance of a firm and could reveal the extent of the capabilities and capacity within a firm. Salim and Yadav (2012) further point out that firm size may be employed as a control variable as it takes into account the diverse operating environments that the firms are in. The size of a firm has been applied in several studies (Umar, et al., 2012; Oladeji, 2015; Meero, 2015). A control variable is considered, as the sample of SOEs in this study operate in different sectors of the economy. Firm size will be represented by the natural log of the total assets of the firm. Growth is characterised by a percentage change in sales

Lastly, in measuring the firms' effectiveness in the utilisation of its assets in generating sales, which in turn has an impact on firm performance, the asset turnover ratio was included in the model for control purposes. This variable is also very instrumental given the reputation of many public owned entities, it is important to show efficiency in conversion of sales (Chan, Chen and Wong, 2017).

1.6.2.4. Model

In conducting an investigation into the existence of a relationship between the capital structure and performance of Schedule 2 SOEs, Eviews software will be used to build the multiple regression models as well as analyse the results of the models.

1.7. Overview of research report

The introduction of this study will be followed by the literature review on access to finance, and theories and empirical studies on capital structure. Thereafter, the methodology, data and models employed in the study will be discussed. The statistical results of the techniques used in the study will be provided, along with a discussion of the results of the model. Lastly, the concluding remarks of the study are presented and the list of sources (relevant literature) used in the study, are then provided.

Chapter Two

Literature review

2.1. Introduction

This Chapter provides a synopsis of the importance of access to finance. Subsequently, theoretical literature on the theories that underpin capital structure is discussed, together with evidence literature on the association between capital structure and financial performance.

2.2. Access to finance

As highlighted in Chapter 1, the focus of this research will be to review the association between capital structure and firm performance of Schedule 2 SOEs. Nevertheless, it is worth spending some time on a brief discussion about the importance of access to finance as it influences the mixture of debt and equity of an organisation (Cheng et al., 2014).

Generally, access to finance can be attained through financial development, which contributes positively to economic growth. Advanced countries have been successful in growing their respective economies over the years as a result of their developed financial systems (Nasr, 2008). To facilitate access to finance, a country requires an efficient financial system that can ensure delivery of the required financial services (Nasr, 2008). Nasr (2008) further highlights that a matured financial system consists of well-run financial institutions, which will contribute to the distribution of funds to firms that will invest in value-adding projects, therefore, increasing economic growth. Levine's (1997) study suggests that industries and firms operating in countries that have well-developed financial systems expand more rapidly, relative to industries and firms based in countries that have weak financial systems.

Nasr (2008) examined Egyptian firms and households' access to finance, including the effect which financial deepening has on a country's economic expansion. The findings of the study indicated that financial resources were allocated at high costs, as financial markets in Egypt were not well developed. This situation made it difficult for firms and households to get access to funds and also hampered potential growth. Studies conducted on SMEs in Brazil (Khumar, 2005) and South Africa (Mazanai and Fatoki, 2012; Chimucheka, 2013) found that limited access to funds serves as an impediment to the development and continuity of SMEs. Access to finance can be improved by the government through the introduction of policies that (will) provide a conducive environment to allow for financial development and enable access to funds by SMEs.

Beck, Demirgüç-Kunt and Maksimovic's (2006) study on the impact that financial and legal institutions have on the size of a firm revealed that countries that have well-functioning financial systems have larger firms, compared to those that have underdeveloped financial systems. Their study is based on the biggest industrial firms from 44 developed and developing countries. Rajan and Zingales's (1998) study based on various sectors from developed and developing countries investigated the relationship between financial deepening and the advancement of a country's economy. They found that an improvement in the functioning of a country's financial system aids economic expansion through the reduction of debt costs, specifically for companies which are reliant on external sources of funding. The relaxation of financial constraints provides new entrants, especially SMEs with access to funds, and thus promoting innovation which will further strengthen growth (Beck et al., 2008).

Overall, finance is important to the growth of a firm as it provides funds for the projects that would otherwise, not have been explored. Access to funds provides firms with the opportunity to redirect resources to productive projects and thus allows firms to undertake projects that are likely to yield the highest returns, therefore, allowing the facilitation of growth (Claessens, 2006).

Access to finance can be limited due to the existence of information asymmetry. Information asymmetry can be present in a country's financial sector for several reasons such as: underdeveloped financial markets with skewed financial sector policies; when one of the contracting parties (especially the lender) has little or no knowledge about the party requesting funds due to the unavailability of audited financial statements; an agency problem between lenders and borrowers; and transaction costs which are high due to the high risk that is normally associated with lending to start-up companies (Malhotra, Chen, Fan, Hamel and Savchenko, 2007; Demirgüç-Kunt, Beck and Honohan, 2008; Chimucheka, 2013).

The existence of information asymmetry discourages lenders from providing credit to firms that are in need as credit providers could end up issuing unprofitable loans Chimucheka (2013). Countries can overcome the challenge of information asymmetry by creating an environment that allows for improvement in financial systems. This will promote access to finance and grow firms as well as reduce costs associated with the usage of debt. Developed financial systems reduce the existence of information asymmetry which can make it difficult for firms to get access to external sources of funds (Claessens, 2006).

As stated above, access to finance affects the debt component of a business capital structure. The above-mentioned studies indicate that in securing continuity and growth, a firm requires appropriate financial resources to be in place. The required funds can be a mixture of equity and debt (capital structure). Therefore, this leads us to the significance of capital structure in relation to the performance of a firm.

2.3. Theoretical literature on capital structure

2.3.1. Capital structure concept defined

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Oladeji et al. (2015) define capital structure as the various sources of funds that are employed by an organisation in order to fund its operations and growth. These sources of funds are made up of equity contribution and debt. Isaac (2014) states that equity is made up of contributed capital and reserves. Contributed capital is classified as funds which were initially invested in the business by investors to obtain a stake within the company. Retained earnings are profits accumulated by the company over the years in operation and have been held for the purpose of strengthening the organisation's balance sheet, including the acquisition of/or expansion into financially viable projects.

According to Oladeji et al. (2015) the debt element of capital structure takes into account long-term bonds issued by a firm to investors, with the aim of obtaining funds to finance investment decisions. The long-term duration of the bonds provides the firm with adequate time to pay the interest incurred and to settle the principle amount when it becomes due. In defining the debt component of capital structure, San and Heng (2011), take a broader approach by taking into consideration long-term and short-term debt as companies may use both forms of debt to finance their assets.

Therefore, capital structure is defined as a mixture and/or the proportion of equity and debt that is employed to fund assets and/or long-term projects within a firm. Both elements of capital structure are crucial to a company. The equity component of the capital structure in a business is vital as it attracts debt holders to invest their funds in a firm (Akeem et al., 2014) and debt benefits firms through the tax shield benefit which allow firms to reduce the cost associated with the usage of debt (Hardiyanto, 2015).

Chadha and Sharma (2015) highlight that the decisions about a firm's capital structure are revised regularly by its management as it undertakes different investment projects

that will require alternative funding options. As a result, the management of a firm will need to continuously rebalance the combination of equity and debt within an organisation, thus ensuring that the company's capital structure is at its optimal level. An organisation's capital structure is at an optimal level when its value is maximised (Oladeji et al., 2015: Chadha and Sharma, 2015). The ideal capital structure will be achieved at a point where the Weighted Average Cost of Capital (WACC) is at its lowest level (Oladeji et al., 2015). Therefore, the financing decision on capital structure has a bearing on the well-being of an organisation (Hardiyanto, 2015).

2.4. Theories that underpin capital structure

2.4.1. Modigliani and Miller Proposition I and II

Lungi and Sorin (2009) state that prior to the formulation of the Modigliani and Miller's (1958) irrelevance theory on capital structure, there was no universally recognised theory on capital structure. The hypothesis of this theory is founded on the principles that there are no taxes, costs of financial distress, or agency costs, so investors would value firms with the same cash flows, irrespective of the sources of finance that are employed by the firm (Clayman, Martin and Troughton, 2008). Therefore, under the irrelevance capital market theory, also known as the MM I Proposition, there exists a perfect capital market.

To further support their irrelevance theory, Modigliani and Miller in 1961 stated that when a firm decides to issue a dividend payout, the payout will not effect change in a business-share price, including the shareholders' return, indicating that in a perfect market, capital structure and dividend decisions do not matter (Lungi and Sorin, 2009). However, according to Abor (2005) the assumptions of the MM I Proposition are not a reflection of what takes place in the real world. Additionally, Shahar, Shahar, Bahari, Ahmad, Fisal and Rafdi (2015) indicate that different sources of finance will influence the value of a business due to the existence of market imperfections.

In 1963, Modigliani and Miller incorporated corporate taxes in its Capital Structure Irrelevance Theory. This theory is known as the MM II Proposition. Adrienn (2014) points out that the MM II proposition highlights that “the value of a leveraged firm is equal to the value of an unleveraged firm, plus the present value of the tax shield associated with debt”. Through the incorporation of corporate tax, Modigliani and Miller, recognise that there is a tax shield benefit that is gained with the usage of debt. However, the profit that is generated through the usage of external funds is counterbalanced through the risk undertaken by the organisation when using debt (Pratheepkanth, 2011).

Subsequently, several studies on capital structure emanated from the Capital Structure Irrelevance Theory, which points out that an appropriate mixture of finance with respect to debt and equity does not exist (Pratheepkanth, 2011). These theories range from the Static Trade-off Theory, the Pecking Order Theory and others.

2.4.2. Static Trade-off Theory

Luigi and Sorin (2009) point out that there are several costs and benefits that managers have to deliberate on under the Trade-off Theory. The costs that are to be considered are those of bankruptcy, which include liquidation and distress costs. Liquidation costs are those that are normally incurred by a firm when its net assets are negative, while distress costs are those that are encountered by a firm when it ceases operations (Shahar et al., 2015). An additional cost that has to be recognised under this theory is agency cost that emanates from the conflict of interest which arises amongst the various shareholders of the firm as a result of information asymmetry (Luigi and Sorin, 2009).

The Static Trade-off Theory takes into account the ideal capital structure which will allow corporations to have access to various sources of finance and which can determine the trade-off between the expenses and advantages associated with the application of debt and equity in a firm (Mahmudi and Mohammadi, 2015). Oladeji et al. (2015) point out that under the Static Trade-off Theory, utilising debt, attracts a tax-saving advantage which

needs to be weighed against costs such as those of bankruptcy. Shahar et al. (2015) propose that the Trade-off Theory advocates that the benefits realised from the tax shield, which emanates from the usage of debt, are neutralised by the firm's cost of financial distress and bankruptcy costs. Therefore, under the Trade-off Theory there is a high probability that a firm will issue more debt to fund its operations as a result of the tax benefit, which will result in the cost associated with financial distress and tax shield being balanced out. (Cheng et al., 2014).

The appropriate balancing of costs and benefits will lead to the usage of debt over equity as it increases the value of the firm (Shahar et al., 2015). Shahar et al. (2015) further state that the targeted capital structure will result in the maximisation of business value and reduce the costs that are associated with prevalent market inefficiencies. In conclusion, the Trade-off Theory advocates an ideal and/or targeted mixture of debt and equity that an organisation will gravitate towards in the presence of any misalignment between the absolute leverage ratio and equity (Luigi and Sorin, 2009; Oladeji et al., 2015).

2.4.3. Pecking Order Theory

Under the Pecking Order Theory, in deciding on how to finance investments, managers will make financial decisions in a sequential manner; internal funds such as retained earnings and reserves will be considered first; secondly, projects will be financed through debt; and lastly investments will be financed through the issuance of equity (Shahar et al., 2015). Internal sources are preferred over external sources as internal funds allow the management and current shareholders to maintain control of the firm (Jahanzeb, Rehman, Bajuri, Karami and Ahmadimousaabad, 2014). However, in an event whereby a firm opts to use external funds, then the firm shall elect external sources of funds which will yield the lowest possible cost of capital and asymmetric information (Iqbal, Muneer, Jahanze and Rehman, 2012). External funding is only considered when a firm's internal

forces of funds are inadequate to finance profitable investment opportunities (Oladeji et al., 2015).

According to Jahanzeb et al. (2014) in making a selection between debt and equity, firms will elect debt financing as the preferred option as managers do not want to relinquish authority over to new shareholders. Moreover, the cost that is associated with debt is regarded by managers of a firm to be lower than that of new equity (Jibran, Ahmed, Iqbal and Masood, 2012). When new equity is being issued, the market can misprice the value of the firm as external investors do not consistently obtain all material information pertaining to an organisation. In the event that equity financing is elected over debt, firm managers will issue new shares below their par value, therefore, acting in the interest of current shareholders (Shahar et al., 2015).

Shahar et al. (2015) further indicate that new shares will be issued when the rate of return to be earned from a new investment opportunity offsets the cost (ceding management control) associated with the new share issues. New share issues are normally restricted to a certain number (Jibran et al., 2012). In summary, the Pecking Order Theory advocates the employment of internally derived financial resources, relative to sourcing external funds when pursuing investment opportunities; however, should firms not have sufficient internal funds, they will elect to retain their profits in favour of future opportunities to avert the use of external sources (Lungi and Sorin, 2009).

2.4.4. Agency Theory

The Agency Theory is concerned with explaining the manner in which managers, shareholders and debtors make decisions about the company's funding and examines how these funding decisions impact an organisation's capital structure (Grigore and Stefan-Diucu, 2013). According to Oladeji et al. (2015) the Agency Theory is concerned with various agents and principals whose decisions are critical for the firm to achieve an optimal capital structure. Akeem et al. (2014) state that an agency relationship is

established in a situation whereby principals bestow certain decision-making powers to agents.

These relationships can be “between the shareholders (agents) and managers; between creditors (principals) and shareholders and managers (agents)” (Grigore and Stefan-Duicu, 2013). Both agents and principals have different interests and will behave in a manner that will address their own interests (Grigore and Stefan-Diucu, 2013). In ensuring the achievement of an ideal capital structure, the agency costs that are prevalent for the agents and principals with different interests will need to be minimised (Akeem et al., 2014). The agency costs include control and justification costs, high risk investment and bankruptcy costs (Grigore and Stefan-Duicu, 2013).

Akeem et al. (2014) further point out that in order to rectify the agency problem that exists due to the different interests of the managers, shareholders and debt holders, it will be beneficial for managers within the firm to be increased, alternatively, leverage may be employed to keep the behaviour of managers “in-check”. The Agency Theory recommends the use of debt as a way to resolve possible conflict between managers and shareholders, as it has certain advantages associated with its usage. Grigore and Stefan-Duicu (2013) highlight that leverage may be employed within the organisation to govern the investment policies of managers through regular payments of capital rates and interest payments and can be used to access more information on how the firm is managed.

2.4.5. Traditional Theory

The Traditional Theory supports the presence of an ideal capital structure at varying levels Afrasiabishani, Ahmadina and Hesami (2012). Afrasiabishani et al. (2012) further state that the presence of a targeted capital structure is dependent on the level of gearing within the firm and shareholder value that is created at an optimal WACC. An optimal WACC level exits where the WACC of a firm is at its lowest level (Oladeji et al. (2015).

Oladeji et al. (2015) further highlight that WACC will decline to its lowest level as external financing in the form of debt is introduced, reaching an optimal level. Thus, the Traditional Theory advocates that the value of a firm may be escalated through the usage of leverage.

However, the extent to which leverage may be employed should be limited to pragmatic levels as further increases in debt will lead to the lowering of the WACC level only up to a certain extent Oladeji, et al. (2015). Therefore, as borrowings increase, WACC will be lowered to a certain degree, while succeeding increases in debt will raise risk to the firm, causing shareholders to request higher profits for the additional risk taken by management.

2.4.6. Market Timing Theory

The Market Timing Theory also referred to as the Equity Market Timing Theory assumes that firms monitor movements in the market when they issue shares; firms will issue new shares when the price thereof is overpriced and repurchase their own shares when underpriced (Luigi and Sorin, 2009; Shahar et al., 2015). Luigi and Sorin (2009) state that there are two versions of the Equity Market Timing Theory:

i. The primary version is founded on the assumption that economic agents are rational – firms will issue new stock when the challenge of information asymmetry between a firm's managers and shareholders is lowered, following the release of positive information. Under this version, a reduction in information asymmetry will lead to an escalation in prices of the shares as the firm will be fairly valued.
ii. The second assumption is based on agents being irrational – managers will issue equity when they are of the view that the stock price is unreasonably high and repurchase the equity when it is irrationally low.

2.5. Evidence literature

2.5.1. Negative and positive relationship between capital structure and firm performance

Abor (2005) applied regression analysis to his empirical study, examining the influence that capital structure has on the earnings of firms registered on the Stock Exchange in Ghana, for a period of five years, from 1998 to 2002. In conducting the study, 22 qualifying firms were selected. The independent variable, capital structure was represented by leverage ratios; short-term debt to total capital (STDTC), long-term debt to total assets (LTDTA) and total debt to total capital (TDTC). Firm size, along with sales growth were also introduced as independent control variables.

Return on equity (ROE) was applied as a dependent profitability measure in the research. The study results pointed out that ROE is to a large extent positively associated to the short-term debt ratio. On the other hand, the outcomes of the study indicated that the relationship between ROE and LTDTA ratio is negative. The outcome of ROE and TDTC demonstrated the existence of a significantly positive relationship between the two variables, when taking into consideration total debt and return rates. Overall Abor's (2005) study states that profitable firms are highly geared and thus use more debt than equity to finance assets and concludes that 85% of debt used by Ghanaian companies consists mainly of short-term debt.

Abor's (2007) study on South African and Ghanaian small and medium sized enterprises (SMEs) analysed the relationship that exists between leverage and the performance of the SMEs. From Ghana, 160 SMEs were used, and 200 were used from South Africa, 68 of which were listed. The study was conducted from 1998 to 2003. In the study, the size and growth of the firms were used as control variables as they had a bearing on the performance of a company. Capital structure was also considered as an independent

variable and was measured by STDTC and LTDTC ratios, including the trade credit to total capital ratio. Firm performance, which was the dependent variable in the study, was measured by the gross margin (GM) and return on assets (ROA).

The Tobin's Q represented a measure of performance of the 68 listed SMEs. The study highlighted that short-term debt is positively and significantly related to the GM for South Africa and Ghana. For long-term debt, the study found that there is a significantly positive association between long-term debt and the profit margin. With regards to the total debt ratio and the GM, the relationship was found to be significant and negative. A significant and negative relationship was found to exist between trade credit and the GM for the two countries.

From the Ghanaian perspective, the data results revealed a negative association between capital structure measures and those representing firm performance. The data outcome for South African firms showed the prevalence of a positive relationship between short-term debt and trade credit. However, the relationship was highly negative when long-term debt and trade credit were considered. For the 68 listed SMEs, the results pointed to a considerably positive relationship between the Tobin's Q and short-term debt as well as trade credit.

Using 320 companies registered on the Tehran Stock Exchange, from the year 2002 to 2009, Saeedi and Mahmoodi (2011) conducted research on the relationship between leverage and the profitability of a firm. Capital structure was applied as the independent variable, expressed by long-term debt, short-term debt and total debt ratios. ROA, ROE, earnings per share (EPS) and the Tobin's Q were used as the dependent variables in the study. These dependent variables were used to measure firm performance. The study outcomes revealed that performance when measured by EPS and Tobin's Q has a substantially positive relationship with leverage. However, the relationship between capital structure and ROA is negative. The study further indicated that there seems to be a positive relationship between ROE and capital structure.

Findings by Javed et al. (2014) disclose that the performance of a firm is dependent on its capital structure, and thus the management of a firm will have to exercise caution when making capital structure decisions. The purpose of the research was to determine how the performance of 63 businesses listed on the Karachi Stock Exchange in Pakistani were affected by their capital structure. The data used in the study covered a period of five years, 2007 to 2011. In examining this relationship, a fixed effect model was employed as a pooled regression model. ROA, ROE, return on sales (ROS) (dependent variables), were used as performance proxies. Capital structure (independent variable) was defined through debt to assets, equity to assets (ETA) and long-term debt to assets.

Javed et al. (2004) presented mixed results with respect to the empirical exercise being pursued. ROA and capital structure displayed a positive relationship. The result was the same with respect to the relationship between ROE and debt to total assets ratio, whereas the association was negative when LTDTA was being examined. When ROA was being considered as a dependent variable, DTA and ETA highlighted the existence of a negative relationship. However, long-term debt to total assets indicated a positive relationship.

Applying the Traditional Theory to capital structure, Oladeji et al. (2015) investigated how the net earnings (after tax) of six petroleum firms, registered on the Stock Exchange, in Nigeria were impacted by their capital structure. The period of the study was from 2003 to 2013. The capital structure model adopted in the study pointed out that the performance of a firm depends on three explanatory variables, namely firm size, tax and lagged return on assets, including a control variable which is the year effect. The research results highlighted that firm performance was positively related to the independent variables. However, the investigation discovered that firm performance was negatively related to leverage. Although the review confirmed the presence of the Traditional Theory, the results were in conflict with the Traditional Theory; when borrowed funds of the six firms were increased the outcome was not positive due to fraud, corruption and wastage. As a result, the study recommended that firms in the

petroleum industry should employ more equity, relative to debt, as a means of financing its business projects.

2.5.2. Negative relationship between capital structure and firm performance

The recommendation by Akeem, et al.'s (2014) is in line with Oladeji et al. (2015). Their study argues that Nigeria's manufacturing companies from various sectors have a capital structure mix that is dominated by equity relative to debt, as increased debt usage could erode value within an organisation. The empirical exercise undertaken by Akeem et al. (2014) was based on 10 companies, selected from a population of 173 firms listed on the Nigerian Stock Exchange.

The considered period of the research was from 2002 to 2012 and reviewed the effects of capital structure on the net earnings (after tax) of a firm. Descriptive and regression techniques were employed to examine key variables such as ROA, ROE, TDTA and total debt to equity (TDTE) ratios. The study concluded that total debt, long-term debt to capital employed ratio, and the age of the firm are negatively related at a 5% significance level.

Umar et al. (2012) carried out a study on 62 companies from ten different sectors in Pakistan listed on the Karachi Stock Market. The companies were utilised to determine how capital structure influenced their profitability. From the study Umar et al. (2012) concluded that raised levels of leverage impact firm performance negatively. The authors further highlighted that the results advocate the employment of internally generated funds such as retained earnings, relative to the use of external borrowings and that decisions on capital structure do have a bearing on the viability of a firm. The results of the research conform to the Pecking Order Theory.

Salim and Yodav's (2012) study, based on 237 firms listed on Malaysia's Stock Market, explored the association between firm performance and its capital structure. The study covers the period from 1995 to 2011. The sectors that were considered ranged from

construction, industrial product, property, etc. In the study ROE, ROA, Tobin's Q and EPS represented measures of the profitability of the companies. Long-term debt, short-term debt, total debt ratios and growth were employed to represent capital structure as an independent variable. The control variable in the study was its size. The results of the investigation indicate that ROE, ROA, including EPS have an undesirable relationship with long-term debt, short-term debt and total debt. The Tobin's Q also indicated that there is a negative association between total debt and the profitability of the firm.

Pratheekanth's (2011) study closely examined capital structure and its impact on an organisation's performance. In his study, he examined and reviewed a handful of businesses listed on Sri Lanka's Stock Market. The observations from the study revealed an inverse relationship between both the financial performance of the organisations and their capital structure. Moreover, the research highlighted that businesses listed on the Colombo Stock Exchange are mainly dependent on debt and as such, have high interest expense, which is highly likely to impact financial performance negatively.

Mahmudi and Mahammadi (2015) looked into the relationship between performance and capital structure of 150 companies from various sectors, ranging from auto manufacturing and car parts as well as machinery and equipment etc. The firms considered in the investigation are listed on the Stock Market of Tehran. The study took into account long-term debt and short-term debt ratios as variables for capital structure, while corporate performance indicators such as ROE, ROI and dividends per share (DPS) were employed in the multivariate regression models. The research outcome indicated that both short-term and long-term debts' bearing on corporate performance is negative in nature. However, the authors stated that this is industry dependent.

2.5.3. Positive relationship between capital structure and firm performance

Using an entire population of 7548 banks in the US, Berger and Baraccorsi di Patti (2006) examined corporate performance and capital structure by assessing the applicability of the Agency Theory to the banking sector. In measuring the banks' performance, profit

efficiency was used as it takes into account the agency costs that exist between managers and shareholders, including the conflict that exists between shareholders and debt holders. The study was conducted from 1990 to 1995. A simultaneous-equation model was applied to the study to allow for retroaction causality between corporate performance and capital structure. The study results indicated that the Agency Theory applies to the US's banking industry, given that high levels of leverage yielded an increase in profit efficiency across the whole sample.

Berger and Baraccorsi di Patti's (2006) study results are consistent with those of Margaritis and Psillaki (2010) who conducted a study on France's manufacturing firms that operated in the textiles and chemicals sectors as well as companies that were in research and development, including technology services. The study was conducted from 2002 to 2005. The authors concluded that high levels of leverage are related to improved profit efficiencies. Therefore, the results of this study coincide with those of the Agency Theory.

Fosu (2013) studied the association between corporate performance and capital structure. The study was based on 257 South African corporations listed on the Johannesburg Stock Exchange. The duration of the study was from 1998 to 2009. In this study, ROA and the Tobin's Q were applied as measures of performance, while leverage (which represents capital structure) was expressed as total debt to total assets. The study concluded that debt does have a significantly positive impact on firm performance. Therefore, the author recommended that South African firms should increase the level of borrowed funds in their company's capital structure, as a result of the positive relationship which exists between leverage and firm performance.

Chowdhury and Chowdhury (2010) carried out an empirical exercise examining how the value of a firm is impacted by its capital structure. The investigation was conducted using a sample of 77 firms from a population of 157 non-financial firms listed on Bangladesh's Dhaka and Chittagong Stock Markets. The companies used were selected from sectors, which were regarded as dominant on the two Stock Exchanges, namely engineering,

food, fuel and power as well as chemical and pharmaceutical. The cross-sectional time series fixed effect model was used for the study that covered the period from 1994 to 2003. The dependent variable, the share price, was used as a proxy for firm value, whilst the independent variable was represented by firm size, profitability, public ownership in capital structure, dividend payout, assets and operating efficiency, growth rate, liquidity and business risk.

The study's results highlighted that the value of the firm and its capital structure correlated positively. In the study, it is further suggested that adjustments made to the capital structure, either to the component of equity or debt, are likely to yield positive results for the value of the firm.

Using a non-linear model, Quang and Xi (2015) conducted an exercise measuring capital structure effect on the financial performance of Vietnamese SOEs participating on the Ho Chi Minh and Hanoi Stock Market for the period of 2006 to 2012. The study outcomes pointed out that capital structure has a positive bearing on financial performance and the expansion of the SOEs when leverage is increased; however, exorbitant use of debt can reduce financial performance.

Nikoo's (2015) research uncovered that the performance of banks is positively affected by its capital structure. The research was conducted from 2009 to 2014 and focused on 17 banks listed on the Iranian Stock Market. The dependent variables which were included in the study as a measure of performance were ROA, ROE and EPS. The independent variable was represented by the debt to equity ratio, which was a measure for capital structure.

2.5.4. Insignificant relationship between capital structure and firm performance

Al-Taani (2013) carried out a study on 45 manufacturing firms listed on the Amman Stock Market in Jordan, examining the relationship between capital structure and firm performance. The experiment was conducted from 2005 to 2009, employing a multiple

regression analysis model to the dependent and independent variables. The dependent variables represented the performance of the manufacturing businesses. Firm performance was measured by ROA and the profit margin (PM). In this study, capital structure was the independent variable and was measured with STDTA, LTDTD and TDTE. From the study, the author concluded that capital structure is not the main determinant of the performance of a corporation and the association between capital structure and firm performance is negative as well as insignificant.

As a result, the author recommended that the managers of Jordan's listed manufacturing firms need to be cautious when using debt to finance projects, given the negative relationship that exists between capital structure and firm performance. In the study, it is further recommended that the assumptions of the Pecking Order Theory should be applied when making capital structure decisions, i.e. firms should first consider using retained earnings to finance projects, prior to considering external financing sources such as debt.

Ebaid (2009) conducted an empirical exercise on the impact of the preferred capital structure mix on corporate performance. The empirical exercise was completed for a period of 8 years, from 1997 to 2005 on non-financial corporates registered on the Egyptian Stock Exchange. In reviewing the association that existed when taking into account leverage and the corporate performance, a multivariate regression model was employed on the 64 firms. In measuring corporate performance ROA, ROE and GM were employed. STDTA, LTDTA and TDTA represented financial leverage. In addition, the author introduced a control variable into the study, size. Size is represented by the log of total assets. The results of the study indicated that decisions on capital structure have a slight and/or insignificant bearing on the profitability of non-financial corporates listed on the Egyptian Stock Exchange.

In conclusion, from the above empirical studies, one can deduce that the association between corporate performance and capital structure can be mixed and produce both negative and positive results. Moreover, the relationship between the two variables can

be either positive or negative. Some empirical evidence has established that capital structure has an insignificant or little effect on organisational performance. The study which is undertaken in this research will be to review the relationship that exists between capital structure and the profitability of South Africa's Schedule 2 public entities and to examine whether this relationship is negative or positive and/or significant or insignificant.

Chapter 3

3.1. Research methodology and data

3.2. Introduction

Chapter 3 provides an overview of the research objectives introduced in Chapter 1. This chapter further covers discussions on the sample and data, financial performance and capital structure measure variables including the independent control variables, the theory that underpins the model techniques and the regression models employed in analysing the data of this study.

3.3. Research objectives

As outlined in Chapter 1, the objective of this study is to determine if a relationship between capital structure and financial performance of Schedule 2 public entities exists; to identify whether this relationship is negative or positive; and should it be proven that there is a relationship between the capital structure and SOEs' financial performance, a determination will be as to whether this association is significant or not significant.

3.4. Sample and data

This study consists of a sample of 18 SOEs, from a population of 21 public entities listed as Schedule 2. The SOEs are from various sectors of the economy, namely transport, telecommunication, energy, defence, finance, mining, forestry and water. The study makes use of secondary data extracted from published audited annual financial statements of the respective SOEs. This raw data was used to compute the ratios measuring capital structure and firm performance. However, Telkom's data was obtained from Bloomberg. With the exception of Telkom, all entities in this study are not listed.

The review period of the study is 2005–2016. Entities excluded from the study are those established in the years that fall below the starting date of 2005. Other entities were eliminated from the study, due to difficulties experienced in collecting data on them. The year 2017, was not considered for this study as some of the entities in the sample were yet to release their audited annual financial statements at the time of writing this report.

The data in this study is balanced panel data. Given the short period of the study (12 years), the data was designed in a panel format for importing into Eviews. Panel data analysis procedure has been considered for this research as it improves the efficiency of the model and allows for a large number of observations, which increases the degree of freedom in the model (Le and Phan, 2017; Hsiao and Yanan, 2016). Le and Phan (2017) and Hsiao and Yanan (2006) further highlight that the usage of panel data, unlike cross-sectional data permits the control of unobserved variables that may exist across different firms and/or cultures of individuals. When using panel data, it is simple for one to make use of instrument variables to eliminate endogeneity (Le and Phan, 2017). However, as will be demonstrated here, the problems of endogeneity, heterogeneity, and autocorrelation are not of great concern to this study as the final model of analysis takes care of them.

3.5. Capital structure and financial performance variables

3.5.1. Independent variables: Capital structure measures

In reviewing the relationship between capital structure mix and firm performance, accounting-based measures were used. Chapter 1 outlines these measures which include the independent variable for capital structure measures that have been used in various studies including short-term, long-term and total debt to total assets. The debt variables in this study are long-term, short-term and total debt. Due to the statistical relationship among the three measures of debt to assets, short-term debt and long-term debt are hypothesised to be relevant for the type of firms included in this study.

The correlation analysis presented in Chapter 4, reveals that the three measures are highly correlated, in lieu of that, we chose the components that have both of the measures to describe the capital structure of the SOEs in South Africa. Therefore, for the purposes of this study, only short-term debt to total assets (STDA) and long-term debt to total assets (LTDA) will be considered.

3.5.2. Other independent variables: control measures

Control variables are also introduced in the study to capture the effects that may not have been detected by the independent variables. These variables are sales, growth, size and asset-turnover ratio. As stated in Chapter 1, sales, the growth and size of a firm have an impact on the performance of the firm (Salim and Yadav, 2012). The proxy for growth in this study is the percentage change in sales, while that of the size of the firm is represented by the natural log of total assets of the firm. Moreover, size is introduced as it accounts for the different environments that the entities operate in and it measures the level of capabilities within the firms (Salim and Yadav, 2012).

Lastly, the asset turnover rate has specifically been selected to help understand the efficiency of management in sweating their assets. This measure sometimes acts as an acid test ratio. As highlighted in Chapter 1, this variable is also very instrumental given the reputation of many public owned entities, it is important to show efficiency in conversion of sales (Chan, Chen and Wong, 2017).

3.5.3. Dependent variables: performance measures

In measuring the financial performance of the public entities, Return on Asset (ROA), Return on Equity (ROE), Net Profit Margin (NPM) and the Operating Margin (OM) were used to capture the performance of the SOEs in the period of the study. The use of this wide range of performance measures allows for the flexibility of testing the capital

structure mix in these organisations. As highlighted in the background section of Chapter 1, as much as these firms are profit oriented, they have an obligation of fulfilling government's developmental agenda. In fulfilling this dual mandate many of them have experienced difficulties that prompted government through the treasury to step in, in order to ensure their continuity.

Therefore, this study deemed it wise to use a range of measures without dummies to capture their performance. It should also be noted that because of the functional mandates of these organisations, their strategic existence may not follow the conventional performance indicators. For instance, purely private sectors are driven by strict profit measures which may not completely apply to organisations such as the ones under investigation in this study.

3.6. Data analysis

3.6.1. Panel data: Model techniques

In the analysis of the panel data that is used in testing the effect of capital structure on the financial performance of the firms listed as Schedule 2 in the PFMA, model techniques such as the pooled ordinary lest squares (OLS), the fixed effect (FE) and the random effect (RE) are applied in this study. According to Brooks (2014) and Le and Phan (2017), the pooled OLS, FE and RE models are techniques that are normally used in analysing panel data. Le and Phan (2017) point out that if heterogeneity does not exist in a regression model and the error term thereof is autonomous of the explanatory variables in the model, then the OLS estimators are consistent and unbiased. This assumption cannot hold for this study as the panel data used here deals with entities that operate in different environments and are therefore heterogenous. Therefore, the FE or the RE models are best suited for analysing the data in this study.

In identifying which model is appropriate, the Hausman test is carried out. However, when applied to short-dated panel data the use of either the RE and FE model may exhibit characteristics of a biased model, as the models will only account for unobserved heterogeneity and not endogeneity (Cameron and Trivedi, 2005; Le and Phan, 2017). To deal with problems associated with endogeneity such as autocorrelation and other normality problems the General Method of Moments (GMM) and/or the dynamic GMM model is used. When employing the GMM and/or the dynamic GMM model, Le and Phan (2017) propose that one ensures that the instruments applied to the model are appropriate to deal with the challenges presented by endogeneity.

In light of the above, all the panel data techniques are explored in this study to review the connection between the capital structure and firm performance of Schedule 2 public entities in South Africa.

3.6.2. The regression models

In studying the relationship between capital structure and financial performance of Schedule 2 public entities, the above-mentioned techniques will be applied to the following multiple regression models:

$$ROA_t = \alpha_t + \beta_1 \text{Salest}_t + \beta_2 Size_t + \beta_3 Sale_asset_t + \beta_4 STDA_t + \beta_5 LTDA_t + \beta_6 Growth_t + \varepsilon_t \quad (1)$$

$$ROE_t = \alpha_t + \beta_1 \text{Salest}_t + \beta_2 Size_t + \beta_3 Sale_asset_t + \beta_4 STDA_t + \beta_5 LTDA_t + \beta_6 Growth_t + \varepsilon_t \quad (2)$$

$$NPM_t = \alpha_t + \beta_1 \text{Salest}_t + \beta_2 Size_t + \beta_3 Sale_asset_t + \beta_4 STDA_t + \beta_5 LTDA_t + \beta_6 Growth_t + \varepsilon_t \quad (3)$$

$$OM_t = \alpha_t + \beta_1 \text{Salest}_t + \beta_2 Size_t + \beta_3 Sale_asset_t + \beta_4 STDA_t + \beta_5 LTDA_t + \beta_6 Growth_t + \varepsilon_t \quad (4)$$

Where:

ROE_t = net profit after tax over total equity

ROA_t = net profit after tax over total assets

NPM_t = net profit after tax over revenue

OM_t = operating income over sales

α_1 = constant

$Sales_t$ = revenue of the firm

$Size_t$ = is the log of a firm's assets

$Sales\text{-}Assets_t$ = asset turnover ratio i.e. sales over total assets

$STDA_t$ = short-term debt to total assets

$LTDA_t$ = long-term debt to total assets

$Growth_t$ = log of sales

The models above are built using Eviews 8 software.

Chapter 4

4. Data analysis and interpretation

4.1. Introduction

This chapter touches on the results expected from the research, including the study objectives explored in Chapter 1. Additionally, it provides an overview of the descriptive statistics of the core data as presented in this study. The statistical results of the various models and their appropriateness are also discussed. Lastly, a discussion and conclusion of the study is provided.

4.2. Study objectives and result expectations

As outlined in Chapter 1, the objectives of this study are to examine the existence of a relationship between the capital structure and financial performance of Schedule 2 SOEs and determining whether this relationship is negative or positive, and to identify if capital structure has a significant and/or an insignificant impact on the financial performance of Schedule 2 SOEs.

With these expectations in mind, as stated in Chapter 1, SOEs from a South African perspective have been provided with a dual mandate of pursuing commercial activities, whilst satisfying government's developmental objectives. This would require that SOEs have accesses to funding to achieve an appropriate capital structure i.e. mixture of debt and equity. In doing so, SOEs have undertaken numerous projects on the strength of their balance sheet(s), supported by government guarantees in some instances. Due to operational inefficiencies and delays experienced in some projects, the SOEs have continued to increase their exposure to debt to cover cost associated with project delays. This has increased borrowing costs and has led to their financial positions to deteriorate.

With that said, it is expected that there would be a significantly negative relationship between capital structure measured by LTDA and STDA and the variables that represent performance. To determine if this expectation holds, the results of the various models introduced in this research are explored in this chapter.

4.3. Statistical interpretation

4.3.1. Descriptive statistics

Table 2: Descriptive statistics of core data

	Financial performance variables				Capital structure variables		Control variables			
	ROA	ROE	NPM	OM	STDA	LTDA	SALES	SL_AST	SIZE	GROWTH
Mean	0.46867	14.6799	0.65303	1.21262	0.152038	0.242032	1.47E+09	0.78861	1.02E+09	41.3307
Median	0.02681	0.05914	0.07316	0.10117	0.078895	0.098773	2680872	0.3288	69966219	0.08612
Maximum	15.9511	2231.17	23.7274	30.3643	4.24199	7.647515	3.04E+10	39.4432	1.77E+10	8424.55
Minimum	-0.8788	-4.7569	-1.3281	-1.3541	3.89E+05	0.000000	777.0000	0.00707	4503.7	-0.9999
St. Dev.	2.11162	157.985	2.85066	4.62612	0.336772	0.569799	5.69E+09	2.95268	3.37E+09	574.626
Observations	215	215	215	215	215	215	215	215	215	215

Table 2 provides an overview of the statistics for measures of financial performance, capital structure and control variables. It can be observed from the descriptive statistics that SOEs produced good returns. During the study period, SOEs on average produced a return of 46.86% when ROA is used as a measure of performance. The average returns of South African SOEs are relatively higher than those of New Zealand SOEs, which produced an average return of 14.6% when measured by ROA (Chan. et al., 2017). Moreover, the financial performance of South African SOEs is higher than that of firms listed on the Bombay Stock Exchange in India. The Indian firms yielded returns of 4% and 12% when measured by ROA and ROE, respectively (Chadha and Sharma, 2015). When using NPM as a measure of performance SOEs on average produced a return of 65.30%.

On overage, the capital structure of SOEs consists mainly of long-term debt, in comparison to short-term debt. LTDA accounts for 24.20% of the capital structure, while

STDA is 15.20%. South Africa's financial markets are well developed, making it easy for firms to obtain finance (Gondo, 2009). This also suggests that lenders in South Africa, during the period of the study, were comfortable with lending to SOEs over the long term as they could easily access information on the entities i.e. audited annual financial statements and the entities Domestic Medium-Term Note Programme that is listed on the South African Johannesburg Stock Exchange. South African SOEs rely more on long debt relative to Ghanaian firms. Abor (2005) reported that 9.85% of Ghanaian firms' capital structure consists of long-term debt; however, short-term debt in these firms is higher at 48.76%, due to challenges experienced in obtaining long-term debt. Salim and Yadav's (2012) study on leverage and firm performance highlighted that Malaysian firms on average only utilise 14% debt in their capital structure.

4.3.2. Correlation matrix results

Table 3: Correlation matrix of core data

Probability	ROA	ROE	NPM	OM	SALES	SIZE	SL_AST	STDA	LTDA	TDTTA
ROA	1									
ROE	0.0184	1								
	0.7883	……								
NPM	0.9486	0.0394	1							
	0.0000	*0.5654*	……							
OM	0.8946	0.022	0.9273	1						
	0.0000	*0.7482*	*0.0000*	…….						
SALES	-0.0724	-0.0139	-0.0618	-0.0690	1					
	0.2909	*0.8398*	*0.3675*	*0.3138*	……					
SIZE	-0.0725	0.0464	-0.0667	-0.78	0.8999	1				
	0.2901	*0.4989*	*0.3301*	*0.2549*	*0.0000*	……				
SL_AST	0.1830	-0.0078	-0.0083	-0.0146	0.2262	0.0674	1			
	0.0072	*0.9095*	*0.9038*	*0.832*	*0.0008*	*0.3255*	……			
STDA	-0.0314	-0.0315	-0.0063	-0.0155	0.4448	0.1640	0.3711	1		
	0.6469	*0.6465*	*0.9274*	*0.8209*	*0.0000*	*0.0161*	*0.0000*	……		
LTDA	-0.0391	-0.0363	-0.0246	0.0080	0.3361	0.0162	0.3647	0.6828	1	
	0.5688	*0.5965*	*0.7195*	*0.9077*	*0.0000*	*0.8129*	*0.0000*	*0.0000*	…..	
TDTTA	-0.0393	-0.0374	-0.0193	-0.0008	0.4079	0.0771	0.3977	0.8675	0.9558	1
	0.5671	*0.5857*	*0.7785*	*0.9903*	*0.0000*	*0.2605*	*0.0000*	*0.0000*	*0.0000*	…..
GROWTH	-0.0135	-0.0065	-0.0144	-0.0170	0.1911	0.3300	0.0047	0.0161	0.0148	0.0165
	0.8441	*0.9248*	*0.8341*	*0.8045*	*0.0049*	*0.0000*	*0.9452*	*0.8150*	*0.8291*	*0.8094*

Table 3 presents the correlation analysis. There are four dependent variables in this study which measure or mimic the performance of SOEs in South Africa. The relation between the dependent variables and the independent variables can be interrogated through this simple statistical analysis. If the association among any two variables is more than 0.8, then they cannot be included in the same model of analysis because of it being a close to perfect correlation. This results in multicollinearity, which is a serious econometric problem. For instance, in this output, multicollinearity exists between ROA and NPM, ROA and OM as well as ROA and turnover ratio (sales to asset) and, thus, these variables cannot fit in the same regression analysis since they seem to carry same innovations.

If among the independent variables, this relationship is discovered, then two or if more of the variables cannot be subjected to the same model since one can be seen to have identical information as the other. The correlation analysis indicates that total debt to total assets (TDTTA) is highly correlated to other independent variables, STDA and LTDA with coefficients of 0.8674 and 0.9557, respectively. Therefore, TDTTA is excluded from the regression models as it cannot be in the same model as explained in Section 3.5.1 in Chapter 3.

As can be seen from Table 3, the variables have different co-movement among themselves and with the dependent variables. STDA as a measure of capital structure is negatively related to ROA, ROE, OPM and OM with coefficients of -0.0314, -0.0314, -0.0062 and -0.0155, respectively. This negative relationship also holds for capital structure, when measured by LTDA against ROA, ROE and NPM with coefficients of --0.0390, -0.03631 and -0.0246, respectively. However, LTDA is positively related to the OM with a coefficient of 0.00825. It can be observed from the table that STDA and LTDA are not statistically significant in determining the behaviour of the dependent ROA, ROE, NPM and OM at a 5% significance level. A negative relationship exists between sales and ROA, ROE and NPM, with coefficients of -0.0723, -0.0138, -0.0617 and -0.0690. The relationship that sales has with these variables is statically insignificant.

With regards to the control variables, it can be seen from the correlation matrix that sales a negative and significant relationship with the dependent variables in the model. Size is negatively and insignificantly related to ROA, NPM and OM, but positively related to ROE. The asset turnover is negatively related to ROE, NPM and OM as can be seen by the signs of the coefficients. However, asset turnover is positively related to ROA. Growth is negatively related to the dependent variables. This relationship is not statistically insignificant.

4.3.3. Unit root test

In identifying the appropriateness of the variables in the model, a test for stationary using the Augmented Dickey Fuller (ADF) test was conducted. According to Brooks (2014) stationary variables are those that have a constant mean and variance as well as a constant autocovariance and do not contain a unit and /or explosive root. To test for the existence of a unit root, the following hypotheses were tested in the study:

Ho: The variable is not stationary (has a unit root)
H1: The variable is stationary (has no unit root)

The p-values of the variables in the model are less than the 5% significant levels, as a result the null hypothesis cannot be accepted. Therefore, the results of the study indicate that the variables are stationary and do not have an explosive unit root, see Appendix A. This means that the models of this study are appropriate and can be used in testing the relationship between the capital structure and financial performance of Schedule 2 SOEs.

4.3.4. Pooled OLS model

Table 4: Pooled OLS model results

	Dependent variable	Dependent variable: ROE	Dependent variable	Dependent variable
	1	2	3	4
SALES	-0.3072	11.1828	-0.2425	0.2818
	0.2715	0.6265	0.5311	0.6501
SIZE	0.0641	4.7623	0.1383	-0.7315
	0.828	*0.8446*	*0.7356*	*0.2663*
SALES_AST	0.1126	-0.1619	0.0239	-0.0667
	0.0227	*0.9680*	*0.7248*	*0.5414*
LTDA	-0.4319	20.3961	-0.2833	0.3144
	0.3904	*0.6220*	*0.6843*	*0.7786*
STDA	0.0263	-37.2444	0.2807	-0.7421
	0.9709	*0.5312*	*0.9907*	*0.6445*
GROWTH	0.0035	-0.4243	0.0001	0.0025
	0.7641	*0.6633*	*0.9907*	*0.9233*
CONSTANT	0.4572	20.1993	0.5951	1.3024
	0.0087	*0.1562*	*0.0137*	*0.0008*
Observations	198	198	198	198
Adj R squared	0.0096	-0.0252	-0.0281	-0.0222
F-test	1.3189	0.1908	0.1022	0.2863
Prob>F	*0.2504*	*0.9791*	*0.9960*	*0.9429*

The statistical results of the pooled OLS model can be observed in Table 4. From the data outcome it can be seen that a 1% increase in LTDA, will result in a -0.4319 and -0.2833 decrease in ROA and NPM, respectively. However, a positive relationship can be seen between LTDA and ROE as well as OM with coefficients of 20.3961 and 0.3144, respectively. As can be seen from Table 4, LTDA's relationship with the dependent variables is not statistically significant as demonstrated by the p-values of the coefficients at a 5% significance level.

When capital structure is measured by STDA, it can be observed that a positive association exits with ROA and NPM with respective coefficients of 0.0263 and 0.2807, while a negative relationship can be seen when ROE and OM are considered. The relationship between STDA and the explained variables ROA, ROE, NPM and OM is not

statistically significant. The p-values of the STDA coefficients are greater than the 5% significance level.

With respect to the control variable, sales, it can be seen that a negative relationship exists between sales and ROA as well as NPM, with coefficients of -0.3072 and -0.2425, respectively. However, a positive relationship exists between sales and ROE, with a coefficient of 11.1828. This positive relationship also holds for sales and OM, with a coefficient of 0.2818. The p-values of sales are greater than the 5% significant level, indicating that the relationship between the control variable sales is not statistically significant. Size is positively related to the dependent variables ROA, ROE and NPM, with coefficients of 0.0641, 4.7623 and 0.1383, respectively. But size is negatively related to the OM, with a coefficient of -0.7315. The relationship that size has with the OM is not statistically significant as can be seen by the p-values at a 5% significance level. Growth is positively related to ROA, NPM and OM, with coefficients of 0.0035, 0.0001 and 0.0025, respectively. It can be seen from Table 4 that the relationship that this control variable has with the dependent variables is not statistically significant at a 5% significance level.

In addressing the objectives of this study, the results of the pooled OLS model are mixed. These results are also not in line with the expected study outcome of a negative relationship between capital structure and firm performance. The results indicate that there is both a negative and positive relationship between capital structure and the financial performance of Schedule 2 SOESs. However, this relationship is not statistically significant. The results of the model also indicate that there is a negative and positive relationship between the dependent variables and the control variables in the model. This relationship is also not statistically significant.

In order to determine the appropriateness of the pooled OLS model the F-statistic, along with its associated p-value was used. The F-statistics of the model along with the associated p-values indicate that the models are not appropriate under the OLS model.

This is supported by the adjusted R-squared values, which range between -0.0222 to -0.0096, illustrating that models cannot explain the changes in the dependent variables. As pointed out in Section 3.6.1, of Chapter 3, the assumptions of the pooled OLS model do not hold for this study given the heterogeneity of the firms that are being examined. Therefore, the FE and RE models are considered.

4.3.5. FE and RE models

Table 5: FE and RE model results

	Dependent variable		Dependent variable: ROE		Dependent variable		Dependent variable	
	1	2	3	4	5	6	7	8
	FE	RE	FE	RE	FE	RE	FE	RE
SALES	-0.3121	-0.3072	8.476	11.1828	-0.1984	-0.2425	0.3417	0.2818
	0.2842	*0.2807*	*0.7991*	*0.6273*	*0.6225*	*0.5381*	*0.5977*	*0.656*
SIZE	0.03889	0.0641	5.322	4.7623	0.0551	0.1383	-0.8416	-0.7315
	0.9002	*0.8312*	*0.8309*	*0.845*	0.8971	*0.7398*	*0.2198*	*0.2749*
SALES_AST	0.1102	0.1126	0.0002	-0.1619	0.0153	0.0239	-0.07884	-0.0667
	0.0323	*0.0253*	*0.9999*	*0.9681*	*0.8285*	*0.7293*	*0.4904*	*0.5486*
LTDA	-0.3996	-0.4319	21.92	203961	-0.2365	-0.2833	0.1825	0.3144
	0.4493	*0.3993*	*0.6081*	*0.6228*	*0.7462*	*0.6894*	*0.8764*	*0.7825*
STDA	-0.0288	0.0263	-34.3806	-37.2444	0.2314	0.2807	-0.7029	-0.7421
	0.9691	*0.9714*	*0.5699*	*0.5322*	*0.8229*	*0.7829*	*0.6723*	*0.6504*
GROWTH	0.0050	0.0035	-0.2636	-0.4243	0.0023	0.0001	0.0059	0.0025
	0.6796	*0.7684*	*0.7904*	*0.6641*	*0.8912*	*0.9909*	*0.827*	*0.9247*
CONSTANT	0.464	0.4572	19.5513	20.1993	0.6012	0.5951	1.3018	1.3024
	0.0093	*0.0100*	*0.1728*	*0.1573*	0.0148	0.0153	0.0011	0.0010
Observations	198	198	198	198	198	198	198	198
Adj R squared	-0.0288	0.0096	-0.0303	-0.0252	-0.0636	-0.0281	-0.0597	-0.0222
F-test	0.6551	1.3189	0.6374	0.1908	0.2633	0.1022	0.3057	0.2863
Prob>F	0.8346	0.2504	0.8504	0.9791	0.9982	0.996	0.9956	0.9429
Hausman test	**0.8996**		**0.4029**		**0.9122**		**0.9397**	
Chi-squared	**2.2085**		**6.1839**		**2.0804**		**1.7687**	

The results of the FE and RE models are reported in Table 5. From the statistical output under both the FE and RE models, it can be seen that LTDA is negatively related to ROA and NPM. This negative relationship was also demonstrated under the pooled OLS model in Table 5. The FE and RE models indicate that a positive relationship exists between LTDA and the ROE. A positive relationship can also be seen between LTDA and OM. To review the model that is appropriate in assessing the association that exists

between the capital structure and financial performance of Schedule 2 public entities, a Hausman test was performed. The following hypothesis is employed to identify which model is appropriate:

H_O: RE model is appropriate

H_1: FE model is appropriate

As can be seen from Table 5, the overall probability values under the Hausman test are higher than the 5% significance level and as such the null hypothesis is accepted. Therefore, the RE model is appropriate and it is the model that will be used to study the relationship between capital structure and firm performance.

The results of the RE model are mixed; when we look at LTDA as a measure of capital structure it can be observed that there is a negative relationship between long-term debt and the dependent variables ROA and NPM with coefficients of -0.4319 and -0.2833, respectively. However, the relationship between LTDA, ROE and OM is positive, a 1% increase in long-term debt will result in an increase of 20.3961 and 0.3144 in the ROE and OM, respectively. The relationship that LTDA has with the dependent variables is statistically insignificant at a 5% significance level.

The results further indicate that there is a positive relationship between STDA and the explained variables ROA and NPM. When all else held constant, a 1% rise in STDA will lead to an increase of 0.0263 and 0.2807 in ROA and NPM, respectively. STDA is negatively related to ROE and OM with coefficients of -37.2444 and -0.7421, respectively. Similar to the LTDA, it can be seen that the relationship that STDA has with the dependent variables in the model, is not statistically significant at a 5% significance level.

In columns 2 and 6, it can be seen that the variable sales is negatively related to ROA and NPM. Whilst, the relationship that sales has with ROE and the OM is positive. When all else is held constant, a 1% increase in sales will cause ROA to decline by -0.3072

and NPM will decrease by -0.2425. The negative relationship that sales has with ROA and NPM is statistically insignificant at a 5% significance level with p-values of 0.2807 and 0.5381, respectively. The results in columns 4 and 8, point to a positive relationship between sales and ROE and OM, with coefficients of 11.1808 and 0.2818, respectively. It can also be observed from the RE model output that the positive relationship that sales has with ROE and OM is statistically insignificant. The size of the firm is positively related to all dependent variables ROA, ROE and NPM, with the exception of OM where a negative relationship exists. Size's overall relationship with the dependent variables is statistically insignificant.

In addressing the objectives of the study, from the results of the RE model, it can be concluded that there is a relationship that exists between capital structure and financial performance of Schedule 2 SOEs. This relationship is mixed, with both negative and positive outcome. According to the RE model this relationship is statistically insignificant. Moreover, the results of the model indicate that there is a positive and negative relationship between the independent control variables and the dependent variables. The association that capital structure and the control variables have with the financial performance of Schedule 2 public entities is statistically insignificant.

In reviewing whether the model is appropriate in explaining the behaviour of the dependent variables in the model, the adjusted R-squared of the model and the p-values of the F-statistic were considered. From Table 5, it can be noted that the adjusted R-squared value ranges from -0.0222 to 0.0096 under the RE model, which is relatively low. This indicates that the model is not significant in explaining the behaviour of the dependent performance variables. This conclusion is supported by the overall p-values of the F-statistic, which are above 5% significance level for the RE model.

Although the RE model takes into account the individuality of the SOEs that is ignored under the pooled OLS model, the RE model is not be appropriate for the study as it does not take into consideration the challenges that may arise from endogeneity, whereby there is an association between the independent variables and the error term within the

model. As explained earlier on in Section 3.6.1, in Chapter 3, the existence of endogeneity will lead to autocorrelation and multicollinearity. Therefore, the GMM is used in this study for its robustness, to solve data and sample problems.

4.3.6. GMM model

Table 6: GMM model results

	Dependent variable	Dependent variable: ROE	Dependent variable	Dependent variable
	1	2	3	4
SALES	-0.5858	8.2107	-0.4705	2.0291
	0.2787	*0.9260*	*0.5494*	*0.1092*
SIZE	-1.1601	-183.0615	-1.8704	-2.9501
	0.6089	*0.4359*	*0.5683*	*0.5766*
SALES_AST	-0.0538	-17.2166	-0.1141	-0.3915
	0.7062	*0.2457*	*0.5808*	*0.2406*
LTDA	-3.6834	-161.8517	-4.4589	-10.0986
	0.2695	*0.6388*	*0.3544*	*0.1939*
STDA	3.9000	192.422	2.5930	10.1933
	0.4264	*0.7045*	*0.4299*	*0.3723*
GROWTH	0.0485	6.1855	0.0652	-0.0152
	0.5792	*0.4959*	*0.6071*	*0.9404*
CONSTANT	0.0029	-3.7084	-0.0278	0.1582
	0.9959	*0.9504*	*0.9737*	*0.9062*
Observations	180	180	180	180
Adj R squared	-0.5910	-0.8056	-0.5492	-0.5891

The output of the GMM model is presented in Table 6. The results of the model indicate that there is a negative relationship between LTDA and the dependent variables. An increase of 1% in LTDA will cause ROA, ROE, NPM and OM to contract by -6.6834, -161.8517, -4.4589 and -10.0986, respectively. The p-values of the dependent variables ROA, ROE, NPM and OM are 0.2695, 0.6388, 0.3544 and 0.1939, respectively. These p-values point out that this negative relationship is not statistically significant at a 5% significance level. However, the results of the model indicate that the relationship

between STDA and ROA, ROE, NPM and OM is positive. ROA, ROE, NPM and OM will increase respectively with 3.9000, 192.4220, 5.5930 and 10.1933 when STDA rises by 1%. The p-values of the dependent variables (ROA: 0.4264, ROE: 0.7045, NPM: 0.4299, OM: 0.3723) point out that the relationship between STDA and the dependent variables is not statistically significant.

From Table 6, it can be observed that sales is negatively related to ROA and NPM, with coefficients of -0.5858 and -0.4705, respectively. An increase of 1% in sales will lead to a decline in ROA and NPM. The p-values of 0.2787 for ROA and 0.5494 for NPM highlight that sales relationship with these variables is not statistically significant at a 5% significance level. Unlike the negative relationship that exists between sales and the dependent variables ROA and NPM, the relationship that exists between sales and ROE is positive. A 1% increase in sales will result in an increase of 8.2107 in ROE. This positive relationship also holds for sales and the OM, with a coefficient of 2.0291. The relationship that sales has with all the performance measures is not statistically significant at a 5% significance level, with a p-value of 0.9260 for ROE and a p-value of 0.1092 for the OM variable.

It can be observed from Table 6, that size has a negative relationship with all the dependent variables in the model. A 1% increase in the size of the SOEs will result in a decline in ROA, ROE, NPM, and OM by -1.1601, -183.0615, -1.8704 and -2.9501, respectively. The p-values of 0.6089, 0.4359, 0.5683 and 0.5766 for ROA, ROE, NPM and OM, respectively demonstrate that the relationship that size has with all the dependent variables is not statistically significant at a 5% level. Similar to size, it can be seen from Table 6 that the asset turnover variable (SALES_AST) has a negative relationship with all the dependent variables in the model. A 1% increase in the asset turnover variable will result in a decline of -0.0538, -17.2166, -0.1141 and -0.3915 in ROA, ROE, NPM and OM respectively. The p-values of the variables (ROA: 0.7062, ROE: 0.2457, NPM: 0.5808, OM: 0.2406) indicate that the relationship that asset turnover has with the dependent variables is not statistically significant.

The results of the GMM model indicate that growth is positively related to ROA, ROE and NPM with coefficients of 0.0485, 6.1855 and 0.0652. However, the relationship that exists between growth and the OM is negative. A 1% increase in growth will cause the OM to decline by -0.0152. At a 5% level of significance, it can be seen that the relationship that growth has with the dependent variables within the model is not statistically significant. ROA, ROE, NPM and OM have p-values of 0.5792, 0.4959, 0.6071 and 0.9404, respectively.

The overall results of the GMM model produce similar results to the RE model discussed above. The GMM model highlights that there is a positive and negative relationship between capital structure and firm performance of Schedule 2 SOEs. This relationship is statistically insignificant. The results of the model also point out that there is a negative and positive relationship between the independent control variables and dependent variables. The control variables relationship with the dependent variables is statistically significant.

The adjusted R-squared values for the model range from -0.8056 to -0.5492, which is below the 60% level. This indicated that the variables do not explain the changes in the model. The models produced the J-statistics, without their associated probabilities, as a result it was difficult to determine whether identification exits in the instruments that are applied in the model. For this reason, the dynamic GMM model was employed in the study.

4.3.7. Dynamic GMM model

Table 7: Dynamic GMM model results

	Dependent variable	Dependent variable: ROE	Dependent variable	Dependent variable
	1	2	3	4
SALES	-0.3607	19.42425	-0.4441	0.2816
	0.0000	*0.0000*	*0.0000*	*0.0000*
SIZE	0.2628	7.3600	0.3119	-0.8317
	0.0000	*0.0000*	*0.0000*	*0.0000*
SALES_AST	0.1869	-0.9028	0.0556	-0.0676
	0.0000	*0.0341*	*0.0031*	*0.1731*
LTDA	-0.2058	5.6094	0.5328	1.3545
	0.0000	*0.0000*	*0.0000*	*0.0000*
STDA	-0.2496	4.621402	0.0328	-2.7998
	0.0058	*0.0000*	*0.0000*	*0.0000*
GROWTH	0.0035	-1.0586	-2.75E-05	0.0204
	0.7804	*0.0002*	*0.9980*	*0.6636*
ROA(-1)	0.6407	19.5513	0.6012	1.3018
	0.0000	0.1728	0.0148	0.0011
ROE(-1)		0.2881		
		0.0000		
NPM(1)			0.5221	
			0.0000	
OM(-1)				0.7462
				0.0000
Observations	162	162	162	162
J-statistic	11.7612	12.8879	3.7156	10.5041
Prob>J	0.4656	0.4565	0.9880	0.5718

The outcome of the dynamic GMM model is presented in Table 7. The results indicate that the explanatory variable LTDA is negatively related to ROA, a 1% increase in LTDA will led to a decline of -0.2058 in ROA, all else held constant. However, the results indicate that LTDA is positively related to ROE, NPM and OM with coefficients of 5.6094,0.5328, and 1.3545, respectively. The p-values of the coefficients, namely 0.000, of the dependent variables in the model indicate that this relationship is statistically significant at a 5% significance level.

From columns 1 and 4, it can be seen that STDA is negatively and statistically related to ROA and OM with coefficients of -0.2496 and -2.7998, respectively. In columns 2 and 3, it can be observed that STDA is positively related to the dependent variables ROE and NPM; therefore, a 1% increase in STDA will result in an increase of 4.6210 and 0.0826 in ROE and NPM, when all things are held constant. The relationship that STDA has with ROE and NPM is statistically significant at a 5% level of significance.

From columns 1 and 3, it can be observed that there is a negative relationship between ROA and NPM. When all else is held constant, a 1% increase in STDA will result in a decrease in ROA and NPM by -0.3607 and -0.4441, respectively. However, columns 2 and 4 indicate that there is a positive relationship between ROE and OM. An increase of 1% in STDA will cause ROE and OM to increase by 4.6214 and 0.0328, respectively. The p-values of the model, indicate that the relationship that STDA has with the coefficients in the model, is statistically significant at a 5% significance level.

With regards to the control variables, the dynamic GMM model points out that sales are negatively related to ROE and NPM, with coefficients of -0.3607 and 0.4441, respectively. The relation that sales has with these variables is statistically significant. The relationship that the sales variable has with ROE and OM is positive; a 1% increase in sales will result in an increase of 19.4242 for ROE and an increase of 0.2816 for OM. The p-values of these coefficients indicate that this relationship is statistically significant at a 5% significance level. Columns 1, 2 and 3 point out that size is positively related to ROA, ROE, NPM with coefficients of 0.2628, 7.3600, and 0.3119, respectively. Whilst size relationship with OM is negative; a 1% increase in the size of the Schedule 2 SOEs will result in a decline of -0.8317 in OM. The outcome of the model highlights that the relationship that size has with all the dependent variables is statistically significant.

The asset turnover ratio is positively and significantly related to ROA and NPM. Therefore, when all else is held constant a 1% increase in sales will lead to ROA and NPM to increase by 0.1869 and 0.0556, respectively. However, a negative relationship exists between the asset turnover ratio and the dependent variables ROE and OM, respectively. A 1% increase in sales will lead to ROE and OM to decrease by -0.9028 and -0.0676.

When the control variable growth is taken into account, it can be observed from columns 1 and 4 that growth has a positive relationship with ROA and NPM with coefficients of 0.0035 and 00204, respectively. The p-values of the above-mentioned variables indicate that this relationship is statistically significant at a 5% significance level. However, columns 2 and 3, point out that the relationship between growth and the dependent variables is negative. When all else is held constant, an increase of 1% in growth will lead to a decline of -1.0586 for ROE and a decrease of - 000002.75 in the NPM. The p-value of 0.0002 for the dependent variable ROE, points out that growth has a statistically significant relationship with ROE at a 5% significance level.

In addressing the objectives of the study, the overall results of the dynamic GMM model points out that the relationship that exists between the capital structure variables and firm performance of Schedule 2 SOEs is both positive and negative. In addition, the dynamic GMM model points out the that relationship that exists between the independent control variables and the dependent variables can be either positive or negative. Moreover, the results of the dynamic GMM indicate that the relationship that the capital structure and firm performance has is statistically significant.

In order to test the strength of the instruments used in the dynamic model, the Sargan test was performed. The hypothesis for the Sargan test is as follows:

Ho: The instruments are not valid

H_1: The instruments are valid

The p-value for the Sargan test is 0.8027, which is higher than the 5% significance level, suggesting that we reject the null hypothesis and accept the alternative hypothesis. Therefore, it can be concluded that the instruments are valid. As can be seen from Table 7, this conclusion is also supported by the J-statistic along with its associated p-values which are greater than the 5% significance level.

The overall results of this model, indicate that the dynamic GMM model is the appropriate model to employ when studying the relationship between the capital structure and the financial performance of Schedule 2 SOEs. Thus, the models in the study were re-estimated using the dynamic GMM model. When re-estimating the models, the dependent variables were lagged to address issues that emanate from endogeneity.

4.4. Discussion of results

4.4.1. Capital structure

From the results of the dynamic GMM model presented in Table 7, it can be seen that the relationship between capital structure and firm performance is mixed. The results indicate that the independent variable LTDA is positively and significantly related to ROA, but negatively and significantly connected to ROE, NPM and OM. With respect to SDTA, there is a significantly negative relationship between ROA and OM. However, STDA is positively and significantly related to ROE and NPM. The results of this study are supported by Abor (2005), Abor (2007), Saeedi and Mahmoodi (2011) and Javed et al. (2014) who discovered that a relationship between capital structure and firm performance can simultaneously be significantly negative and positive.

The results of this study are not supported by the findings of Akeem et al. (2014), Umar et al. (2012), Pratheekanth (2011) and Salim and Yadav (2012) who suggested that the association between capital structure and firm performance is negative in nature. The results of this study are also contradicted by Baraccorsi di Patti (2006), Berger and Baraccorsi di Patti (2006), Chowdhury and Chowdhury (2010) and Quang and Xi (2015) whose studies revealed that there is a positive relationship between the usage of leverage and the financial performance of firms. On the other hand, research conducted by Al-Taani (2013) and Ebaid (2009) revealed that capital structure has a negligible to no impact on firm performance.

The results of this study suggest that there are benefits that can accrue from the usage of both long-term debt and short-term debt. However, entities need to be careful when using debt, as excessive usage thereof could erode the benefits that can be realised from leverage. This is affirmed by Abor's (2005) research which states that an increase in debt within an organisation can lead to reduced profitability. This has been the case with some South African government entities, whereby profits have been offset by high interest costs associated with growing levels of debt.

Public entities have undertaken massive infrastructure projects with significant capital expenditure requirements. The SOEs have funded their capex requirements through increased borrowings supported by their balance sheet and/or debt backed by government guarantees. The increase in borrowings has led to an escalation in interest costs. This is further exacerbated by the long lead times in projects, whereby operating and interest costs are incurred during the production phase of the project, before the entity can realise sufficient revenue to cover both the interest on the debt and operating cost. This situation leads to reduced profitability. Moreover, from an accounting perspective, the high capital expenditure filters through to the income statements of these entities via depreciation, thus reducing profits even further.

The results of this study are in line with the static trade-off theory on capital structure, which states that there are tax benefits that can be realised by firms when making use of

debt in their capital structure mix (Shahar et al., 2015). However, this benefit is eroded as the level of debt within the firm escalates; as debt rises the profits of the firms decrease and the probability of financial distress heightens which in turn offsets the profits realised by the firms (Luigi and Sorin, 2009). The traditional theory on capital structure is also applicable to this study as it points out that the introduction of debt to a firm's capital structure will cause WACC to decline. However, this decline can only be achieved when debt is at a certain level, further increases in debt will result in a rise in the WACC level, which eventually starts to erode the value of the firm (Oladeji et al., 2015). This is the case with some Schedule 2 SOEs which have high levels of debt and have to rely on government guarantee facilities in order to raise debt as investors are not willing to invest in the SOEs without some kind of government support, as the value of their balance sheets has weakened throughout the years.

4.4.2. Control variables

4.4.2.1. Sales

Hauser and Katz (1998) indicated that in order for a firm to be profitable, it needs to generate sufficient sales to remain sustainable. This view is also held by Chadha and Sharma (2015) who state that companies that generate sturdy profits, experience increased sales levels. However, from Table 7 (dynamic GMM model), it can be seen that the control variable sales has a significantly negative relationship with ROA and NPM. This negative relationship is an indication that SOEs' goods and services are mispriced as public entities do not only offer their goods and services on a commercial basis, but are similarly expected to provide public goods at prices below the cost of production to make the goods and services affordable to the broader population in the country. Also, the developmental mandates that SOEs have been given are in some instances unfunded and/or not sufficiently funded and thus, making it difficult for SOEs to make profits. Some developmental mandates remain unfunded as the South African government has competing priorities, socio-economic and infrastructure investments that

are normally prioritised, over other projects that may not be regarded as social in nature. This negatively impacts SOEs that have unfunded mandates. The South African government has also cut some grant funding, previously extended to SOEs, due to budgetary constraints.

4.4.2.2. Size

In this study, size is positively and significantly related to ROA, ROE and NPM. The positive relationship between ROA and size is further supported by Chan et al. (2017) whose research results revealed that the profitability of SOEs when measured by ROA is positively related to its size. When ROE was being considered Chan et al. (2017) highlighted that the association between size and ROE can either be positive or negative. In the case of this study, the relationship between size and ROE is not mixed, the relationship between the two is one dimensional, i.e. positive.

It can also be seen from the dynamic GMM output that growth is significantly and negatively related to OM. Pervan and Visie (2012) state that the negative relationship between size and performance of a firm can be explained by the management of a firm that is pursing self-interest at the expense of maximising firm value. This is the case with some SOEs in South Africa; allegations of some SOEs' involvement in State Capture have questioned the manner in which the board and the executive management of public entities run the affairs of these entities. This suggests that the management of these parastatals may have diverted resources from their intended use and have compromised the financial sustainability of the SOEs. In the 2017 Budget Review, the National Treasury reported that poor corporate governance and the inability of management to fully comply with their fiduciary duties have led to companies to experience financial challenges.

4.4.2.3. Asset turnover

It can be seen from Table 7 that the output for the asset turnover for this study is mixed. The results indicate that the asset turnover rate is significantly positively related to ROA and NPM, pointing out that the effective use of assets by SOEs will result in an increase in ROA and NPM. However, this relationship does not hold for ROE and OM. The results of this study are in conflict with the findings of Muritala (2012) which indicate that asset turnover is significantly positively related to ROE. Chan et al. (2017) also found that the asset turnover ratio is positively related to the performance of the firm.

This significantly negative relationship results of this study serve as an indication that public entities may be experiencing inefficiencies. The inefficiencies stem from the SOEs' aging infrastructure which has led to them producing goods of poor quality, causing the returns of the entities to decline. This is also an indication that management of the entities may not be efficiently managing the SOEs assets.

4.4.2.4. Growth

In this study, growth is used as a control variable as it has an impact on the performance of a firm. Chadha and Sharma (2015) found that firms that exhibit increased sales growth will produce good financial performance. According to King and Santor (2008) and Jiraporn and Liu (2008) the growth of a firm is positively and significantly related to profitability when measured by ROA. Given the results of the above-mentioned study one would expect that growth in sales of SOEs is positively and significantly related to the overall financial performance of the firm. Although the results of this study also prove that growth is positively related to ROA and OM. Alternatively, the results of the study prove that ROE is significantly and negatively related to growth. Whilst the relationship between growth and NPM is negative, the relationship is
significant.

For South African SOEs, growth may be negatively related to firm performance as some public entities serve specific niche markets and as such may not be in a position to expand into other markets that would allow them to increase their sales growth. The inability of SOEs to respond to changes in their operating environment can also drive sales down, especially in a situation whereby entities no longer enjoy their monopoly status. The introduction of other players into the market has led to improved efficiencies that have resulted in the competitive pricing of goods and services; at times SOEs are unable to compete, especially, if they are experiencing operational inefficiencies. This relationship may also be explained by the restrictive legislative mandates that have been provided to the SOCs. The SOEs mandate prescribe the goods and services that the SOEs may provide, as such the SOEs may not provide goods and services outside of their mandates.

The negative relationship between growth and profitability is also supported by Coad (2007) who states that relinquished opportunities result in low profit margins. Moreover, Coad (2007) identified that if firms do not grow at an optimal level, negative growth rates may be realised.

4.5. Conclusion and recommendation

In the South African economy, SOEs are used as instruments to advance government's developmental agenda, whilst required to remain financially sustainable through the pursuit of their commercial mandate. In order to be able to achieve this dual mandate, SOEs need an optimal capital structure mix; an appropriate mixture of debt and equity. Therefore, the objective of this study was to determine if a relationship exists between capital structure and the financial performance of public entities listed as Schedule 2 in terms of the PFMA. To study this relationship, panel data covering the period from 2005 – 2016, was used. The data employed in the study was analysed using various models. The results of the models indicated that the dynamic GMM model is the most

appropriate in studying the relationship between capital structure and financial performance of Schedule 2 SOEs.

The dynamic GMM model produced mixed results. This model indicated that capital structure measured by LTDA is positively and significantly related to ROA, but negatively and significantly associated to ROE, NPM and OM. With respect to SDTA, there is a significantly negative relationship between ROA and OM. However, STDA is positively and significantly related to ROE and NPM. The findings of the dynamic model of the study are in support of two capital structure theories; the trade-off theory and the traditional theory, which both advocate that there are benefits that can be realised from the usage of debt within the firm. However, the gained value will be eroded as firms increase the levels of leverage within the organisation. This implies that SOEs can make use of debt, but at acceptable levels, in order to ensure that the value gained through debt does not diminish. Therefore, it is recommended that the management of SOEs to continuously rebalance the combination of equity and debt within the entities as they undertake different projects that will satisfy government's developmental objectives, thus ensuring that the firms' capital structure is at its optimal level.

This study was limited to only exploring the effect that the capital structure mix of SOEs has on the financial performance of Schedule 2 public entities. This study can be expanded further to include the impact that corporate governance has on the performance of Schedule 2 public entities, as the continued weakness in the governance of SOEs questions the manner in which these entities are run by their respective boards. According to Pillai et al. (2017), governance is regarded as a crucial determinant of performance of the firm. This is also supported by Dettharong et al. (2017).

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Appendix A:

Panel unit root test: Summary
Series: STDA
Date: 02/20/18 Time: 14:50
Sample: 2005 2016
Exogenous variables: Individual effects
User-specified lags: 1
Newey-West automatic bandwidth selection and Bartlett kernel
Balanced observations for each test

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-22.6793	0.0000	18	180
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-6.53406	0.0000	18	180
ADF - Fisher Chi-square	69.8415	0.0006	18	180
PP - Fisher Chi-square	104.903	0.0000	18	198

** Probabilities for Fisher tests are computed usi
-square distribution. All other tests assume
ng an asy
asymptotic
ıptotic Chi normality.

Panel unit root test: Summary
Series: DLTD
Date: 02/20/18 Time: 14:53
Sample: 2005 2016
Exogenous variables: Individual effects
User-specified lags: 1
Newey-West automatic bandwidth selection and
Bartlett
ker nel
Balanced observations for each test

			Cross-

Method	Statistic	Prob.**	sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-3.62824	0.0001	16	144
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-1.60441	0.0543	16	144
ADF - Fisher Chi-square	51.1379	0.0173	16	144
PP - Fisher Chi-square	91.0926	0.0000	16	160

** Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.

Panel unit root test: Summary
Series: DLSALES
Date: 02/14/18 Time: 16:13
Sample: 2005 2016
Exogenous variables: Individual effects
User-specified lags: 1
Newey-West automatic bandwidth selection and Bartlett kernel
Balanced observations for each test