

Change in Corporate debt levels in South Africa from 1994 to 2016

By

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Abstract

This paper aims to investigate the change in corporate debt levels in South Africa from 1994 to 2016, included is an analysis of factors that firms take into consideration when determining the company's capital structure.

This study uses data from firms in the Real Estate and REIT, Travel and Leisure and Construction and Materials sectors listed on the Johannesburg Stock Exchange (JSE). Four different leverage measures are used to determine the change in capital structure for the period under review, as well as six of the most commonly used determinants of capital structure.

A high level interpretation of the results reflected the following; an increase in the use of debt in the Travel and Leisure and Construction and Materials Sectors, however a significant decrease in the use of debt relative to equity was seen in the Real Estate and REIT Sector thus skewing the Total Sample findings considerably. An increase in the use of long term debt relative to short term was also found.

Results from the analysis of the capital structure determinants varied, with some determinants showing statistical significance. The following determinants were positively related to debt; firm size, asset tangibility and growth while the determinants; cost of debt and tax had a negative relationship. The relationship between profitability and leverage was varied.

Keywords:

Capital Structure Theory, Capital Structure Determinants, Interest Rates, Capital Market, Real Estate, Real Estate Investment Trusts, Travel and Leisure, Construction and Materials

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List of Acronyms

ALSI	All Share Index
BESA	Bond Exchange of South Africa
CGT	Capital Gains Tax
CORD	Cost of Debt
EBA	Extreme Bounds Analysis
EBIT	Earnings before Interest and Tax
GDP	Gross Domestic Product
GROW	Growth Rate
IFRS	International Financial Reporting Standards
IPO	Initial Public Offering
JSE	Johannesburg Stock Exchange
MPC	Monetary Policy Committee
PROF	Profitability
REIT	Real Estate Investment Trust
ROA	Return on Assets
ROC	Return on Capital
ROE	Return on Equity
SA	South Africa
SARB	South African Reserve Bank
SIZE	Firm Size
TANG	Tangibility of Assets
TAX	Corporate Tax Rate
TDBV	Total Debt to Book Value of Equity

TDMV	Total Debt to Market Value of Equity
TLBV	Total Leverage to Book Value of Equity
TLMV	Total Leverage to Market Value of Equity
T.O.	Trade-off Theory
UK	United Kingdom
US	United States

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Chapter 1: Introduction

1.1. Background

The capital structure decision has been one of the most fundamental decisions for corporates in South Africa following its newly established Democracy in 1994. Moving into the new democracy, macro-economic objectives were set to achieve sustainable economic growth using tools such, as fiscal and monetary policy. These policies have had considerable impact on the capital structure decision of companies in South Africa and, consequently, a role in determining the financial stability and going concern of companies.

A look at the South African economy for the period of 1994 to 2016 is crucial as this period coincides with South Africa's new Democracy. Prior to the political transition, in 1994, South Africa's economy was characterised with indicators of poor economic growth, current account balance surpluses, high inflation and low foreign exchange reserves. This was caused by South Africa's isolation from the world market due to sanctions imposed by the international community, this resulted in an outflow of capital (Faulkner & Loewald, 2008). Therefore, recognising the impact of the macro-economic environment in determining the capital structure decision of firms is central to this study.

Firms within the real estate and real estate investment trusts (REITs), travel and leisure and construction and materials sectors of the Johannesburg Stock Exchange (JSE) will be analysed. While these firms only contributed toward 5% of the total market capitalisation of the JSE at the end of 2016, they accounted for 20% of the total number of listed firms. Furthermore, firms within the real estate and REIT sectors account for three of the eight specialised indices listed on the JSE. The data set includes a total of 76 firms and 792 observations, of which 47 firms are within the real estate and REIT sector, totalling 90% of the sample's market capitalisation at 2016. (JSE, 2016)

A study regarding capital structure and its determinants, performed by Harrison, Panasian and Seiler (2011) examined the determinants of capital structure decisions of REITs in the US between 1990 and 2008. The paper discusses different capital

structure theories that may impact a firm's capital structure decisions. The paper, however, highlights a considerable difference between the REIT sector and other sectors within the economy, namely; REITs have the statutory ability to avoid payments of corporate income tax should they distribute a minimum of 90% of their profits. This is similar to the South African context in which the REIT regime affords certain tax advantages to qualifying entities, and exempts SA REITs from capital gains tax (CGT). These are therefore of considerable interest, and thus included in this study. In addition, REITs have significant fixed assets, as a result of their business models. (SARS, 2013)

Similarly, the travel and leisure and construction and materials sectors of the JSE are fixed asset intensive, through the use of property and machinery, respectively. These, including the real estate and REIT sectors, form the basis of this research paper.

This paper will form part of a research project in which each of the remaining sectors of the JSE, including delisted stocks, will be investigated by different authors. Each of the studies will investigate the change in corporate debt levels in South Africa from 1994 to 2016, including an analysis of factors that firms take into consideration when determining the company's capital structure.

1.2. Problem Statement

An analysis of South Africa's changes in corporate leverage is important given conflicting perceptions of debt financing within the South African economy especially within these crucial sectors; real estate and REITs, travel and leisure and construction and materials of the JSE.

Furthermore, the South African environment has changed considerably across the period under review. South African capital markets have been subject to numerous exogenous shocks, for example the East Asian Crisis of 1997 and 1998, the Global Financial Crisis resulting from the sub-prime bust in the United States, the financial crisis of the Eurozone, BREXIT and, closer to home, apartheid and the associated sanctions of the 1980s and early 1990s. These notable events presented South African policy makers with the challenging task of maintaining stability in the economy, including stabilising inflation rates within the tolerated band. Policy makers

manipulated the repurchase rate, or money supply, using monetary and fiscal policy in order to achieve the desired results in the economy. No action by policymakers, would allow market forces to come into effect and bring the economy into an equilibrium. As a result, the repurchase rate, a rate at which banks lend to one another and subsequently the prime lending rate, a rate at which firms fund their investments and operations, fluctuated significantly. 'Over the last three decades we have also seen a drastic decrease in the prime lending rate, which peaked at 25% in the late 1980s and declined to 8-10% since 2010.' (Slabbert, 2018).

The South African bond market also underwent considerable change during this period. It was only in the late 1980s that the public debt market was established. Firms had few choices when considering capital structure, namely equity, bank financing or private funding. The limits to alternative financing allowed banks to extract additional value from a firm's investments. This created a 'hold-up cost of debt to the near-monopoly nature of their main fund supplier, banks' (Ojah & Pillay, 2009). The development of the Bond Exchange of South Africa (BESA), which provided an additional and diversified source of capital to market participants, thus impacted capital structure decisions. As time progressed the BESA received their license which increased the accessibility of capital for South African firms, furthermore improvements in the efficiency of clearing and settling trades increased the attractiveness of the BESA. Non-residents were also better able to invest in the Country and consequently became active participants in the bond market, including primary and secondary debt issues. (Stals, 1999; Ojah & Pillay, 2009; Slabbert, 2018)

Given the impact of events within the global and local environment, this paper serves to determine and analyse the changes in corporate leverage in South Africa and what factors contributed to these changes, for the period 1994 to 2016. Further, the paper will determine whether traditional capital structure determinants have a significant ability to predict the changes in capital structure.

1.3. Research Methodology

The study uses a quantitative methodology to determine the correlation between the capital structure determinants of; firm size, asset tangibility, profitability, growth, the cost of debt and corporate tax rates to firm leverage, for the period 1994 – 2016. With the aim of determining the impact of capital structure determinants on the capital structure decision. A detailed outline of the research methodology is provided in Chapter 3.

1.4. Brief Orientation and Chapter Overviews

Chapter 1 provides an introduction and background to the research. Highlighting the problem statement, significance of study and methodology used. The literature review presented in Chapter 2 provides a theoretical framework on capital structure theories, the determinants of the capital structure model, a look into the South African interest rate environment and debt market and, further the relationship between leverage and corporate performance.

Chapter 3 will provide insight into the research design and methodology. Chapter 4 - analysis of results, provides a report of the interpretation of empirical findings of the data as per the methodology used. The final chapter within this study, Chapter 5, provides the main findings of the study, conclusion and areas for potential future studies.

Chapter 2: Literature Review

2.1. Introduction

This chapter will investigate the extensive literature surrounding capital structure theory, and provides an analysis of appropriate capital structure determinants, including their relationship to capital structure theory and as such leverage.

Further, the review will address the interest rate environment and capital market in South Africa. This will include a detailed discussion of South African interest rates and the Bond Exchange of South Africa. This will provide the necessary context and background for readers. In addition, an understanding of the circumstances in which South African managers were required to make optimal capital structure decisions.

2.2 Capital Structure Theory

Capital structure theory has been a topic of debate and extensive research, with many theories suggesting an optimal capital structure based on an understanding of the both the properties and information attributes of debt and equity financing. Capital structure research was pioneered by authors Modigliani and Miller in 1958. Their original paper, the 'mother' of capital structure theory, resulted in the development of numerous alternative capital structure theories. Many authors, searching for an optimal mix of debt and equity, continued to build on their research and understanding of capital structure.

This section will identify and describe notable capital structure theories that are used to explain the capital structure choices of firms and application of capital structure theory to firms within real estate and REIT, travel and leisure and construction and materials sectors will be investigated. Emphasis will be placed on the relevance of capital structure theory to REITs, given their unique tax circumstances and mandatory distribution payments. The real estate and REIT sector accounts for 47 of the firms within this study, and 90% of the total sample's market capitalisation at 2016.

2.2.1. Irrelevance Theory

Modigliani and Miller (1958), the pioneers of capital structure theory, argued that a firm's capital structure is irrelevant, in what is commonly known as the Capital Irrelevance Theory. The authors, known as M&M, divided their theory into two propositions. In their first proposition, aptly known as proposition 1, they set out to determine how a change in capital structure would affect the value of a firm. Stating, importantly, that the value of a firm was determined by its cash flows. The study assumed the following; no taxes, no capital market frictions, in other words no transaction costs and no bankruptcy costs, symmetric access to credit markets, implying the same rate for borrowers and lenders, and that a firm's financial policy revealed no information about that firm.

Under perfect market conditions, the capital structure and financing decisions made by managers affected neither the cost of capital nor the market value of the firm. A firm's cash flows determined the value of the firm and these cash flows were independent of capital structure, consequently leaving the firm's value unaffected. Capital structure was therefore considered irrelevant.

Proposition 2 addressed whether a change in capital structure would affect the associated cost of capital, otherwise known as the rate of return, required by debt and equity holders. The required rate of return on debt has traditionally been accepted as several times lower (even in the absence of taxes) than that of equity, therefore increasing debt in a firm's capital structure would result in a lower cost of capital. Debt, however, was considered riskier and as such an increased use of debt would result in an increase in the required rate of return on equity. As a result of taking on additional risk, equity holders would demand an increase in the rate of return on their investment. Thus, any decrease in the cost of capital, as a result of an increased use of debt, would be exactly offset by an increase in the cost of equity. (Modigliani & Miller, 1958; Karadeniz, Kandir, Balcilar & Onal, 2009).

This theory, based on numerous assumptions, would have little relevance to the travel and construction sectors as they do not operate within a perfect market. Irrelevance theory, however, has relevance in the REIT sector as these firms are subject to limited or no taxes. It has therefore been argued that the value of any REIT would be

independent of its capital structure, thus supporting the capital structure irrelevance theory set out by M&M. (Ghosh, Nag & Sirmans, 2001)

Subsequently, Modigliani and Miller began relaxing their assumptions in order to determine what implications this would have for proposition 1 and 2. Income taxes were introduced into their model and the results indicated the following; in light of proposition 1, firms would benefit from 100% debt inclusion into their capital structure. As interest payments on debt are tax deductible, they would serve to shield earnings from tax and thus increase the firm's value. The effect of income taxes on proposition 2 would result in a decrease in the cost of capital as the tax rate would reduce the cost of debt. Thus, decreasing the firm's cost of capital and increasing firm value. This, yet again, would motivate 100% debt financing due to the tax benefits.

At this point, however, the authors continued to overlook the event of bankruptcy which would offset the income tax benefits associated with debt. Once accounted for, the increase risk of bankruptcy associated with debt would increase the cost of capital, thus eliminating any decrease as a result of the interest-tax shield. (Modigliani & Miller, 1958)

2.2.2. Trade-off Theory

The advantages and disadvantage of incorporating debt into a firm's capital structure had become apparent and motivated an optimal capital structure theory. This theory implied a firm was able to reach an optimal capital structure and change its value through altering its capital structure. This notion resulted in the trade-off theory. The basis of trade-off theory considered bankruptcy and financial distress costs as described by Myers (1977) and agency costs as explained by Jensen and Meckling (1976). Trade-off theory suggests that a firm establish a target capital structure and gradually move toward it. This target capital structure must account for both the benefits and risks associated with debt. As increased levels of debt result in an increase in bankruptcy costs, financial distress costs and agency costs for shareholders, it will result in a decrease in the value of the firm (negative trade-off). Debt, however, reduces the cost of capital as a result of the deductibility of interest payments against tax (positive trade-off). (Karadeniz, et al., 2009)

In a study completed by Harrison, Panasian & Seiler, (2011), the authors describe trade-off theory as a trade-off theory between the marginal debt tax shield and marginal bankruptcy costs. This theory rests largely on the premise that firms can enjoy the benefits of an interest tax shield, this benefit, however, as highlighted by the authors, would not directly translate into the REIT market as they are able to legally avoid tax payments. Therefore, eliminating the theoretical benefits of the trade-off theory. This is supported by Ghosh, et al., (2001) who argue that firms with a marginal tax rate of zero, such as that of a REIT, would have a negative tax advantage of using debt. The benefits of trade off theory for REITs are therefore eliminated.

Furthermore, REIT mandates often limited their operational activities to activities regarding real estate related assets, therefore limiting the diversification of their assets and increasing the risk of bankruptcy. Magnifying the risk of bankruptcy are, therefore, the nature of their assets, which are large often illiquid commercial property assets, 'subject to cyclicity and vagaries of local property markets' (Harrison, et al., 2011). In addition, these assets are often complex to value and subject to unique financing arrangements and local market conditions. (Harrison, et al., 2011)

2.2.3. Pecking Order Theory

Myers and Majluf (1984) and Myers (1984) suggested a financing hierarchy on the basis of information asymmetry amongst managers and outside investors, which resulted in the pecking order theory. This theory indicates that investors generally have less information than management and that management would only issue equity if they considered it to be undervalued by the market. Thus, to avoid signalling impacts, management will prefer to use internal financing than external financing and as such the capital hierarchy arose, namely;

1. Internal: Retained Income
2. External: Debt Financing
3. External: Equity financing

As indicated, external sources of capital are subject to adverse selection as managers have more information than outside investors. 'Outsiders are aware of their relative ignorance and demand a premium on their investment returns' (Smith, 2010). As market participants are cognisant of the information asymmetries that exist, managers are forced to sell equity at a discount. Equity is thus considered the least preferred financing method. (Karadeniz, et al., 2009; Smith, 2010)

The unique circumstances presented by the REIT sector, have implications for the applicability of the pecking order theory. REITs are required to distribute a given percentage of their distributable profits and as a result retained income is diminished. This, regulatory restriction, results in fewer capital options available to managers of REITs, namely external debt and or equity financing. Albeit, debt without the benefits.

With this in mind, a study conducted by Ghosh, et al., (2001), for the period 1991 to 1997 indicated that the share price changes of REITs are significantly and positively related to debt issues and furthermore the amount of debt issued. In general, debt issues are viewed in a positive light relative to equity, therefore supporting the notion of pecking order theory in practice. A study of European property companies, conducted by Brounen and Eichholtz (2001), found a similar negative price reaction to equity offerings and positive price adjustments on debt offerings. These reactions have been attributed to the pecking order theory's information asymmetry and

alternative signalling explanations. Deviating momentarily, an alternative negative signalling theory of equity issuances has been documented as follows;

- Implied cash flow change hypothesis

This hypothesis suggests that raising external equity financing indicates to outside investors that internal cash flows have been insufficient, and possibly even disappointing. Furthermore, changing the financing policy may indicate that the firm's future prospects are not as pleasing. The larger the equity issue the bigger the implied cash constraints and thus the greater the share price movement.

- Debt market accessibility hypothesis

This is an alternative hypothesis, suggesting that there are instances in which the post-equity issue share performance may be better than expected. This theory rests on the premise that investors have sound rationale regarding the risk associated with highly levered firms and will thus tolerate an equity issue. (Brounen & Eichholtz, 2001)

As REITs are forced to obtain external funding, Ghosh, et al., (2001) arrive at a similar explanatory conclusion for the use of debt financing in REIT's capital structure. The authors suggested the following; superior REITs will use their understanding of the market to issue debt and elicit a positive share price reaction, despite no obvious advantage to issuing debt (as discussed under the trade-off theory). Thus, separating themselves from other REITs who issue equity financing.

An additional explanation, not taking into consideration share price reactions, is documented by Hardin and Wu (2010). The authors suggest that REITs wishing to establish sound banking relationships, which may assist in mitigating market frictions and improve overall capital acquisition processes, will obtain debt financing. Although debt may limit management's operating and strategic options through the creation of debt covenants. Debt financing can also create trust, as firms who hold debt are more likely to be issued a credit rating and are subsequently able to issue public debt with greater flexibility or gain better access to public capital markets. In other words, an investment grade credit rating can create trust, decrease information asymmetries, reduce restrictive covenants and mitigate capital market friction enabling REITs to access liquidity and act quickly should they require projects and property financing.

2.2.4. Agency Theory

Jensen and Meckling's (1976) agency theory suggests that in a principal and agent relationship it may be unlikely that the agent will always act in the best interest of the principal, being the holders of debt or equity. The authors suggest, to align the interest of principal and agent, the principal can establish monitoring and control activities to limit wasteful activities of the agent. Agency costs can result between management and equity holders, in which management may tend to appropriate larger amounts of corporate resources in the form of perquisites, for their own consumption. Further to this management may avoid profitable investments as they require too much effort from management and as such firm value will be substantially lower. Budget restrictions and incentive schemes may assist in limiting unwanted behaviour.

The introduction of debt into a firm's capital structure may introduce additional agency concerns as managers choose to act in the best interest of equity holders, at the detriment of the interests of debt holders. In this instance, it is likely that management have an equity interest in the firm and as such choose their interests combined with those of other equity holders above the interests of debt holders. In these circumstances, an increase in debt encourages management to make riskier investments as losses will fall on the bondholders while gains will accrue to the shareholders. Debt holders, in these circumstances, may introduce restrictive covenants, to protect their interest. (Jensen & Meckling, 1976; Smith, 2010)

Associated with agency cost is the asset substitution problem, in which shareholders encourage management of a company to invest in riskier assets to increase potential returns on equity, however at the expense of debt holders. Hardin and Wu (2010) indicate that property acquisitions are core to a REITs business model and as such an increase in unsecured lending may result in significant asset substitution concerns for REIT debt holders. Less secured debt implies greater risk, and banks may therefore impose restrictions to prevent asset substitution in REITs.

Opposing arguments, suggest that debt is beneficial as it provides managers with the incentive to work harder, consume fewer perquisites, and make better investment decisions for the firm.

The reason being; management will focus their efforts on optimal decision making as they are cognizant of the firm's interest and capital repayment requirements. Further to this, it has been suggested that managers' who hold their careers and reputations in high esteem, will avoid excessive debt within their firm's capital structure. Personal risk aversion will also deter management from taking on debt. (Smith, 2010)

2.2.4.1 Free Cash Flow Theory

Within agency theory it has been submitted that firms with significant levels of free cash flows tend to invest in wasteful and value destroying projects an example thereof, is the post equity issue slump presented by Brounen and Eichholtz (2001). The authors describe this well-known phenomenon in which a slump in operational profitability tends to occur in the year following a security issue. Thus, supporting agency theory in which managers have incentives to invest proceeds from external issues into unprofitable projects. Therefore, the free cash flow theory suggests that debt repayments are beneficial as they reduce the amount of free cash flow available for managers to waste. (Smith, 2010)

A paper by Brown and Riddiough (2003) highlights that the free cash flow rationale bears little impact on a firm that is obliged to make mandatory dividend payments from distributable income, which would be the case for the REIT sector. This theory, however, would have relevance within the other sectors examined in this paper.

2.3 Capital Structure Determinants

Capital structure theory sets the foundation from which many traditional capital structure determinants have been derived. Trade-off theory would suggest that the cost of debt and the corporate tax rate are significantly correlated to the use of leverage, and thus appropriate determinants of a firm's capital structure. Pecking order theory is driven by information asymmetries which would subsequently drive the capital structure decisions of a firm. There have been numerous studies in which various capital structure determinants have been assessed against leverage in order to determine whether they are able to significantly predict a firm's capital structure.

This chapter will address the capital structure determinants used in various literature, which will serve to inform the method used in this study. Furthermore, addressing the relationship found between capital structure theory, capital structure determinants and leverage. Relevant studies, however not limited, will include those completed in the real estate, travel and construction sectors, given their relevance to this study. The suitability of determinants toward different leverage ratios, term structures of debt and the applicability across countries will be discussed.

2.3.1. Capital Structure Determinants – Travel and Construction Sectors

Karadeniz, et al., (2009) investigated the factors affecting capital structure decisions of lodging companies listed on the Istanbul Stock Exchange (ISE). The data included five companies and 65 observations for the period 1994 to 2006. Their study accounted for eight capital structure determinants and one leverage method (dependent variable), namely the debt ratio, defined as the total book value of debt relative to the total book value of assets. Their study generated various hypothesis, given both the trade-off theory and pecking order theory.

Table 1 will present the study's eight capital structure determinants and the implied relationship that that determinant has with each of the capital structure theories. As seen in Table 1, the study hypothesised the following;

Table 1: Capital structure determinants & their relation to capital structure theory

Determinant	Trade off theory	Pecking order theory
Firm Size	<ul style="list-style-type: none"> • Positive Relationship <p>Larger firms are better diversified and as such have lower probability of financial distress, thus allowing them to take advantage of debt.</p>	<ul style="list-style-type: none"> • Negative Relationship <p>Information asymmetries are lower for larger firms and as such they are able to issue equity without being penalised extensively.</p>
Tangibility	<ul style="list-style-type: none"> • Positive Relationship <p>Fixed assets would serve as collateral for debt financing and as a result firms have better debt capacity.</p>	<ul style="list-style-type: none"> • Negative Relationship <p>Fixed assets have lower information asymmetries and as such firms would rely on equity financing.</p>
Profitability	<ul style="list-style-type: none"> • Positive Relationship <p>High profitability decreases the risk of financial distress in a firm and allows for greater borrowing capacity.</p>	<ul style="list-style-type: none"> • Negative Relationship <p>Profitability will result in increased earnings available for use in the firm's capital structure.</p>
Growth Opportunities <i>(market to book ratio of the firm)</i>	<ul style="list-style-type: none"> • Negative Relationship <p>As growth opportunities bear greater risk and higher financial distress costs, high growth firms would prefer equity financing.</p>	<ul style="list-style-type: none"> • Positive Relationship <p>Higher growth opportunities would imply a positive relationship as greater financing would be utilised.</p>
Commercial Trade Position	<ul style="list-style-type: none"> • Not specified 	<ul style="list-style-type: none"> • Negative Relationship

Determinant	Trade off theory	Pecking order theory
Effective Tax Rate	<ul style="list-style-type: none"> • Positive Relationship Debt results in increased interest payments resulting in a decrease in the effective tax rate.	<ul style="list-style-type: none"> • Not specified
Non-debt Tax Shield	<ul style="list-style-type: none"> • Negative Relationship 	<ul style="list-style-type: none"> • Negative Relationship
Free Cash Flow	<ul style="list-style-type: none"> • Positive Relationship Large free cash flows are associated with lower risk and as such borrowing capacity increases.	<ul style="list-style-type: none"> • Negative Relationship An increase in free cash would provide an increase in internal capital available for use.

* Results of the study by, Karadeniz et al. (2009), have been highlighted in blue above.

The actual findings of their study, highlighted in blue, indicate that tangibility of assets, the effective tax rate and profitability are negatively related to the debt ratio. The remainder of the determinants for their sample appeared to have no relationship to the debt ratio. The findings partially support pecking order theory, however, neither the trade-off nor the pecking order theory are exactly explained in this model. Moreover, they noted that lodging companies are capital intensive as they require huge capital outlays at the investment and operating stages, making frequent, replacement, expansion and modernisation investments in order to meet challenging consumer behaviour. (Karadeniz, et al., 2001)

Moving our attention toward the construction sector, Baharuddin, Khamis, Mahmood and Dollah (2011), completed a study of the debt and equity structure for a sample of construction firms listed in the Bursa Malaysia market for the period 2001 to 2007. Their sample included 42 companies and 294 observations, their dependant variable, similar to the study above was the debt ratio. Their study accounted for the following capital structure determinants; asset tangibility, growth, firm size and profitability and

documented the implied relationship between capital structure theories; trade-off and pecking order theory and the determinants. Table 2 presents the determinants used, the relationship implied by each of the capital structure theories and the results of their testing. The documentation and results indicated the following;

Table 2: Summary of findings for Capital Structure Determinants in Construction

Determinant	Trade off theory	Pecking order theory
Firm Size	• Positive Relationship	• Not specified
Finding:	Larger firms rely more on debt financing, thus supporting the trade-off theory which indicates that larger firms have greater debt capacity.	
Tangibility	• Positive Relationship	• Positive Relationship
Finding:	With increased asset tangibility the demand for debt, to finance these assets, also increased. This is consistent with both capital structure theories, per the author's interpretation of the relationship between tangibility and capital structure theory.	
Profitability	• Positive Relationship	• Negative Relationship
Finding:	The study found that an increase in the use of debt, resulted in lower profitability and therefore an inverse relationship was noted.	
Growth	• Not specified	• Positive Relationship
Finding:	It was found that, construction companies depend heavily on debt financing compared to that of equity to fund expansion and growth.	

* Results of the study by, Baharuddin et al., (2011), have been highlighted in blue above.

In light the table, their results, as highlighted in blue, support both the trade-off and pecking order theories, notably, the findings suggest that as construction firms grow in terms of size and asset base, these firms will rely on debt financing, more so than equity. The capital structure determinants employed in this study, echo those used by Karadeniz, et al., in the study of lodging firms. (Baharuddin, et al., 2011)

2.3.2. Capital Structure Determinants – Real Estate and REIT Sector

In the same year, a study completed by Harrison, et al. (2011), examined the determinants of capital structure of real estate investment trusts (REITs). Their sample comprised REITs listed on the New York Stock Exchange, American Stock Exchange or the NASDAQ for any duration of the sample period, 1998 to 2008. As noted in the introduction to this study REITs in both the US and SA are statutorily permitted to avoid the payment of income taxes, thus eliminating the corporate tax rate as an appropriate capital structure determinant.

The dependent variable in the study was the ratio of total book value of debt to the sum of book value of debt and market value of equity. The study was in depth and included numerous predicting variables, categorised as; traditional capital structure determinants, additional capital structure determinants, REIT organisational characteristics, REIT operating and financing characteristics and REIT competing capital structure theory variables.

Dissimilar to the studies addressed above and below, Harrison et al., (2011) includes an additional capital structure theory, namely market timing. This theory indicates that management will time the market in order to take advantage of pricing discrepancies in the external equity market. Different to the pecking order theory, it is believed that if information asymmetries are sufficiently pronounced, they will allow firms to profitably issue equity. As such, this theory would hypothesise a negative relationship between a firm's market to book ratio and leverage, as undervalued firms, would have higher market to book ratios, increased equity offerings and therefore less debt.

The results of their study found that REIT capital structure is, to a large extent, driven by traditional capital structure determinants that would ordinarily influence the decisions of non-REIT sectors. The expected relationship, given the expectations implied by capital structure theory and the results of the study have been summarised in Table 3. Similar, to Table 1 and Table 2, the results of their testing have been highlighted in blue.

Table 3: Summary of findings for Traditional Capital Structure Determinants in REITs

Determinant	Trade off	Market timing	Pecking order
Firm Size	• Positive	• Positive	• Negative
Finding:	Their finding supports both trade-off and market timing theories.		
Tangibility	• Positive	• Positive	• Negative
Finding:	A positive relationship was found. This supports the theory that REITs have increased debt capacity given the increased collateral provided by their significant fixed asset base.		
Profitability	• Positive	• Positive	• Positive
Finding:	Harrison, believes that profitable firms will want to avoid the negative signalling associated with equity issuances, and therefore issue debt. A negative, overall relationship has been found, supporting neither capital structure theory, nor the pecking order theory.		
Growth	• Negative	• Negative	• Positive
Finding:	Their finding supports both trade-off and market timing theories.		
Cost of Debt	• Negative	• Not specified	• Not specified
Finding:	A negative relationship was found as an increased cost of borrowing reduces a REITs use of debt financing.		
Information Opacity	• Not specified	• Not specified	• Positive
Finding:	Equity has negative signalling connotations, an increase in information opacity, would result in firms avoiding equity issuances, and increasing debt. No evidence of a significant relationship was found, thus neglecting the predictions of the pecking order.		

*Results of the study by, Harrison et al., (2011), have been highlighted in blue above.

Furthermore, through the inclusion of other 'non-traditional' capital structure determinants in their study, they were able to conclude that the firms' debt capacity varies according to the unique operating and financing mechanisms of REITs. For example, REITs with primary investments in Commercial properties such as residential and malls would have higher debt ratios, whereas REITs investing in storage units exhibit lower debt ratios. (Harrison, et al., 2011)

Having discussed the cost of debt, only rarely in the literature, an additional study, in support of Harrison's findings, was conducted by Kumar and Bodla (2014). This study addressed capital structure in developing countries and supports the hypothesis that firms are less likely to rely on debt, when the cost of borrowing increases. This negative relationship between the cost of debt and leverage, supports the trade-off theory.

This study, comparable to those conducted in the travel and construction sectors, draws attention to the importance of traditional capital structure determinants in the investigation of a firm's debt equity choice. In addition, Harrison, provides readers with assurance that traditional capital structure determinants have relevance in the REIT sector.

2.3.2.1. Real Estate and REITs in the absence of taxes

Sbeti and Moosa (2012) conduct a study in which they investigate appropriate capital structure determinants in the absence of taxes. This study is of interest, given the inclusion of the real estate and REIT sector in this paper. Their study forms its premise on the following statement; Modigliani and Miller's trade-off theory rests heavily on the proposition that interest on debt is deductible for tax purposes. Therefore, in light of trade-off theory and in the absence of taxes, there is little basis for real estate and REIT firms to hold debt. As such they set out to determine which factors would influence leverage within a firm's capital structure. The authors use an analysis method known as Extreme Bounds Analysis (EBA) to identify which determinants are important. Their study used leverage as the dependant variable across a sample of firms listed on the Kuwaiti stock exchange. Their analysis accounted for firm size, liquidity, profitability, tangibility, growth opportunities, payout ratio, share price performance, firm age and income variability. The results indicate that profitability and growth opportunities are important determinants of capital structure. Further their results were more supportive of the pecking order theory which suggested leverage is negatively related to profitability and positively related to growth opportunities. (Sbeti & Moosa, 2012)

A similar article, by Smith (2010), investigated the capital structure determinants for tax-exempt organisations in the United States, the study was large, including 63 970 firms from the year 1998 to 2003. The sample included religious organisations and education firms as these firm's debt ratios are unaffected by corporate income taxes. Smith (2010) calculated two debt ratios, namely the ratio of total liabilities to total assets and financial debt relative to financial capital. The findings indicated that the following determinants were positively related to debt; asset tangibility, growth and firm size and profitability, liquidity and firm age had a negative relationship to firm leverage. This is consistent with Sbeti and Moosa (2012). An overall finding indicated that the debt ratios for tax exempt entities are lower than those of taxable firms, the average ratio of financial debt to total assets for tax exempt firms was 16%, with a range of 4% - 23%. While taxable firms had a mean ratio of 25% - 27%.

Smith (2010) concludes that the findings of his study are broadly consistent with the predictions of each trade-off, pecking order and agency cost theories. The positive

relationship between growth, firm size and asset tangibility and leverage, the former determinant being consistent with pecking order theory while the latter determinants are consistent with the trade-off theory. The negative relationship between leverage and the age, profitability and liquidity of the firm are consistent with the predictions of the pecking order theory and agency cost theories.

Smith (2010), included an interesting determinant into his study, namely 'a percentage of officers, directors, trustees and key employees that are paid', the rationale for including this determinant into the study is as follows; it is suggested that only board members of tax-exempt firms who work without a salary are able to convincingly validate that they are motivated to take their decision making ability seriously. In other words, these employees have greater motivation to act in the best interest of the firm as they are not influenced by the mechanics of a remuneration structure. Therefore, if increased debt financing can reduce wasteful expenditure, then trade-off theory suggests that decision makers with greater discipline will use more debt. This theory, therefore predicts a negative relationship between debt use and managers who are paid. Managers who are paid would not want the constraint of interest payments associated with debt financing. Pecking order theory would also predict a negative relationship between the two, as disciplined managers, i.e. those who are not entitled to a salary would use more debt, whereas salaried individuals would use less. The finding, however, unique to tax-exempt firms found that debt is positively related to the percentage of officers, directors, trustees and key employees that are paid.

Debt is used to encourage efficient decision making when decision makers take their guardianship role seriously, thus this finding is inconsistent with trade-off theory. Similar, this is inconsistent with the pecking order theory as debt is known to encourage managerial self-discipline. Management, with seemingly less discipline as result of receiving remuneration will take on greater amounts of leverage. 'It is unclear why insiders would choose to discipline themselves in the absence of any kind of market for corporate controls. One explanation for this would be that outside donors require some amount of debt financing to encourage decision makers to run the organisation more effectively.' (Smith, 2010)

2.3.3. Capital Structure Determinants – Across Sectors

Moving toward more general studies, Noulas and Genimakis (2011), conducted a study of the determinants of capital structure choice of Greek listed companies, their sample included various sectors, including both travel and construction, however, excluded real estate companies. The data set comprised 259 firms, for the period 1998 to 2006, their study included leverage ratios similar to those used in this paper; long term debt to equity, total bank debt to equity and total liabilities to equity and 9 capital structure determinants, being; firm age, size, profitability, price volatility, asset tangibility, depreciation, growth rate, credit rating and classification of economic activities. Their findings are as follows; the three leverage measures were significantly negatively related to the age of the firm, while a significant positive relationship was found with sales and credit rating for the entire sample.

Additional findings indicated significant positive correlations between leverage and sales, growth rate, tangibility, depreciation, volatility and credit rating. A negative relationship occurred between profitability and the firm's age. Most of these findings support the pecking order theory, more specifically the positive relationship between profitability and growth. Although, the findings differed significantly across leverage measure used and sector. (Noulas & Genimakis, 2011)

A study accounting for the lack of research conducted in emerging markets, also concluded that the pecking order theory better explained the changes in debt levels. The study looked at evidence of capital determinants in Poland. The analyses focused on the years 2002 to 2012, comprising 111 companies listed on the Warsaw Stock Exchange. 'The results indicate that there is evidence of a significant negative relationship among the size of a company, its growth rate, profitability, tangibility and the level of total debt. The study shows positive relationship between growth prospects of the company and the debt levels' (Kazmierska-Jozwiak, Marszalek & Sekula, 2015). The authors established that firms with a higher share of fixed assets had a lower propensity to incur debt, despite the opportunity to obtain favourable debt financing, as a result of increased collateral. Thus, implying managers wish to finance their fixed assets with equity of an unspecified maturity date. This supports the pecking order theory, in addition to the negative relationship between leverage and

size and profitability. These firms prefer internal equity financing over debt. (Kazmierska-Jozwiak, et.al., 2015)

Chipeta (2016) also addresses traditional capital structure determinants in an emerging market, namely South Africa. The paper is aimed at analysing capital structure behaviour of firm's engaging in Initial Public Offerings on the Johannesburg Stock Exchange, in doing so they investigate firms that successfully concluded an IPO on the exchange for the years 1996 to 2011. In addition, they determine which capital structure determinants impact leverage. Their key findings, suggest that, post initial-IPO firm behaviour is consistent with target trade-off theory, as their key findings indicated that on average, IPO firms adjust faster to an optimal capital structure target than seasoned firms. Further, they conclude that firm size, profitability, growth and asset tangibility are significant in explaining the capital structure of IPOs on the JSE.

The results are unlike those of Kazmierska-Jozwiak, et al., (2015). While the author concludes that profitable firms borrow less, relative to the total debt ratio, other findings indicate a significant positive relationship between firm size, asset tangibility, growth and profitability (when the dependant variable is the long term debt ratio). The positive relationship between size, tangibility and profitability support the trade-off theory, as they increase the firm's ability to borrow and satisfy the need for profitable firms to protect their earnings from tax.

The author provides an argument for both a possible negative or positive relationship between asset tangibility and leverage, and while the results indicated a positive relationship, consistent with trade-off theory, they provide several reasons, for a negative relationship, which may provide additional support for the findings of Kazmierska-Jozwiak, et al., (2015). A negative relationship may indicate that firms with high collateral value of assets are already highly levered and as such prefer equity to avoid additional probability of financial distress. Further, tangible assets provide a firm with a non-debt tax shield as a result of the deductibility of asset allowances against taxable income. These firms, therefore, do not rely on the interest tax shield associated with debt.

The significant and positive relationship of leverage to IPO firms with high growth prospects, contradict the trade-off theory, as growth opportunities are associated with

greater financial risk, and suggest alternatively that IPO firms have greater credibility as a result of their equity listing and as such introduce additional debt into their capital structure. This is consistent with the pecking order theory. (Chipeta, 2016)

2.3.4. Capital Structure Determinants – Global Literature

Two similar studies, broadly addressing capital structure determinants around the World, conducted in 2008 and 2015, investigate the leverage choices of firms in 42 and 37 countries, respectively. The earlier study found that firm-specific determinants of leverage, such as tangibility, firm size, risk, profitability and growth opportunities, differ across countries. Furthermore, de Jong, Kabir & Nguyen (2008) 'find that institutional differences between developed and developing countries explain a large portion of the variation in the use of long term debt. They also observe that some institutional factors in developing countries influence the leverage of large and small firms differently' (de Jong, et.al., 2008).

Nonetheless, the findings indicated, consistent with predictions of conventional capital structure theories, that firm-specific predictors of size, tangibility, risk, growth and profitability were significant on cross-country capital structure.

The later study undertook to determine which capital structure determinants, across different countries, are reliable predictors of leverage. Finding that, size, tangibility, industry leverage, profits and inflation are reliable determinants of capital structure. These findings are similar in nature to the first study. (de Jong, et.al., 2008; Oztekin, 2015)

To corroborate de Jong's findings, an earlier study of the capital structure determinants in the United Kingdom (UK) and Italy in 2003, found; firms in developed versus less developed markets have different approaches to capital structure theory. Their results indicated that firms in well-developed financial markets, such as the UK, have long term target debt ratios that they adjust toward, whereas firms in less developed and thus less efficient financial markets, such as in Italy, appear to place less importance on the search for an optimal capital structure. (Panno, 2003)

The final study in this review, completed by Bevan and Danbolt (2002), address the impact of capital structure determinants and the differences thereof on long term and short term debt. The study investigates the following four leverage measures in order to arrive at their findings; Non-equity liabilities to total assets (total debt plus trade payables over total assets and the excess market value of equity), debt to total assets (total debt over total assets adjusted for the difference between the market value of

equity less book value of equity), debt to capital (total debt over total debt plus market value of equity and preference shares) and adjusted debt to adjusted capital (adjusted debt being total debt less liquid assets and adjusted capital removing accounting specific balances, such as provisions, deferred tax and intangible assets). The rationale for removing liquid assets, such as cash and marketable securities, is that these items are extra liquidity of the firm and as such could and may be used to reduce debt within the firm, immediately. Further, accounting liabilities such as deferred tax and provisions result in a decline in equity (retained earnings), with no associated cash flow for these balances, they are, therefore, added back to equity to better reflect the equity capital of the firm. Intangible assets are removed, as they may be significantly inflated by accounting goodwill.

The study incorporates the following capital structure determinants into their model; growth opportunities (market to book ratio), firm size, profitability and tangibility. Their results indicated that the level of leverage utilised by UK firms differed significantly depending on which measure of leverage was adopted. Further, their study indicated that determinants of leverage vary significantly depending on the nature of the debt being analysed. Their conclusions were based on the following results; while a significant positive relationship was found between leverage and firm size and asset tangibility this was only relative to long-term debt forms, this, however, differed when adjusting for short term debt. The leverage measure, adjusted for short term borrowings, resulted in a negative relationship between the firm size and leverage. When adjusting the leverage measure for trade payables, the relationship between asset tangibility and leverage was negative. These results may be explained as follows; smaller firms have difficulty in obtaining favourable long term debt financing (as larger firms have a negative relationship to leverage when adjusted for short term debt), and participate in maturity matching of tangible assets to long term debt, respectively.

These results indicate the significant differences that may result from the use of different leverage measures for both long and short term debt and allude to the importance of decomposing an analysis into long and short term components. (Bevan & Danbolt, 2002)

2.3.5. Capital Structure Determinants – Summary

The variety of literature presented, while extensive and based on different sectors can be summarised to draw attention to the most commonly used determinants and their relationship to leverage, furthermore, the supported capital structure theory. This has been summarised in Table 4 and a consensus determined. This will be used to inform both the Method, per Chapter 3 and the Results, as presented in Chapter 4.

Table 4: Summary of findings across the Literature Review

Determinant	Author	Relationship	Theory
Firm Size	Smith (2010)	Positive	Trade-off
	Baharuddin et al. (2011)	Positive	Trade-off
	Harrison et al. (2011)	Positive	Trade-off
	Kazmierska-Jozwiak et al. (2015)	Negative	Pecking Order
	Chipeta (2016)	Positive	Trade-off
	Slabbert (2018)	Positive	Trade-off
	Consensus:		● Positive
Tangibility	Karadeniz et al. (2009)	Negative	Pecking Order
	Smith (2010)	Positive	Trade-off
	Baharuddin et al. (2011)	Positive	T.O. & Pecking
	Harrison et al. (2011)	Positive	Trade-off
	Noulas & Genimakis (2011)	Positive	Trade-off
	Kazmierska-Jozwiak et al. (2015)	Negative	Pecking Order
	Chipeta (2016)	Positive	Trade-off
Slabbert (2018)	Negative	Pecking Order	
Consensus:		● Positive	● Trade-off
Profitability	Karadeniz et al. (2009)	Negative	Pecking Order
	Smith (2010)	Negative	Pecking Order
	Baharuddin et al. (2011)	Negative	Pecking Order
	Noulas & Genimakis (2011)	Negative	Pecking Order

Determinant	Author	Relationship	Theory
Profitability	Sbeti & Moosa (2012)	Negative	Pecking Order
	Kazmierska-Jozwiak et al. (2015)	Negative	Pecking Order
	Chipeta (2016)	Negative	Pecking Order
	Slabbert (2018)	Negative	Pecking Order
	Consensus:	• Negative	• Pecking Order
Growth	Smith (2010)	Positive	Pecking Order
	Baharuddin et al. (2011)	Positive	Pecking Order
	Harrison et al. (2011)	Negative	Trade-off
	Noulas & Genimakis (2011)	Positive	Pecking Order
	Sbeti & Moosa (2012)	Positive	Pecking Order
	Kazmierska-Jozwiak et al. (2015)	Positive	Pecking Order
	Chipeta (2016)	Positive	Pecking Order
	Slabbert (2018)	Positive	Pecking Order
Consensus:	• Positive	• Pecking Order	
Cost of Debt	Harrison et al. (2011)	Negative	Trade-off
	Kumar & Bodla (2014)	Negative	Trade-off
	Slabbert (2018)	Negative	Trade-off
Consensus:	• Negative	• Trade-off	
Tax Rate	Karadeniz et al. (2009)	Negative	Neither
	Slabbert (2018)	Negative	Neither
Consensus:	• Negative	• Neither	

Commonly, the positive relationship between capital structure determinants; firm size and tangibility to leverage, support the beliefs of the trade-off theory. Also, in support of this theory, the negative relationship commonly found between the cost of debt and leverage. Profitability, having a negative and growth, a positive relationship to

leverage is in support of the financing hierarchy as described by the pecking order theory. Last, the tax rate had a negative correlation to leverage, supporting neither the trade-off theory, nor the pecking order theory, at this point.

The commonly identified and traditional capital structure determinants will be utilized in this study, as the Method, found in Chapter 3. Further, Chapter 3 will elaborate on the measure that will be used for each of these determinants and reinforce the relationship implied by the capital structure theories, such as the trade-off theory and pecking order theory. Quantitative research will be conducted in Chapter 4 and the results thereof presented and interpreted, based on our understanding of the literature presented above.

2.4. Capital Structure and Corporate Performance

For decades authors have employed capital structure determinants into their models, based on their explanatory value toward firm leverage. Similar, studies have attempted to determine whether a firm's leverage explains corporate performance. Thus, emphasising the importance of capital structure, this section will review various studies that have investigated the following hypothesis; whether capital structure decisions of firms have a direct impact on their financial performance. Two studies have been conducted with direct emphasis on the research at hand. The studies focus on the relationship between capital structure and performance within the REITs and construction industry.

2.4.1 Capital Structure and Performance for Real Estate and REITs

Ott, Riddiough and Yi (2005) investigated investment decisions and associated investment performance of a sample of REITs in the US for the period 1981 to 1999. They attempted to determine whether REITs are able to add value over and above their cost of capital, which is a direct result of their capital structure choices. This was measured using the Internal Rate of Return (IRR). Their findings concluded, that while there was a positive relationship between investment performance and capital structure investments for the period 1985 to 1999, this relationship was not particularly strong. The average return to the sector, over and above the cost of capital, was between 1.6% and 2.9% per annum. A notable finding, however, was that investments were financed primarily through equity and long term debt. External debt and equity accounted of 84% of aggregate investment over the entire sample period.

According Van Zyl (2010), SA REITs, for the period 2000 to 2009, had an average ratio of share to total capital of 58.17% and long term debt to total capital averaged 35.53%, while short term debt relative to total capital was 1.48%. Real estate investment and services displayed the following; an average of 22.04%, 70.79% and 2.49% for the same ratios, respectively. While these studies do not cover the same time horizon, have similar findings; Real Estate and REITs fund investments and operations predominantly through the use of long term debt and equity, while the use of Short Term Debt relative to Total Capital is negligible. (Van Zyl, 2010)

The findings based on the sample reviewed in this paper, for the period 1994 to 2016, indicate that long term debt as a percentage of total debt averaged 88.37%, while short term debt relative to total debt averaged a mere 5.57% for the period. These results consider both the REIT and real estate investments and services sector on the JSE and corroborate the evidence presented above. For the detailed discussion of results see Chapter 4: Results.

2.4.2 Capital Structure and Performance for Construction Companies

In 2009, San and Heng (2009) performed a study of how capital structure drives performance of the Malaysian Construction Sector. A total of 49 construction companies were investigated, for the period 2005 to 2008. Overall the results indicated a relationship between capital structure and corporate performance.

The sample, more specifically, was divided into three categories based on the size of the construction firm and the following results were found;

- Large Construction Companies; Return on Capital (ROC) and Earnings per Share (EPS) have a significant relationship with capital structure. Furthermore, long term debt and total debt to equity have the greatest impact on the corporate performance of larger construction firms.
- Medium Construction Companies; it was concluded that only long term debt to common equity (LDCE) had a direct impact on corporate performance of these firms, as the relationship between LDCE and the companies' operating margin was positive. Further, medium companies' performances were affected by the changes in capital structure, but to a lesser extent than large companies were.
- Small Construction Companies; the study found that total debt to capital had an impact on corporate performance, and a significant relationship was found between EPS and capital structure. Specifically, debt capital had a direct impact on the EPS performance of small companies.

Overall the findings indicate that holdings of debt financing impact firm performance, specifically ratios; return on capital, earnings per share and firm operating margin.

2.4.3 Capital Structure and Performance for various firms – Ghana & Jordan

A study performed in the same year, investigated whether capital structure impacted the performance of listed firms in Ghana. Ghana, having relevance to this study as an emerging market. These findings may serve to inform the findings in a South African context, as a prominent emerging market.

These firms were not sector specific and the sample accounted for a total of 22 firms which were listed from 1998 to 2002. Their findings were detailed and differed depending on the type of capital employed by the firm and included; a significant positive relationship between the ratio of short term debt to total assets and return on equity (ROE) (profitability), a negative relationship between the ratio of long term debt to total assets and ROE, furthermore a positive relationship between total debt to total assets (debt ratio) and ROE. It was also found that firms depend more on short term debt as their main source of financing. A high portion, namely 85% of total debt is represented by short term debt. (Abor, 2005)

These findings, differ to those of Ott, et al. (2005), and support the notion that short term debt tends to be less expensive relative to long term debt, therefore increasing short term debt relative to long term debt, will lead to an increase in profits. Short term debt used in ordinary course of business, attracts a lower interest rate, thus increasing the bottom line. Long term debt is relatively more expensive as it carries a greater risk of default across the longer term.

In the final study, contradictory results were found in a sample of Jordanian companies during the period 1989 and 2003. Jordan, an emerging market, may provide insight into the South African findings presented in Chapter 4.

The study was completed by Zeitun and Tian (2007) who investigated the impact that capital structure had on the corporate performance of these Jordanian firms. The firms' capital structure had a significantly negative relationship to the firms' performance metrics, considering both accounting and market measures of performance. There was, however, a positive and significant effect between short term debt to total assets and the performance of these firms. This finding supports the argument presented above; short term debt is less costly than long term debt and the use thereof relative to long term debt has a beneficial impact on firm performance.

The use of short term debt can bolster earnings as finance costs are presumably lower.

Contradictory findings within emerging markets, may be a result of external shocks; the author brought readers' attention the large number of external shocks in the Middle East that would have impacted the Jordanian economy during the period of the study. In conclusion, firm performance may be impacted by capital structure decisions.

2.5 South African Interest Rate Environment

While capital structure determinants can explain the variability in the use of debt, and debt the performance of corporates. Macro-economic conditions, including interest rates and exogenous economic shocks, would play a role in a firm's decision-making process. South African interest rates have fluctuated considerably, with a marked decline in the prime rate from a high of 25% in late 1980 to a stable 8% - 10% since 2010. (Slabbert, 2018) Fluctuating interest rates would no doubt pose additional challenges to managers' capital structure decisions. An analysis of the South African interest rate environment will provide context to this study and the results thereof. This chapter will provide insight into the history and significant of interest rates in South Africa.

2.5.1. A New Era – Democracy and the East Asian Crisis

In 1995, Stals, the Governor of the South African Reserve Bank addressed the topic of interest rates; by documenting the basic mechanics of economics' supply and demand. He noted that, given economic theory, an increased demand side for loanable funds and an unmatched supply of loanable funds will have the effect of increasing interest rates and vice versa. The mechanism of the Reserve Bank may, however, influence the level of interest rates through monetary policy, for example the reserve bank can set high interest rates to control increasing inflation. Stals, further indicated that South Africa experienced net capital outflows to the rest of the World from 1985 to 1993 which decreased loanable funds arising from domestic savings and foreign investment.

Post-apartheid, a net capital inflow into South Africa arose, resulting in a lower interest rate. 'Large Amounts of capital of a short term nature flowed into the country, exerted upward pressure on the exchange rate of the Rand, increased domestic liquidity and depressed interest rates' (Stals, 1996B). Real interest rates in South Africa, however remained high at this stage. Given the high need for funding, low corporate savings and sanctions on South Africa, i.e. the underlying supply and demand conditions. (Stals, 1995)

In 1996, Stals reinforced the notion that interest rates are driven by both the needs of borrowers and the demands of lenders, and the interplay thereof. As described, in order to achieve an equilibrium, the significant demand for funds by firms, private and government parties (demand) must be met with loanable funds which arise from savings and foreign investment (supply). At this point, little savings and increased spending in the economy was resulting in high interest rates and high inflation rates. A high inflationary environment was considered unfavourable and would have been perpetuated if the Reserve Bank had lowered interest rates. The reserve bank was, therefore, hesitant to intervene i.e. manipulate rates downward and as such interest rates remained high during 1996.

More specifically, the high demand for short term funds, resulted in an increase in short term interest rates from relatively lower rates in early 1994 of 10% to 14% in mid-1995 and 16% in early 1996. More specifically the yield on three-month Treasury bills increased from 12.5% in December 1994 to 14.2% in June 1995. The repurchase rate increased by 200 basis points over this same period and bank credit lines peaked at 19.5% in June 1995. These rates decreased only marginally going forward.

Long term rates followed the following trend; the yield on long term government instruments declined from 16.7% in June 1995 to a lower 13.7% in January 1996. Foreign capital inflows diminished, and a shortage of foreign exchange developed as a result of the large fiscal deficit that South Africa was experiencing, thus resulting in the upward pressure on interest rates. To alleviate the high interest rate environment, it would have been imperative for government to increase savings and reduce the fiscal deficit, failing this, market forces would need to take effect to restore equilibrium and aid in lowering interest rates. (Stals, 1996B)

The economic landscape incurred positive changes in 1997 as inflows of foreign capital gained momentum. Foreign investors were responsible for R34 billion net purchases of bonds and equity. This allowed South African private investors to re-allocate their SA assets to foreign assets, thus stabilising the exchange rate. Interest rates also began to decline from early 1997 given the above market effects and a slowdown of credit extensions to the public sector. The Reserve Bank eased monetary policy during the year by decreasing the repurchase rate by 100 basis points to 16% and overall the economy experienced gradual increases in money

market liquidity and declines of market interest rates, for example long term government bonds and Treasury bills.

The conditions detailed above were short lived as turmoil in the currency and capital markets onset in late-1997. Overheated East Asian economies overflowed into South Africa, resulting in a sell off of foreign investment in bonds and equities, again applying upward pressure on interest rates. (Stals, 1997A) Once again, market forces of higher savings and reduced government spending were required to alleviate high interest rates and encourage market discipline. The Reserve Bank remained hesitant to intervene.

The East Asian crisis, was an example of why excessive credit extension can result in a financial crisis; East Asian controls regarding lending were relaxed as banks were allowed to maintain low interest rates while extending excessive amounts of credit into the market. Foreign borrowings were increased to supply the extra liquidity, however as foreign investors became weary, liquidity dried up and the financial system could no longer be supported. (Stals, 1998A)

Extremely high interest rates continued into 1998, 'when non-residents reviewed their investment strategy and started to withdraw some of the funds they had previously invested in South African bonds. During the four months: January to April 1998, non-resident investors increased their holdings of South African bonds by approximately R16 billion. Over the next four months, from May to August 1998, they reduced their holdings of South African bonds by approximately R19 billion'. (Stals, 1998B) Interest rates reacted almost immediately, as investor confidence in emerging markets declined, presumably driven by the East-Asian crisis.

2.5.2. A New Millennium – 2000s and the US sub-prime Crisis

As South Africa entered the new Millennium, interest rate behaviour was erratic, the yield on long term government bonds fell to 13.3% in early 2000, from a high of 18.3% in late 1998, this was influenced by low-inflation, fiscal discipline and a positive assessment by international ratings agencies. By May 2000 the daily average yield on long term bonds had shifted upwards to reach 15.2% before returning to more stable conditions at 13.7% in August 2000.

‘As a result of the changes in long-term and short-term interest rates, the relatively flat yield curve at the beginning of 1999 assumed a steep positive slope over the next eighteen months. This reflected an easing of the monetary policy stance and, in the first five months of 2000, higher long-term yields and interest rates. From the end of May 2000, the differential between long-term and short-term yields began to decline again.’ (Stals, 2000)

In 2002, the South African Reserve Bank, accused of having deliberate policy that caused the high interest rate environment, was again subject to unpopular opinion, as they tightened monetary policy in order to control inflationary pressures. Inflation had spiked from 5.8% to 12.5% from September 2001 to August 2002. Mboweni (2002), stated; ‘In the face of these inflationary forces, the SARB responded by tightening monetary policy. On each occasion, in January, March, June and September 2002, the Reserve Bank’s repurchase rate was raised by 1%, leading to corresponding increases in the interest rates charged by commercial banks and thus the rates at which corporates were able to borrow at. The banks’ prime overdraft rate for example rose from 13% at the beginning at the year to 17% at present. At that level, the public is clearly feeling the impact of monetary policy. Dishing out this medicine doesn’t make the Bank very popular’ (Mboweni 2002).

The inflation outlook improved during 2003 and decreased to a rate within the target band as a result of sustained prudent monetary and fiscal policies. The Monetary Policy Committee (MPC), therefore, decreased interest rates on four occasions in 2004, and a 5.5% adjustment occurred. This aggressive action equated interest rates to levels last seen in the 1980s. This had a direct impact on the size of the bond market which decreased significantly from R40 billion in 2002 to R 30 billion at the

end of 2005. With the cost of borrowing declining, the bond market became an attractive tool for corporates to raise financing. (Mboweni, 2003 & 2005)

Moving to 2006, the repo rate was increased marginally to control inflationary pressure, and an all-round positive sentiment toward the capital market and growth prospects in South Africa was felt. However, by July 2007 turmoil had hit the global financial market as the sub-prime bust led to tightening of liquidity and credit conditions. 'A rising wave of risk aversion prompted by increasing foreclosures in the US sub-prime mortgage market resulted in an abrupt deterioration in global financial market conditions in August 2007. Rising foreclosures and delinquencies were linked to sub-prime borrowers who had taken out adjustable rate mortgages. As interest rates reset to higher levels, in line with the rising US interest rate environment, these borrowers found it difficult to pay their mortgage loans. This turbulence was not confined to the US sub-prime market, spreading to the broader mortgage market and financial markets more generally.' (Mboweni, 2007)

South Africa, to a certain extent, was hedged against the effects of the crisis because of the dynamic relationship between gold and the stock market. An analysis was conducted by Chkili (2016), to determine the correlation between the two assets, gold and equity and the effectiveness of gold as a hedge in equity markets. The findings of this study indicated; the correlation between gold and equity markets is negative in periods of market turmoil or financial crises, therefore implying that gold can act as a safe haven against significant market movements. Further, adding gold to a stock portfolio enhances its risk adjusted return. Gold therefore, has both hedging and stabilizing characteristics. It was at this point, during the crisis, that Gold and Platinum companies represented more than 40% of the JSE Top 40 Index. These resource giants included BHP Billiton and Anglo American at 16% and 11.4% of the Top 40 Index, respectively and energy company Sasol at 7.5%, to name a few.

The study suggested an optimal allocation for gold in a South African asset portfolio, namely, in a one-dollar gold/stock portfolio 68.56%, should be invested in gold, whereas only 31.44% should be invested in the equity market. This strategy would effectively hedge the country and minimize the impact of the financial turbulence experienced in the crisis. It was in the peak of the crisis, that South Africa's Top 40 Index, used as a proxy for the composition of the JSE had a 40%+ holding in gold and minerals, thus allowing the country to mitigate the effects of the crisis. (Chkili, 2016)

(Wasserman, 2019). The crisis, nonetheless, had become pervasive as contagion took hold in the UK, Australia and the Eurozone.

As risk aversion increased, the yield on a US three-month Treasury bill dropped 2%. To cover funding needs, US banks hoarded cash and liquidity dried up, in addition banks were no longer able to raise funding. The explosive demand for liquidity had an immediate impact on the short term money market, which resulted in overnight interest rates to soar. As a means to provide relief the Fed lowered its target federal funds rates, allowing emerging markets to breathe. (Mboweni, 2007)

South African monetary policy, had been tightened from June 2006 and 2008, resulting in an upward trajectory, the repurchase rate had been increased by an additional 5% to 12% and the prime overdraft rate moved to 15.5%. Throughout this period, however, the outlook for the International economy remained uncertain. The negative effects of the sub-prime crisis were worse than expected which resulted in continued turbulence in the financial markets. This sentiment continued into 2008 and 2009. Although, there were signs of recovery in the SA economy, a full recovery remained dependent on the pace of global recovery. Inflation had moderated, however continued declining, the economy experienced minimal growth and many sectors contracted. Consequently, the repurchase rate, contrast to earlier years, moved into a downward trajectory. The rate was 11.5% at the end of 2008 and had declined to 7% by the end of 2009.

2.5.3. A New Millennium – the second decade and the Euro Debt Crisis

Unfortunately, a renewed positive economic outlook for South Africa was not a reality in the near future. A series of events, including external shocks, resulted in a continued weak economic environment and the repurchase rate was set between 5% and 7% for the remaining years up until 2016. In 2010 the World incurred various challenges; low growth persisted in the US, with continued quantitative easing, solvency fears were crippling countries in the Euro area as sovereign debt concerns reached their peak, as such the current environment of global low interest rates were prolonged. In 2011, Gill Marcus, the Governor of the SARB, made the following statement; 'Since the previous meeting of the Monetary Policy Committee, there has been no meaningful progress to resolving the sovereign debt crisis that is engulfing

the Euro area, with the primary focus now on Italy and Greece. The interlinked nature of the debt crisis and concerns about the banking sector in Europe, coupled with the inability of the advanced economies to generate sustained growth, continues to weigh negatively on the global economic outlook. The heightened uncertainty has had implications for the pattern of global capital flows and exchange rates in emerging markets' (Marcus, 2011).

By 2012, the Global crisis remained unresolved, domestic growth outlook deteriorated, and the Eurozone crisis had perpetuated into a recession. Asia experienced declining growth rates and China and India were expected to experience weak growth, with the implications thereof impacting prospects for emerging markets, including South Africa. The repurchase rate remained at a low 5%. As the country entered into 2013 to 2014 the outlook remained challenging, inflation begun breaching the upper band and monetary policy was altered upward. This perpetuated into 2015, alongside a severe drought and electricity demands far in excess of Eskom's capacity, resulting in food inflation and inflation moving upward. The repurchase rate was subsequently altered upward, again.

As the capital markets entered late 2016, positive sentiment appeared to return. Inflation was forecast to return to its target range and economic growth was expected to recover. The repurchase rate, nevertheless, was increased again in 2016, further to this long bond yields increased by 60 basis points during the year and subsequently moderated at 25 basis points higher than in 2015. Tighter monetary policy was also expected in the US, as uncertain conditions, including BREXIT, tariff increases on Chinese exports and the possibility of new US policy as a result of the current elections, were set to have adverse effects on the economy going forward. The Global Financial crisis of the late 2000s, seemingly behind the World and South Africa, had created global shock which caused an increase in the cost of debt financing. The interest rate hiking cycle, however, was set to end, although the Monetary Policy committee remained hesitant. (Marcus, 2012 & 2013; Kganyago, 2014, 2015 & 2016A & B)

2.6 South African Debt Market

While interest rates have played a huge role in the behaviour of corporates, an important aspect of the economy is its capital market. Capital markets have said to be imperative in economic development by providing liquidity to corporates to finance longer-term projects. Capital markets have three components, long term bank loans and deposits, bonds and equity capital. Each component serving a unique purpose in the market. Bonds are well suited to longer term financing needs, while bank debt has often been labelled 'bridging finance'. In order to effectively obtain debt financing firms with favourable credit ratings will be subject to less capital market friction, as such equity is a valuable component, allowing firms to maintain sound capital structures and credit ratings.

2.6.1. The Bond Exchange of South Africa – the Beginning

The Bond Exchange of South Africa (BESA) is South Africa's bond market, it is formalised, exchange driven, and exhibits characteristics of efficiency and liquidity. Government sanctions in the 1980s and early 1990s, had resulted in limited access to foreign lending and thus liquidity. As a result, South Africa relied heavily on the efficiency and liquidity provided by the bond market. The SA bond market had taken steps to become more formal as improvements to the functioning and efficiency thereof took place in 1990. Furthermore, the Bond Market Association was established in the mid-1980s allowing for its rapid development. (Mboweni, 2006C)

In the years leading up to 1999, the following statistics were presented by the Governor of the South African Reserve Bank:

'The increase in total turnover in the secondary market for bonds was spectacular. The total value of transactions in secondary trading on the BESA increased from just over R2 trillion in 1995 to R4.3 trillion in 1997, and R8.5 trillion in 1998' (Stals, 1999).

This increase in participation in the capital market, and more specifically the debt market in 1998 was a result of further enhancements and greater flexibility regarding the payment, clearing and settling of transactions. Furthermore, exchange controls were lifted by policy makers in order to facilitate trade. This increase in activity in the

capital market included active participation from non-residents who were attracted by the aforementioned policy reforms. Although participation in the capital markets were positive, the adverse global financial conditions resulted in a depletion of foreign investment in the debt market by the end of 1998; net disinvestments from the BESA in 1998 were R10 billion, in the first four months of 1998 non-residents increased South African bond holdings by R16 billion, the months that followed saw non-residents reduce their investments in bonds by R26 billion. This had severe repercussions for interest rates. (Stals, 1999)

This trend continued into 2000, as non-residents became net sellers of bonds totalling R16.5 billion in the first 6 months of 2000. Non-residents were shifting their portfolios toward high-technology and manufacturing orientated economies instead of commodity-based countries. Inflows of other capital were able to temporarily mitigate the effects thereof. In mid-2000, the US dollar weakened on international foreign exchange markets and foreign investors returned to a net-purchasing position in the SA bond market.

Toward the end of 2002, the governor of the Reserve Bank stated; 'South Africa's financial markets are robust, liquid and well-developed' (Mboweni, 2002). He further went on to contextualise the size of the SA bond market, indicating that the value of its turnover in a single month was approximately R1 trillion, an amount equal to South Africa's annual gross domestic product. Non-residents were playing a key role in these markets and contributed sizably to net purchases, although selling and buying bonds in equal amounts. The bond market continued to expand and increased a considerable 200% to the end of 2005. SA had become an attractive debt market for foreign investment, as rating agencies Fitch and Standard and Poor's had improved their investment rating of the country, which moved from 'high risk speculative grade' in 1994 to 'investment grade rating' in 2005. Foreign investors continued to actively participate in the bond market, with foreign flows accounting for 18.9% of total bond market flows in 2005, up from 9% a year earlier. (Mboweni, 2002, 2003 & 2005)

Foreign investors remained net purchases in the South African bond market during 2006 as their interest in the South African market remained strong, it became evident that emerging markets were becoming more resilient to exogenous shocks impacting investor sentiment, such as the East Asian Crisis of 1997-1998. Investors, regardless,

continued to seek high yielding instruments. 'In 2005, a total net amount of R23.8 billion was raised through the primary issuance of bonds on BESA' (Mboweni, 2006).

In 2005 the total value of bonds listed on the BESA was equivalent to 46% of gross domestic product. This consisted of 70 different issuers of bonds, including public firms. The BESA, at this stage had good liquidity as measured by total transactions and turnover. Significant contributions were made by non-residents.

A downside, however, to the efficacy of the BESA was crowding out, a circumstance in which issuing of domestic debt crowds out private sector issuers of debt securities, resulting in an adverse impact on long term productive investment in the economy. This was prevalent in South Africa given the government budget deficit, the deficit as 2.3% and 3.1% of total SA GDP for the years 2004/2005 and 2005/2006 respectively, was mostly financed through domestic borrowing i.e. issuing of government bonds. Under these circumstances an increased issuing of government bonds results in a decline in bond prices and inversely, higher domestic interest rates. Higher domestic interest rates increase the cost of issuing debt, and in turn could result in a crowding out of private investment. Kahn, indicated, in his 2005 paper on Bond Market Developments in Sub-Saharan Africa, that developments in the SA domestic bond market had only, more recently, included the significant expansion of the domestic private bond market. (Kahn, 2005; Treasury, 2005)

By 2006, a promising finding indicated, that while government bonds still accounted for much of the debt listed on the BESA at 66%, this had declined from 80% in 1996, thus indicating an increase in bond activity by corporates. At this point, new issuances of corporate bonds had overtaken those of government. Bonds were enjoying an extended rally and yields had reached record lows toward the end of the year. Tighter monetary policy, as discussed above, however, increased bond yields, combined with asset repricing as a result of perceived emerging market risk by foreign investors. (Mboweni, 2006C & 2007)

As the economy moved into 2007, the landscape was characterised by US sub-prime crisis. SA, however, was somewhat unaffected at this point, the banking sector had minimal exposure to the US sub-prime market and liquidity remained healthy. Non-residents interest in the bond market remained positive. (Mboweni, 2007)

2.6.2. The Bond Exchange of South Africa – a Global Player

Fast forward to late 2009; the BESA became a wholly owned subsidiary of the JSE and was commended for playing an imperative role in advancing SA as a leader in emerging markets and a global player in the bond market. Being both well developed and liquid, the bond exchange was placed fourth in the World Federation of Exchanges based on turnover recorded for bond trades in 2008. This was positive for various reasons; a well-functioning bond market could improve the transmission mechanism for monetary policy and provide insights to the reserve bank on the inflation and interest rate expectations of market participants, pricing of debt is considered more effective, and a bond market reduces the concentration of credit risk, which would solely lie with banking institutions. These attributes and the gold hedge allowed South Africa to fare well during the global financial crisis as it provided financial stability.

The bond market, however, did not come out unscathed from the crisis. The contraction in economic activity and easing of monetary policy had the following effects; downward pressure on bond yields and increased risk aversion, which in turn resulted in non-residents reducing their exposure to the domestic bond market. Bond listings, however, still grew within 2008, albeit at a slower pace given corporates were forced to downscale as a result of a slowdown in economic activity. (Mminele, 2009)

Following the crisis, global uncertainty remained at the forefront of the World economy and prospects in emerging markets, while positive remained challenging. In 2012 the BESA was included in the World Government Bond Index of Citibank, which resulted in an influx of inflows into the domestic bond market. This inflow assisted in moderating the degree of depreciation that the exchange had experienced. Non-residents contributed a total of R85.2 billion in net purchases of bonds in 2012. The bond market fared well relative to the equity market in which non-residents were net-sellers at this point. By 2014, US quantitative easing was underway, and the US policy rate remained zero bound, non-resident activity in the SA market was buoyant. Market sentiment had resulted in an initial sell off of bonds, resulting in net-sales in May 2013, however as expectations of US Fed tapering were modified, non-residents resumed a net-purchasing position of R17 billion thus reversing the net sales, by October 2013.

This was temporary, as risk aversion increased in November and net-sales of bonds amounted to R9.7 billion. Overall non-resident purchases of bonds amounted to R12.8 billion. (Marcus, 2013)

This trend persisted into the coming years, in 2014 non-residents remained net-sellers in the bond market, at November net bond sales amounted to R16.2 billion. US quantitative easing continued and the volatility in capital flows were indicative of fickle global investor sentiment. This perpetuated into 2016 and SA experienced a significant sale of bonds by non-residents of R42.7 billion. The US presidential elections had caused uncertainty, and economic policies, to curb higher inflation, indicated a possibility of increased tightening of US monetary policy. Coupled with a sharp increase in US long yields, the reversal of capital flows to emerging markets, including SA was to be expected. (Kganyago, 2014 & 2016B)

2.7. Conclusion

Dominant theories, such as the irrelevance theory, trade-off theory, pecking order theory and agency theory, have been the foundation to which the determinants of capital structure have been established. Traditional and commonly used determinants have been identified as; firm size, asset tangibility, and firm profitability and growth opportunities. Their ability to predict changes in firm capital structure is varied.

Significant findings from this literature review have indicated the following; regression results differ significantly dependant on the leverage measure and the sector examined. Further the findings of Kazmierska-Jozwiak, et al., (2015), likewise indicate that a firm's capital structure varies significantly across economic activity of firms. Thus, the results of this study are likely to be varied based on the sector and leverage measures used. (Noulas & Genimakis, 2011)

Leverage and corporate performance were addressed and echoed the importance of decisions made by corporates regarding their capital structure. While alternative findings were presented, in aggregate, leverage had impacted corporate performance.

The macro-economic review of South African interest rates and the capital market provided readers with insight regarding changes that had occurred across the period. Section 2.5 analysed each decade within the sample period and confirmed that South Africa was no stranger to the repercussion of World Economic shocks, of which resulted in fluctuating inflation and interest rates for the country. The Bond Exchange of South Africa was discussed in Section 2.6 and detailed the progression of the capital market through the years, and thus the accessibility of debt for corporates.

The theory and macro-economic findings within this review will provide a basis to justify the capital structure decisions made by firms within the sample, specifically the increase in debt levels across the period and any marked inclines or declines.

The investigation of these theories, the associated capital structure determinants and the relationship between leverage and performance will inform the methodology to which this paper analyses the change in corporate leverage in South Africa over the period of 1994 - 2016 using a sample of companies from the real estate and REIT, travel and leisure and construction and materials sectors listed on the JSE.

Chapter 3: Research Design and Methodology

3.1. Introduction

This chapter highlights the methodology used to analyse the change in corporate debt levels in South Africa between the periods of 1994 to 2016. The theoretical framework that formed part of the literature review is the basis from which the model and estimation is derived.

The aim of the quantitative research is to determine whether;

- Leverage within firm capital structure has changed for the period of 1994 to 2016,
- There is a relationship between corporate leverage ratios and the determinants of capital structure, and
- The relationship, if any, is able to significantly predict the changes in the level of leverage held in a firm's capital structure.

The relationship between the dependent variables, leverage ratios and independent variables, the capital structure determinants will take the following form;

- General Equation; $Y = (\mu_1) (X1) + (\mu_2) (X2) + (\mu_3) (X3) + (\mu_4) (X4) + \dots$

Where, Y is the dependent variable, and
 X is the independent variable

- Specific Equation (defined in detail below);

$$TDBV = (\mu_1)(SIZE) + (\mu_2) (TANG) + (\mu_3) (PROF) + (\mu_4) (GROW) + (\mu_5) (CORD) + (\mu_6) (TAX)$$

$$TDMV = (\mu_1)(SIZE) + (\mu_2) (TANG) + (\mu_3) (PROF) + (\mu_4) (GROW) + (\mu_5) (CORD) + (\mu_6) (TAX)$$

$$TLBV = (\mu_1) (SIZE) + (\mu_2) (TANG) + (\mu_3) (PROF) + (\mu_4) (GROW) + (\mu_5) (CORD) + (\mu_6) (TAX)$$

$$TLMV = (\mu_1) (SIZE) + (\mu_2) (TANG) + (\mu_3) (PROF) + (\mu_4) (GROW) + (\mu_5) (CORD) + (\mu_6) (TAX)$$

3.2. Definition and Analysis of Variables

3.2.1. Leverage Ratios – Dependent Variables

Four alternative leverage ratios will be used in this study, these are the dependent variables. The leverage ratios are as follows; total debt over book value of equity, total debt over market value of equity, total liabilities over book value of equity and total liabilities over market value of equity. This is consistent with Slabbert (2018) and allows for ease of comparison of each of the studies that make up this research topic.

Total debt will be defined as long and short term debt that is interest bearing. Interest bearing debt is associated with an increased risk of firm bankruptcy. Total liabilities will consist of both interest bearing borrowings (short and long) and other accounts, such as trade creditors, deferred tax and provisions. These are defined by the International Financial Reporting Standards (IFRS). The denominators of each of the leverage measures; book and market value of equity are defined as follows; equity per the firm's statement of financial position, i.e. share capital at the value it was originally issued and the market capitalisation of the firm, which is the current value of issued equity, respectively. Table 5 highlights the leverage measures that will be used.

Table 5: Leverage Measures

Proxy	Variable	Calculation
TDBV	Total Debt to Book Value of Equity	Long-term Interest Bearing Debt + Short-term Interest Bearing Debt / Total Book Value of Equity
TDMV	Total Debt to Market Value of Equity	Long-term Interest Bearing Debt + Short-term Interest Bearing Debt / Total Market Value of Equity
TLBV	Total Liabilities to Book Value of Equity	Total Liabilities / Total Book Value of Equity
TLMV	Total Liabilities to Market Value of Equity	Total Liabilities / Total Market Value of Equity

3.2.2. Determinants of Capital Structure – Independent Variables

This study will use the following capital structure determinants; firm size (calculated as the natural logarithm of firm revenue), tangibility of assets (fixed assets, also known as property, plant and equipment over total assets), profitability (earnings before interest and tax over total assets), growth (natural logarithm of total assets), cost of debt (prime interest rate in South Africa) and the corporate tax rate (tax rate in SA).

Similar, to dependent variables, these are consistent with those used by Slabbert (2018) in order to ensure consistency and comparable results between the 4 authors who have been tasked with completing this study, across the JSE.

These determinants and the method to calculate these have been summarised in the table below, Table 6. Each independent variable will be discussed in detail.

Table 6: Capital Structure Determinants

Proxy	Determinant	Calculation
SIZE	Firm Size	Natural logarithm of Turnover
TANG	Tangibility of Assets	Fixed Assets / Total Assets
PROF	Profitability	Earnings before Interest and Tax (EBIT) / Total Assets
GROW	Growth	Natural logarithm of Total Assets
CORD	Cost of Debt	South African Prime Rate
TAX	Tax Rate	South African Corporate Tax Rate

3.2.2.1. Firm Size

Firm size will be calculated as the natural logarithm of firm revenue. The majority of research support the notion that larger firms have greater debt capacity. These studies indicate that larger firms are better diversified and have lower probabilities of default and thus financial distress. Larger firms are also assumed to have stable future cash flows. Further to this, larger firms have easier access to debt, incur lower transactions costs associated with debt and therefore find it less expensive to issue long term debt. As a result, and in support of the trade-off theory, a positive relationship between leverage and firm size is expected.

The pecking order theory suggests a negative relationship, indicating that, larger firms have fewer information asymmetries as a result of better quality financial information, therefore the cost of issuing equity is lower. Agency theory, however, suggests neither a positive or negative relationship, as this would depend on firm and management specific circumstances. (Karadeniz, et al., 2009; Smith, 2010; Sbeti & Moosa, 2012; Harrison, et al., 2011; Noulas & Genimakis, 2011)

3.2.2.2 Asset Tangibility

Asset tangibility will be measured as the ratio of tangible assets, also known as property, plant and equipment over total assets and offers a similar argument to firm size. The pecking order theory indicates that increased tangible assets will result in fewer information asymmetries, allowing firms to issue equity without being penalised by the market, thus a negative relationship will exist. The trade-off theory predicts a positive relationship; tangible assets serve as effective collateral for lenders, if a borrower defaults due to financial distress, therefore increasing the amount and ease at which these firms can obtain debt. Tangible assets may also allow firms to obtain favourable debt financing terms. The latter relationship forming the consensus amongst the studies presented in the literature review, Chapter 2.

The following has been noted in the travel sector; 'most hotel assets are tangible and represent valuable collateral, therefore it may be very likely that the type of investments made by lodging companies are better financed with long term debt as lenders are more comfortable with real estate type investments and debt capital

works better to control any associated agency problems (Karadeniz, et al., 2009).’ In support, Smith (2010), stated; tangible assets can mitigate concerns over insider resource exploitation as described by agency costs. This will have relevance to the real estate and REIT sector. (Karadeniz, et al., 2009; Smith, 2010; Harrison, et al., 2011)

3.2.2.3 Profitability

Profitability will be measured as a firm’s earnings before interest and tax (EBIT) over total assets, i.e. return on assets. Profitability, similar to firm size and tangibility will increase the firm’s borrowing capacity. Smith (2010), Harrison, et al. (2011) and Noulas et al. (2011) indicate that profitability has an inverse relationship with financial distress, thus lowering the risk of bankruptcy and increasing the firm’s ability borrow and potentially obtain financing on favourable terms. Further, firms enjoying higher profits will require a greater tax shield, thus taking on greater amounts of leverage.

Pecking order theory suggests the opposite; leverage and profitability are negatively related. Firms are likely to use less debt with an increased availability of internal funds. Similar, an increase in profitability will allow risk averse managers the opportunity to avoid debt in their capital structure. Harrison, et al. (2011), argues that profitability lowers debt ratios mainly through the retention of earnings and a negative relationship is to be expected. The findings within these studies, convincingly support the pecking order theory. (Karadeniz, et al., 2009; Smith, 2010; Harrison, et al., 2011)

3.2.3.4. Growth

Firm growth will be calculated using the natural logarithm of the firm’s total assets. This measurement basis differs to past studies, in which a market based measures have been used, namely; the firm’s market to book ratio. This ratio accounts for the market’s perception of the firm, potentially distorting results, thus an alternative accounting measure has been used.

Dissimilar to the determinants discussed above and contradictory to initial belief, the hypothesised relationship between growth and leverage is negative. Although growth opportunities may result in an increase in future profitability, it is also associated with

an increase in risk. Growth opportunities bear more risk and thus higher financial distress costs. The trade-off theory, therefore, suggests that there is an expected negative relationship. Furthermore, high growth firms will finance growth with equity finance to mitigate idle capacity problems arising from risky debt. Harrison, et al. (2011), in support of this notion predicts that 'corporate borrowing introduces deadweight costs into the firm's decision making process and as such high growth firms wishing to avoid this may lower their use of debt.' (Karadeniz, et al., 2009)

Smith (2010), describes a positive relationship between debt and growth, in terms of the pecking order theory, and suggests that it is likely that high growth firms will use greater portions of debt financing as they are unable to fund all investment opportunities with internal sources. The results of studies discussed in the literature review, again, are convincingly in support of the pecking order theory.

3.2.2.5. Cost of Debt

This study will use the South African prime interest rate as a proxy for the cost of debt. The South African prime interest rate is a function of the repurchase rate, a rate at which banks are able to borrow from the SARB. The prime rate is greater than the repurchase rate and is used as a basis to determine rates at which commercial banks will lend to their customers, after accounting for client specific risk factors. Interest rates, including the prime rate have fallen significantly since the highs experienced in 1980, impacting a firm's capital structure decision making. (Correia, Flynn, Uliana & Wormald, 2011)

Although, not commonly been used in past studies, it is suggested, per the trade-off theory, that an increase in the cost of debt, may increase the cost of financial distress and as such an inverse relationship would be expected.

A study conducted by Kumar and Bodla (2014), looking at the corporate capital structure in developing countries such as India, included the cost of borrowing as a determinant for leverage. The study supported the inverse relationship; an increase in the cost of borrowing, is likely to reduce a firm's dependence on borrowed funds.

A second study investigating the relationship between the cost of debt and leverage by Harrison, et al., 2011, also found a negative relationship in support of the trade-off theory. (Kumar & Bodla, 2014)

3.2.2.6. Corporate Tax Rate

The South African corporate tax rate will be used to measure the corporate tax rate. In 2011, Correia noted the following; 'South Africa has undertaken major changes to the tax system which are impacting on investment and financing decisions. The significant reduction in the corporate tax rate from 48% to 28% in the last 20 years has affected corporate investment and financing decisions' (Correia, et al., 2011).

Few studies have incorporated the tax rate as a predictor into their model, however, their basis for inclusion is a result of the following; trade-off theory of capital structure rests on the premise that interest expense on debt is deductible for tax purposes. Therefore, considering this theory, there should be a positive relationship between the corporate tax rate and debt ratios. In other words, higher corporate tax rates should have a positive effect on the value of tax shields, resulting in increased debt holdings. The pecking order theory, however, does not specify a relationship between tax rates and debt. (Karadeniz, et al., 2009; Oztekin, 2015)

3.3. Data Sources

Data used to calculate the applicable ratios, which are used for both the dependent and independent variables to complete the regression were obtained from annual financial statements extracted from Iress. The sample period was set from 1994 to 2016, or from the period in which the firm became publically listed. In the event that a firm had limited financial information or had been suspended from their listing, they were removed from the sample. Thus, having a total sample of 76 firms across the following three sectors: real estate sector including real estate investment trusts and real estate investments and services, travel and leisure sector and the construction and materials Sector. The entire sample is contained in Appendix A-1.

The corporate tax rate is readily available and the cost of debt, is the South African prime rate, which has been obtained from Iress. Data analysis was completed using Microsoft Excel.

3.4. Estimation Techniques

Having defined the objective, described the dependent and independent variables, and sourced the appropriate data, this section will provide readers with insight into the method used to conduct the trend analysis, correlation and regression analysis.

The first objective is to determine whether firm leverage has changed across the period, this will be completed using graphical representations to determine trends. The second objective is to determine whether a relationship exists between the dependent and independent variables, the correlation coefficient. This value will determine whether the variables are negatively or positively related to one another, as indicated by a negative or a positive value respectively. A perfect negative correlation would be represented by -1 and a perfect positive correlation by +1. No correlation returns a zero value. This has been performed in Excel using Excel Data Analysis Toolpak.

This tool generates a correlation coefficient matrix, from which, it can be determined whether the leverage ratio is positively or negatively related to each of the capital structure determinants. However, to determine whether the correlation coefficient is real and not a result of a chance occurrence, a significance test, calculating associated p-values, will be completed. A correlation coefficient is said to be statistically significant when the associated p-value is less than 0.05 or 0.01, with the latter indicating greater statistical significance. A p-value in excess of 0.05 will not allow us to conclude that the result is real and not as a result of chance or luck.

The p-value will be determined using a regression model, this model will be run using the Excel Data Analysis Toolpak. This tool assumes a t-distribution, in which the mean is calculated under the assumption of a normal distribution, while the standard deviation is unknown. A separate regression will be run for each of the leverage ratios; TDMV, TDBV, TLMV, TLBV. The leverage ratio is input into the model as the dependent variable and each of the capital structure determinants; SIZE, TANG, PROF, GROW, CORD and TAX are input as the independent variables, also known as the predictors or X-values. The results of each regression will calculate a p-value that corresponds to that leverage ratio, for example TDMV and each of the capital structure determinants. The results will provide an indication of whether the capital structure determinants are statistically significantly correlated to that leverage ratio.

Chapter 4: Results

4.1. Introduction

Having determined the methodology in which this research will be conducted. This chapter seeks to document the results from the quantitative research performed over the capital structure determinants of leverage in South Africa for the period 1994 to 2016, for real estate, REITs, travel and leisure and construction and materials firms across the JSE.

A trend analysis will be performed to address the overall changes in leverage for the period and the use of different types of leverage, for example short term and long term debt relative to total debt and current and non-current liabilities to total liabilities. This will be performed for each of the sectors and the total sample.

The following estimation techniques will be used; a correlation coefficient analysis, in order to determine whether the determinants are positively or negatively correlated to leverage, and a regression technique in which the significance between the leverage ratio, dependent variable and the independent capital structure determinants will be determined. This will be determined using the p-values of the regression analysis.

The correlation matrix and regression analysis will be performed consistently over the total sample, and each of the sectors individually. Further, a regression model will be used for each of the leverage ratios, within the total sample and individual sectors, namely; TDMV, TDBV, TLMV and TLBV. Thus, the results will conclude on the statistical significance of the relationships between each of the leverage ratios and the determinants of size, tangibility, profitability, growth, cost of debt and tax, for the total sample, real estate and REITs, travel and leisure and construction and material firms.

The trend analysis will be completed using graphs to highlight the use of and changes in debt, while the estimation techniques will be completed using the Microsoft Excel Analysis Toolpak. These will be documented in Section 1 and Section 2 – Trend Analysis and Section 3 – Regression Analysis for the Total Sample and each sector, respectively.

4.2. Total Sample

4.2.1. Total Sample – Leverage Results

Figure 1: Leverage Ratios for the Total Sample

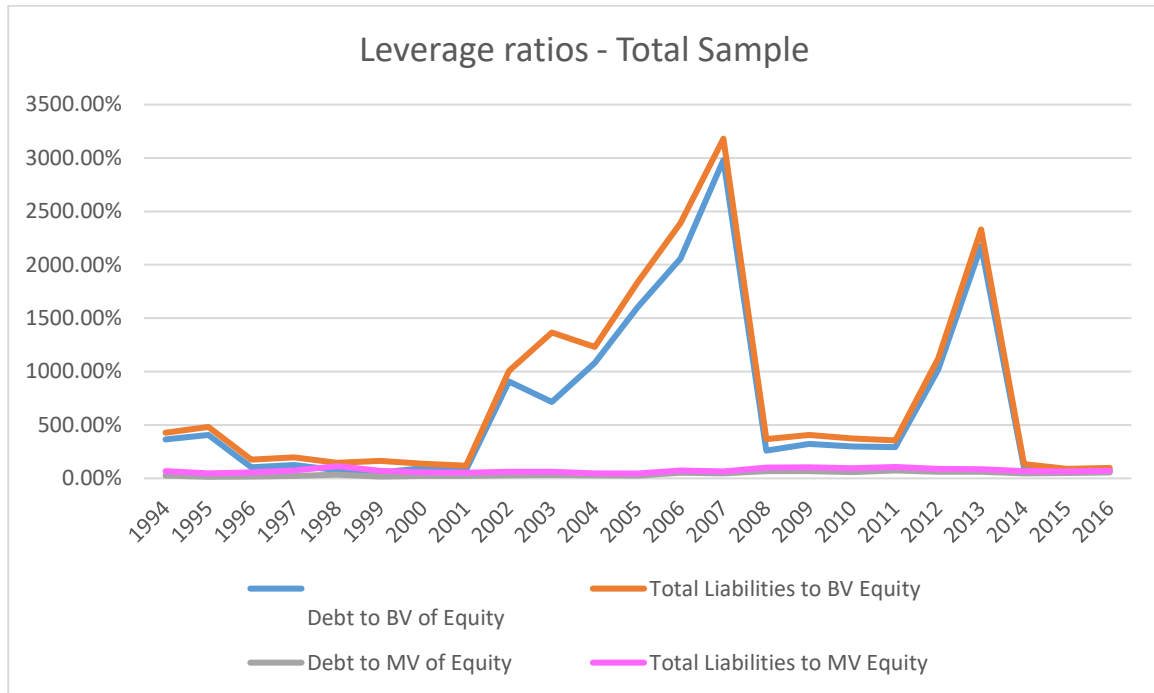
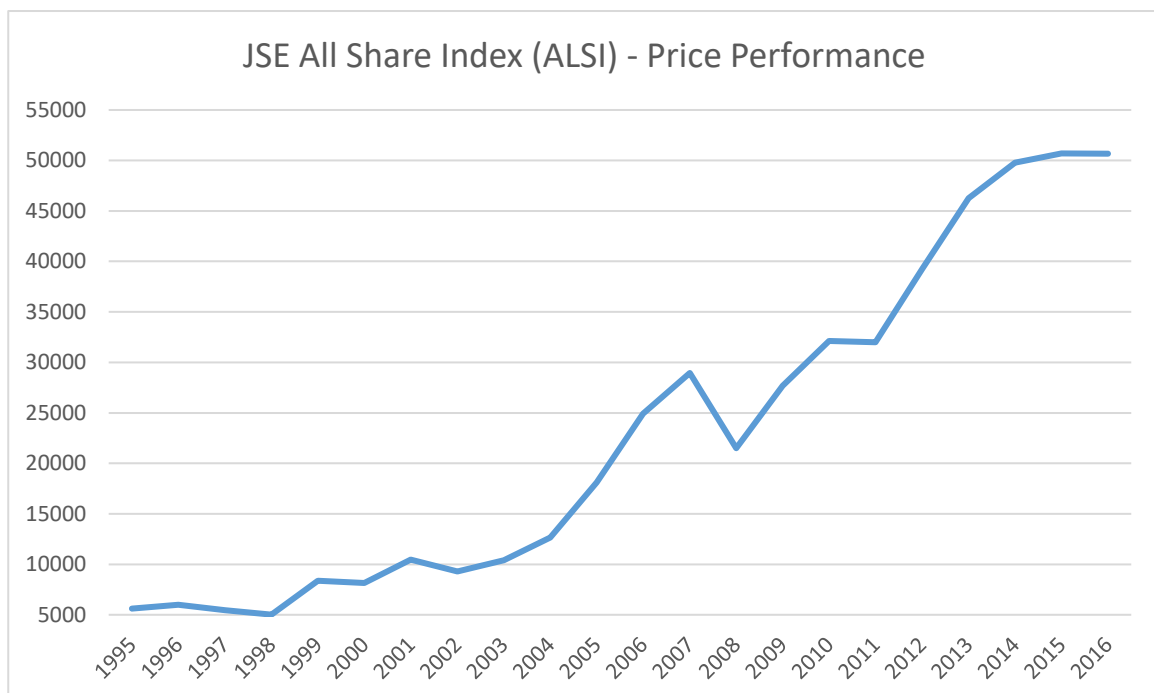


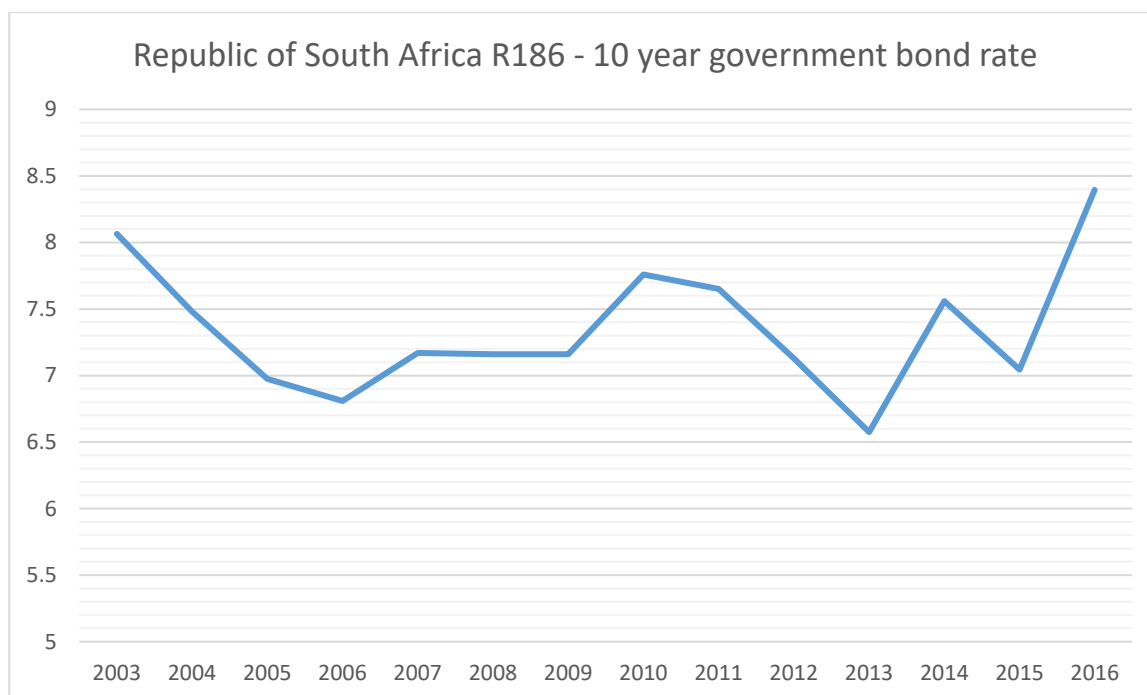
Figure 2: JSE All Share Index (ALSI) – Price Performance for the period 1995 – 2016



The total sample consisted of 76 firms listed on the JSE, in the real estate and REIT, travel and leisure and construction and materials sectors. Figure 1 provides a graphical representation of the different leverage ratios for the Total Sample, for period 1994 to 2016. Figure 2 is the performance of the JSE All Share Index for the period 1995 to 2016. The benchmark 10-year government bond rate is displayed, for the period 2003 to 2016, in Figure 3.

Inspecting Figure 1, a significant upward trend in leverage begun in 2001, peaking at an all-time high in 2007 and declining sharply in 2008. In 2004, we confirm the definite upward trend in leverage. This increase in debt usage is explained as follows; in 2004, extremely low interest rates attracted government and corporates to issue debt financing. Debt, cheaper than previous years, had become an attractive tool in the capital market. In 2006, evidence indicated that corporates had increased their activity on the BESA. The numerator of each ratio, i.e. debt and or liabilities, had increased.

Figure 3: Republic of South Africa – R186 – 10 Year Government bond rate



A second factor contributing to the changes in leverage, specifically influencing the denominator – equity, was the Global Financial crisis of 2007 – 2008. While, South Africa was somewhat hedged from the full impact thereof, the equity market did not come out unscathed. As displayed in Figure 2 which visually portrays the

performance of the JSE All Share Index from 1995 to 2016, a significant and sharp decline in the index occurred between 2007 and 2008. This, sharp decline, coincides with the all-time high in leverage ratios seen in 2007. As the market value of equity stocks declined sharply (the denominator in the leverage ratios, TDMV and TLMV), the debt to equity ratio spiked significantly. The crisis, and subsequent decline in equity, had the effect of changing the weight of debt and equity within firms' capital structures and thus their risk profile. (Mminele, 2009)

After the 2007 high, leverage declined sharply, as a result of the following; between years 2006 to 2008, interest rates were increased by the SARB, thus debt became expensive to issue and leverage became less attractive to corporates. As seen in Figure 2 the 10-year government bond rate increases steadily from 2006 until 2010.

Further as equity markets recovered, the market value of stock would have increased in value, thus decreasing the leverage ratio. Corporates, would have, amidst the crisis, paid down their debt to stabilise their debt-equity ratios, thus further contributing to the decline in leverage ratios as seen in Figure 1, post 2008.

Following this, between the years; 2011 and 2014, debt measures spike and fall on a second occasion, peaking at a second high in 2013. Explaining this spike; leverage, as seen in Figure 3, had become increasing cheaper, beginning in 2011 the 10-year government bond rate can be seen decreasing from roughly 7.7% to a low of 6.6% in 2013. The South African repurchase rate, driving the decline in rates was at a low of 5% at the end of 2012, once again making debt cheaper and attractive to corporates. After which, however, rates begun increasing as monetary policy was altered to curb inflation and as a result leverage begun decreasing, again it was considered an expensive source of finance. (Mboweni, 2003, 2004 & 2005)

Overall, the South African capital market deepened from 1994 to 2016, increased efficiency and the establishment and improvements the BESA, meant debt financing became both readily available and cheaper relative to the high interest rates seen in the late 1980s, allowing firms to increase debt, relative to equity in their capital structure. Favourable monetary policy made debt an attractive tool to raise finance. The numerical analysis of each leverage ratio, for the period 1994 to 2016 is summarised in Table 7 and Appendix A-3. Individual leverage graphs, for TDBV, TDMV, TLBV and TLMV can be seen in Appendix A-4.

Table 7: Yearly Leverage for the Total Sample

Total Sample				
	TDBV	TLBV	TDMV	TLMV
1994	366%	427%	25%	68%
1995	407%	481%	15%	46%
1996	104%	176%	16%	55%
1997	124%	198%	24%	73%
1998	77%	146%	34%	114%
1999	56%	163%	18%	72%
2000	94%	137%	22%	56%
2001	79%	120%	23%	53%
2002	908%	1007%	29%	61%
2003	716%	1365%	31%	63%
2004	1082%	1232%	29%	48%
2005	1602%	1838%	27%	46%
2006	2059%	2392%	52%	74%
2007	2982%	3181%	46%	64%
2008	260%	367%	69%	101%
2009	322%	407%	68%	103%
2010	298%	373%	60%	94%
2011	292%	355%	74%	106%
2012	1019%	1124%	62%	90%
2013	2174%	2331%	63%	86%
2014	99%	134%	48%	67%
2015	67%	89%	50%	66%
2016	71%	98%	56%	72%
Average	663%	789%	41%	73%
Min	56%	89%	15%	46%
Max	2982%	3181%	74%	114%
Std Dev	814%	883%	19%	20%
Range	2926%	3092%	59%	68%

4.2.2. Total Sample – Term Structure of Leverage

Figure 4: Long term and Short term Debt relative to Total Debt and Long term and Short term Liabilities relative to Total Liabilities

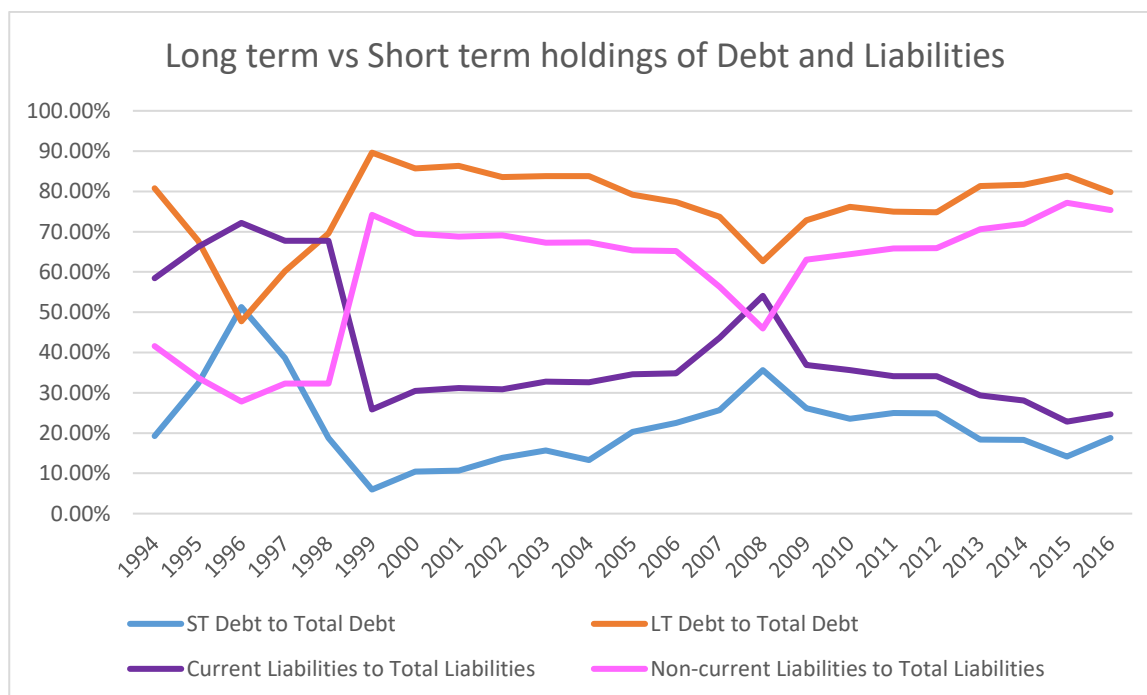


Figure 4 provides a graphical representation of the preferred term structure of debt.

Looking at the preferred term structure of debt, as graphically displayed in Figure 4, holdings of long term debt were consistently larger than those of short term debt.

In greater detail; current liabilities appear to have been favoured relative to non-current liabilities, for years 1994 to 1998, subsequently, non-current liabilities were considerably larger than current. Both measures, however converged in 1996, and again, albeit less aggressively in 2008. In other words, the use of short term debt and liabilities were preferred relative to long term. Corroborating these findings, Chapter 2 describes the following; from 1994 to 1996, Apartheid government sanctions, little foreign investment and low government savings had resulted in a shortage of funding and high demand for shorts term funds. As a result, short term interest rates increased from 10% in 1994 to 16% in early 1996, whereas long term government yields declined. It is from this point, in which firms shifted back into long term debt financing, as short term debt was associated with high interest rates. (Stals, 1996B)

4.2.3. Total Sample – Correlation & Significance Results

The correlation analysis has been documented in a correlation matrix in Table 8, while the regression models, per leverage ratio have been summarised in Table 9, the results of the correlation and significance analysis are summarised below. Statistical significance has been documented at the 5% and 1% levels. The results are as follow;

- Firm size (SIZE) is positively correlated to each of the leverage ratios with the following displaying statistical significance; TDMV and TLMV at the 0.01 level. These ratios incorporate the market measure of equity and as such market perception toward firm size may drive this relationship.
- Tangibility (TANG) and profitability (PROF) are positively correlated to both TDBV and TLBV and negatively correlated to TDMV and TLMV. Tangibility displays no statistical significance, while profitability reflects significant correlation at the 0.01 level for TDBV, TLBV and TDMV and at the 0.05 level for TLMV.
- Growth (GROW) is positively correlated to each of the leverage ratios, in addition significant correlation exists with TDMV at the 0.01 level and TLMV at the 0.05 level. These ratios incorporate market perception toward the firm (reflected in the market capitalisation). Similar to firm size, market perception toward growth may impact the share price resulting in a significant relationship between leverage and growth.
- The cost of debt (CORD), as measured by the South African prime interest rate is negatively related to each of the leverage ratios, with TDMV showing statistical significance at the 0.05 level.
- Corporate tax rate (TAX) is negatively correlated to each of the leverage measures, with significance of TDMV at the 0.01 level.

The capital structure determinants showed the greatest statistical significance toward TDMV, in other words the capital structure determinants were best able to predict the variability in total debt to market value of equity. Poor predictability was found between the capital structure determinants and TDBV and TLBV. In agreement, there is not a good fit in the regression model as measured by adjusted R^2 , when using

TDBV and TLBV as our leverage measures. Whereas adjusted R^2 , for model TDMV and TDLV, indicated that there was a reasonable fit. Further, profitability displayed significant correlation toward each of the leverage ratios, while tangibility the least.

The relationship between leverage and determinants; size, tangibility, profitability and the cost of debt, support the trade-off theory, whereas the positive relationship between growth and leverage, consistent with much of the past literature, supports the pecking order theory. The relationship between the tax rate and leverage support neither theory. For the total sample, the findings broadly support the trade-off theory.

Table 8, 9 and 10 below provide a summary of the following; correlation between the four leverage ratios and 6 capital structure determinants, the regression model for each of the leverage ratios and the descriptive statistics.

Table 8: Correlation between dependent variable & determinants for the Total Sample

Correlation - Total Sample										
	TDBV	TLBV	TDMV	TLMV	SIZE	TANG	PROF	GROW	CORD	TAX
TDBV	1.0	0.991	0.177	-0.138	0.228	0.033	0.568	0.225	-0.233	-0.226
TLBV	0.991	1.0	0.156	-0.151	0.190	0.190	0.558	0.195	-0.237	-0.221
TDMV	0.177	0.156	1.0	0.156	0.745	0.745	-0.069	0.843	-0.634	-0.742
TLMV	-0.138	-0.151	0.156	1.0	0.473	0.473	-0.168	0.383	-0.087	-0.421
SIZE	0.228	0.190	0.745	0.473	1.0	-0.178	0.328	0.707	-0.301	-0.266
TANG	0.033	0.104	-0.061	-0.343	-0.178	1.0	-0.033	0.058	-0.273	-0.156
PROF	0.568	0.558	-0.069	-0.168	0.328	-0.033	1.0	-0.072	0.081	0.211
GROW	0.225	0.195	0.843	0.383	0.707	0.058	-0.072	1.0	-0.736	-0.772
CORD	-0.233	-0.237	-0.634	-0.087	-0.301	-0.273	0.081	-0.736	1.0	0.725
TAX	-0.226	-0.221	-0.742	-0.421	-0.266	-0.156	0.211	-0.772	0.725	1.0

Table 9: Regression Statistics for the Total Sample

(a) Dependent Variable: **TDBV**

(b) Predictors: (constant), SIZE, TANG, PROF, GROW, CORD, TAX

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of Estimate
1	0.687899	0.473205	0.275657	692.41%

Anova

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	689.057030	6	114.842838	2.395392	0.076196
Residual	767.091752	16	47.943234		
Total	1456.148782	22			

(a) Dependent Variable: TDBV

(b) Predictors: (constant), SIZE, TANG, PROF, GROW, CORD, TAX

Coefficients

Model	Unstandardized coefficients		t	Sig.
	B	Std. Error		
TDBV (constant)	13.963945	71.098365	0.19640	0.84677
SIZE	-3.881364	4.738467	-0.81912	0.42475
TANG	-0.022480	0.083028	-0.27075	0.79005
PROF	154.001287	46.693135	3.29816	0.00454
GROW	3.237279	5.284816	0.61256	0.54877
CORD	2.603919	62.710902	0.04152	0.96739
TAX	-64.278869	119.614285	-0.53738	0.59840

(a) Dependent Variable: TDBV

(a) Dependent Variable: **TLBV**

(b) Predictors: (constant), SIZE, TANG, PROF, GROW, CORD, TAX

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of Estimate
1	0.676711	0.457938	0.254664	762.63%

Anova

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	786.143683	6	131.023947	2.252815	0.091036
Residual	930.561469	16	58.160092		
Total	1716.705153	22			

(a) Dependent Variable: TLBV

(b) Predictors: (constant), SIZE, TANG, PROF, GROW, CORD, TAX

Coefficients

Model	Unstandardized coefficients		t	Sig.
	B	Std. Error		
TLBV (constant)	29.478202	78.308425	0.376437	0.711537
SIZE	-3.608590	5.218994	-0.691434	0.499203
TANG	0.008381	0.091448	0.091651	0.928113
PROF	162.162414	51.428269	3.153177	0.006154
GROW	2.396849	5.820748	0.411777	0.685967
CORD	-3.320666	69.070393	-0.048077	0.962250
TAX	-83.212451	131.744327	-0.631621	0.536555

(a) Dependent Variable: TLBV

(a) Dependent Variable: **TDMV**

(b) Predictors: (constant), SIZE, TANG, PROF, GROW, CORD, TAX

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of Estimate
1	0.968120	0.937256	0.913726	5.65%

Anova

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	0.761798	6	0.126966	39.833792	0.000000
Residual	0.050998	16	0.003187		
Total	0.812797	22			

(a) Dependent Variable: TDMV

(b) Predictors: (constant), SIZE, TANG, PROF, GROW, CORD, TAX

Coefficients

Model	Unstandardized coefficients		t	Sig.
	B	Std. Error		
TLBV (constant)	0.574335	0.579715	0.990720	0.336570
SIZE	0.265890	0.038636	6.881924	0.000004
TANG	-0.000394	0.000677	-0.581492	0.569012
PROF	-1.328158	0.380722	-3.488526	0.003036
GROW	-0.128349	0.043091	-2.978577	0.008867
CORD	-1.237871	0.511326	-2.420903	0.027740
TAX	-5.546134	0.975299	-5.686597	0.000034

(a) Dependent Variable: TDMV

(a) Dependent Variable: **TLMV**

(b) Predictors: (constant), SIZE, TANG, PROF, GROW, CORD, TAX

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of Estimate
1	0.826881	0.683732	0.565132	13.18%

Anova

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	0.601024	6	0.100171	5.765003	0.002332
Residual	0.278010	16	0.017376		
Total	0.879034	22			

(a) Dependent Variable: TLMV

(b) Predictors: (constant), SIZE, TANG, PROF, GROW, CORD, TAX

Coefficients

Model	Unstandardized coefficients		t	Sig.
	B	Std. Error		
TLMV (constant)	2.691407	1.353526	1.988442	0.064148
SIZE	0.321393	0.090208	3.562806	0.002595
TANG	-0.002114	0.001581	-1.337347	0.199812
PROF	-2.172557	0.888914	-2.444057	0.026486
GROW	-0.244311	0.100609	-2.428324	0.027332
CORD	0.724788	1.193850	0.607102	0.552302
TAX	-8.522501	2.277141	-3.742632	0.001775

(a) Dependent Variable: TLMV

Table 10: Descriptive Statistics for the Total Sample

Descriptive Statistics - Total Sample					
	N	Minimum	Maximum	Mean	Std. Deviation
TDBV	23	55.94%	2981.70%	663.48%	813.56%
TLBV	23	89.13%	3181.13%	788.66%	883.36%
TDMV	23	15.04%	74.16%	40.92%	19.22%
TLMV	23	46.00%	114.06%	72.98%	19.99%
SIZE	23	13.07	15.42	14.49	0.73
TANG	23	239%	7454%	2223%	1945%
PROF	23	3.10%	19.64%	11.01%	3.96%
GROW	23	14.50	17.40	15.87	0.97
CORD	23	8.50%	23.00%	13.36%	4.17%
TAX	23	28.00%	35.00%	29.96%	2.51%
Valid N	23				

4.3. Real Estate Investments and REITs

4.3.1. Real Estate Investments and REITs – Leverage Results

Figure 5: Leverage Ratios for the Real Estate and REIT Sector

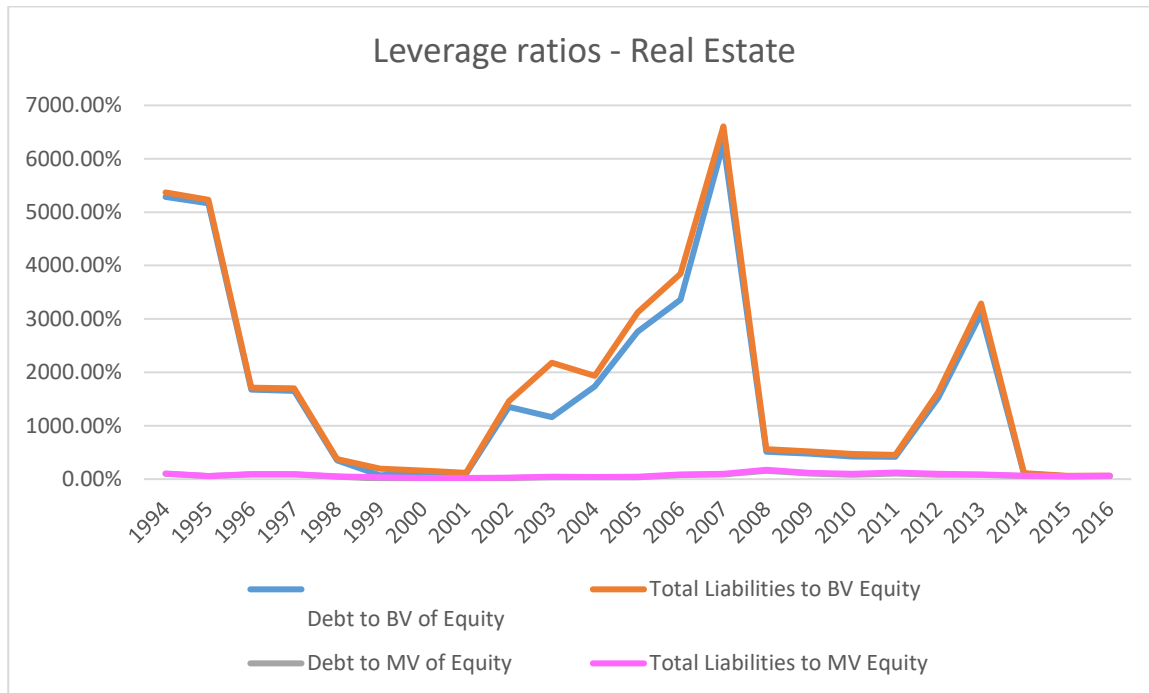
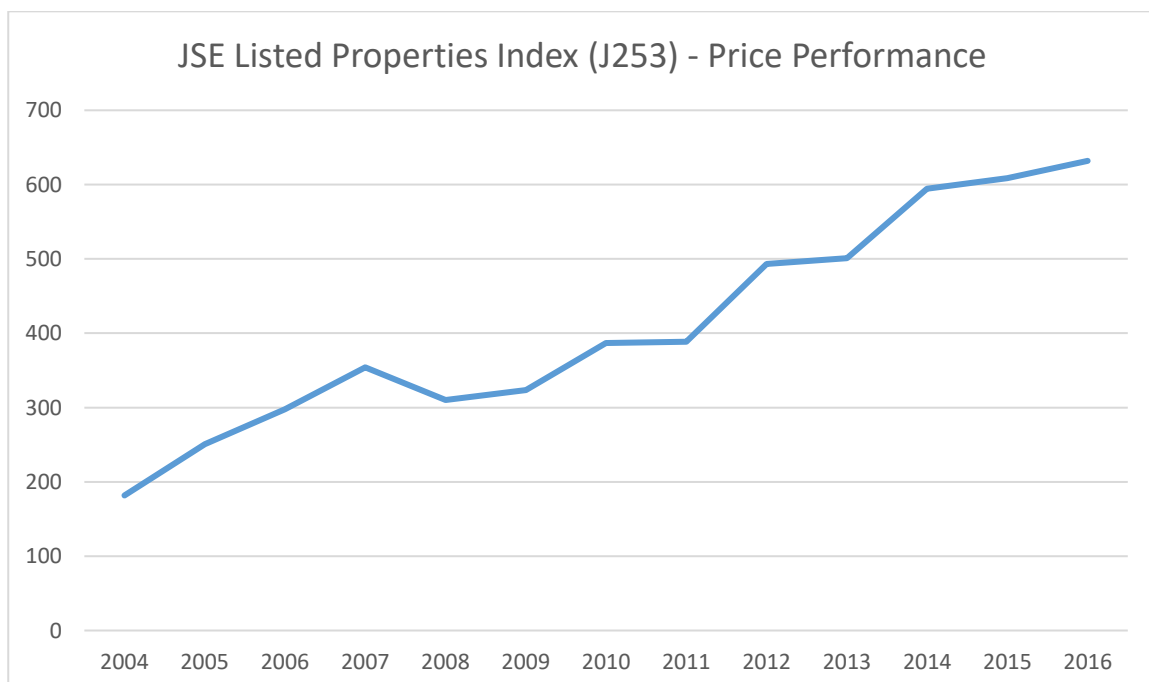


Figure 6: JSE Listed Properties Index – Price Performance for the period 2004 – 2016



REITs and real estate firms within this study account for a total of 47 firms and 61.8% of the total sample. REITs make an interesting analysis as their tax liability is limited.

Figure 5 provides a graphical representation of the different leverage ratios for the real estate and REIT sector, for period 1994 to 2016. Figure 6 is the performance of the JSE Listed Properties Index for the period 1995 to 2016.

Looking at the trend analysis, overall debt holdings decreased for this sector, the year on year trend, however, mimicked that of the total sample, and as such follow the same rationale presented for the total sample. As seen in Figure 5, leverage ratios spike in years' 2007 and 2013. Similar to the performance of the ALSI, the performance of the JSE Listed Properties Index as seen in Figure 6, falls between years 2007 and 2008, thus reducing the denominator in each of the market leverage ratios and causing a large peak in the leverage ratios. Further, low interest rates of 2004 to 2006, would have encouraged corporates to issue debt and therefore contributed to the steady increase in leverage ratios seen between 2004 and 2007. Debt levels declined sharply between 2007 and 2008, as corporates would have paid down debt to stabilise leverage ratios and tighter monetary policy ensued, making debt relatively more expensive.

Leverage increased for a second time in 2013 as the SARB reduced the repurchase rate, in turn bond yields declined and corporates favoured debt as a cheaper source of finance. Decreasing interest rates can be seen in 4.2.1 Total Sample – Results – Figure 3, as the benchmark 10-year government bond rate declined 110 basis points between 2011 and 2013. Corporates would have been inclined to issue more debt, while market values of equity remained constant, thus inflating leverage ratios. Figure 6 indicates that equity was stagnant between years 2012 and 2013, before increasing toward the end of 2013. From which, leverage ratios decline and 'normalise'. Again, increasing interest rates and overall higher equity prices, would result in an impact to both the numerator and denominator of the leverage ratio.

The numerical analysis of each leverage ratio, for the period 1994 to 2016 is summarised in Table 11 and Appendix A-5. Individual leverage graphs, for TDBV, TDMV, TLBV and TLMV can be seen in Appendix A-6.

Table 11: Yearly Leverage for the Real Estate and REIT Sector

Real Estate & REITs				
	TDBV	TLBV	TDMV	TLMV
1994	5284%	5370%	102%	107%
1995	5166%	5231%	57%	59%
1996	1675%	1715%	87%	93%
1997	1653%	1700%	89%	96%
1998	354%	375%	46%	53%
1999	70%	194%	10%	34%
2000	135%	160%	18%	22%
2001	99%	117%	17%	23%
2002	1355%	1458%	24%	29%
2003	1161%	2179%	35%	49%
2004	1738%	1936%	34%	40%
2005	2764%	3119%	34%	43%
2006	3363%	3846%	77%	90%
2007	6293%	6607%	85%	99%
2008	515%	560%	156%	175%
2009	478%	520%	103%	117%
2010	424%	468%	85%	101%
2011	418%	455%	105%	121%
2012	1523%	1631%	84%	98%
2013	3106%	3292%	80%	90%
2014	103%	114%	56%	63%
2015	55%	62%	52%	59%
2016	55%	63%	57%	64%
Average	1643%	1790%	65%	75%
Min	55%	62%	10%	22%
Max	6293%	6607%	156%	175%
Std Dev	1856%	1929%	36%	38%
Range	6238%	6544%	146%	152%

4.3.2. Real Estate and REITs – Term Structure of Leverage

Figure 7: Long term and Short term Debt relative to Total Debt and Long term and Short term Liabilities relative to Total Liabilities

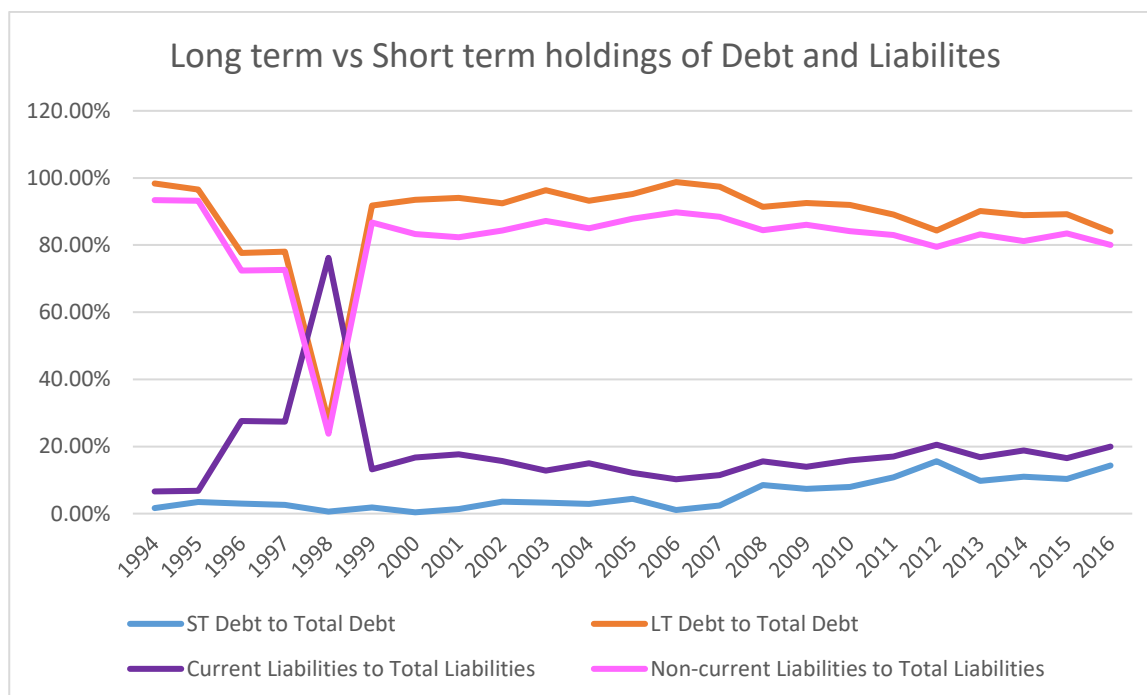


Figure 7 provides a graphical representation of the preferred term structure of debt.

As displayed in Figure 7, holdings of long term debt were consistently and significantly larger than those of short term debt, averaging 88.37% of total debt across the period, relative to 5.57% of short term debt. Non-current liabilities were also considerably larger than current liabilities at an average of 82% of total liabilities for the period, and short term liabilities to total liabilities an average of 18%.

As an explanation; managers may wish to match the term of their debt financing to that of their investment assets, in order to adequately finance their operations.

Current liabilities were, however, largely used in 1998, corresponding with extremely high interest rates. The East Asian crisis had resulted in a sell off of SA bonds, thus decreasing bond prices and increasing interest rates. Long and short term debt became expensive relative to current liabilities, including trade payables, and therefore less preferred. (Stals, 1996B)

4.3.3. Real Estate Investments and REITs – Correlation & Significance Results

The correlation analysis, for the real estate and REIT sector, has been documented in a correlation matrix in Table 12, while the regression models, per leverage ratio have been summarised in Table 13, the results of the correlation and significance analysis are summarised below. Statistical significance has been documented at the 5% and 1% levels. The results reflected in the real estate and REIT sector are, however, varied and statistical significance is limited, thus the results will be presented accordingly;

- PROF, CORD and TAX are positively correlated to the accounting measures of leverage; TDBV and TLBV. However, negatively related to our market ratios of TDMV and TLMV. None of these correlations are statistically significant.
- SIZE and GROW have an inverse relationship to the relationship documented above. These determinants have a negative relationship to the accounting ratios, namely TDBV and TLBV and a positive correlation with TDMV and TLMV. Again, neither of these correlations are statistically significant.
- TANG has a positive correlation to all leverage ratios, with a significant relationship at the 0.01 level for TDMV and TLMV (both the market measures).

These haphazard results make their interpretation thereof challenging. It can be interpreted, however, with confidence, that there is no relationship between capital structure determinants and debt measures when using the book value of equity, as none of the determinants were significantly related to TDBV and TLBV. Confirming this, the associated adjusted R^2 , in models TDBV and TLBV, revealed no good fit in the linear regression. It can also be determined, with confidence, that the tangibility of assets has an overall positive relationship to leverage and a significant positive correlation to debt measures when using equity at market value. This is consistent with much of the past literature, which found a positive relationship.

These results may be intuitive given the primary operations of real estate and REIT firms. These firms make significant investments in tangible assets, such as fixed commercial properties and land of which they may renovate, rebuild and

subsequently rent or sell to generate revenue. Thus, intuitively, tangibility of these assets may drive capital structure decisions of managers of real estate and REIT firms. Greater fixed assets also provide lenders with suitable security in the event of default, thus increasing the debt capacity of REITs. This positive relationship supports the trade-off theory and specifically the findings of past literature based on REITs, namely Smith (2010) and Harrison, et al. (2011).

Table 12, 13 and 14 below provide a summary of the following; correlation between the four leverage ratios and 6 capital structure determinants, the regression model for each of the leverage ratios and the descriptive statistics.

Table 12: Correlation between dependent variables and determinants for the Real Estate and REIT Sector

Correlation - Real Estate and REIT										
	TDBV	TLBV	TDMV	TLMV	SIZE	TANG	PROF	GROW	CORD	TAX
TDBV	1.0	0.994	0.215	0.176	-0.212	0.308	0.297	-0.267	0.202	0.436
TLBV	0.994	1.0	0.186	0.990	-0.193	-0.193	0.300	-0.247	0.175	0.412
TDMV	0.215	0.186	1.0	0.990	0.207	0.207	-0.273	0.148	-0.054	-0.006
TLMV	0.176	0.990	0.990	1.0	0.264	0.264	-0.312	0.212	-0.095	-0.075
SIZE	-0.212	-0.193	0.207	0.264	1.0	-0.057	-0.022	0.985	-0.833	-0.890
TANG	0.308	0.254	0.638	0.579	-0.057	1.0	0.196	-0.122	-0.064	0.296
PROF	0.297	0.300	-0.273	-0.312	-0.022	0.196	1.0	-0.042	-0.245	0.131
GROW	-0.267	-0.247	0.148	0.212	0.985	-0.122	-0.042	1.0	-0.791	-0.937
CORD	0.202	0.175	-0.054	-0.095	-0.833	-0.064	-0.245	-0.791	1.0	0.725
TAX	0.436	0.412	-0.006	-0.075	-0.890	0.296	0.131	-0.937	0.725	1.0

Table 13: Regression Statistics for the Real Estate and REIT Sector

(a) Dependent Variable: **TDBV**

(b) Predictors: (constant), SIZE, TANG, PROF, GROW, CORD, TAX

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of Estimate
1	0.632333	0.399845	0.174787	1686.37%

Anova

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	3031.491351	6	505.248558	1.776631	0.167540
Residual	4550.172585	16	284.385787		
Total	7581.663936	22			

(a) Dependent Variable: TDBV

(b) Predictors: (constant), SIZE, TANG, PROF, GROW, CORD, TAX

Coefficients

Model	Unstandardized coefficients		t	Sig.
	B	Std. Error		
TDBV (constant)	-395.111609	293.582581	-1.34583	0.19712
SIZE	9.445938	18.461177	0.51167	0.61587
TANG	1.868852	16.106546	0.11603	0.90907
PROF	102.210993	95.092048	1.07486	0.29838
GROW	1.220832	20.871400	0.05849	0.95408
CORD	163.345104	217.136335	0.75227	0.46281
TAX	796.954752	649.752645	1.22655	0.23774

(a) Dependent Variable: TDBV

(a) Dependent Variable: **TLBV**

(b) Predictors: (constant), SIZE, TANG, PROF, GROW, CORD, TAX

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of Estimate
1	0.610830	0.373114	0.138031	1790.96%

Anova

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	3054.520248	6	509.086708	1.587162	0.214580
Residual	5132.044493	16	320.752781		
Total	8186.564741	22			

(a) Dependent Variable: TLBV

(b) Predictors: (constant), SIZE, TANG, PROF, GROW, CORD, TAX

Coefficients

Model	Unstandardized coefficients		t	Sig.
	B	Std. Error		
TLBV (constant)	-429.398548	311.789551	-1.377206	0.187412
SIZE	8.833357	19.606075	0.450542	0.658365
TANG	-3.132679	17.105417	-0.183140	0.856989
PROF	102.475521	100.989325	1.014716	0.325341
GROW	2.515293	22.165772	0.113476	0.911065
CORD	134.437887	230.602374	0.582986	0.568030
TAX	895.702694	690.048042	1.298029	0.212678

(a) Dependent Variable: TLBV

(a) Dependent Variable: **TDMV**

(b) Predictors: (constant), SIZE, TANG, PROF, GROW, CORD, TAX

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of Estimate
1	0.834591	0.696543	0.582746	23.09%

Anova

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	1.957709	6	0.326285	6.120949	0.001729
Residual	0.852900	16	0.053306		
Total	2.810609	22			

(a) Dependent Variable: **TDBV**

(b) Predictors: (constant), SIZE, TANG, PROF, GROW, CORD, TAX

Coefficients

Model	Unstandardized coefficients		t	Sig.
	B	Std. Error		
TDMV (constant)	0.522763	4.019439	0.130059	0.898141
SIZE	0.407333	0.252752	1.611590	0.126599
TANG	0.951358	0.220515	4.314262	0.000535
PROF	-1.929500	1.301905	-1.482059	0.157751
GROW	-0.309431	0.285750	-1.082873	0.294915
CORD	4.909982	2.972813	1.651628	0.118097
TAX	-4.400852	8.895763	-0.494713	0.627527

(a) Dependent Variable: **TDMV**

(a) Dependent Variable: **TLMV**

(b) Predictors: (constant), SIZE, TANG, PROF, GROW, CORD, TAX

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of Estimate
1	0.812215	0.659693	0.532078	25.82%

Anova

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	2.068376	6	0.344729	5.169396	0.003947
Residual	1.066985	16	0.066687		
Total	3.135362	22			

(a) Dependent Variable: TLMV

(b) Predictors: (constant), SIZE, TANG, PROF, GROW, CORD, TAX

Coefficients

Model	Unstandardized coefficients		t	Sig.
	B	Std. Error		
TLMV (constant)	-0.382916	4.495682	-0.085174	0.933180
SIZE	0.355890	0.282699	1.258899	0.226125
TANG	0.922422	0.246642	3.739918	0.001785
PROF	-2.472954	1.456161	-1.698269	0.108816
GROW	-0.232777	0.319607	-0.728322	0.476942
CORD	4.397279	3.325047	1.322471	0.204605
TAX	-2.403517	9.949778	-0.241565	0.812186

(a) Dependent Variable: TLMV

Table 14: Descriptive Statistics for the Real Estate and REIT Sector

Descriptive Statistics - Real Estate and REIT					
	N	Minimum	Maximum	Mean	Std. Deviation
TDBV	23	54.88%	6293.11%	1642.94%	1856.40%
TLBV	23	62.19%	6606.63%	1790.00%	1929.03%
TDMV	23	9.73%	155.98%	64.84%	35.74%
TLMV	23	22.28%	174.53%	75.07%	37.75%
SIZE	23	9.99	15.06	13.13	1.84
TANG	23	3.70%	89.36%	45.28%	27.54%
PROF	23	-10.41%	13.77%	6.81%	4.83%
GROW	23	12.30	17.77	15.70	1.93
CORD	23	8.50%	23.00%	13.36%	4.17%
TAX	23	28.00%	35.00%	29.96%	2.51%
Valid N	23				

4.4. Travel and Leisure

4.4.1. Travel and Leisure – Leverage Results

Figure 8: Leverage Ratios for the Travel and Leisure Sector

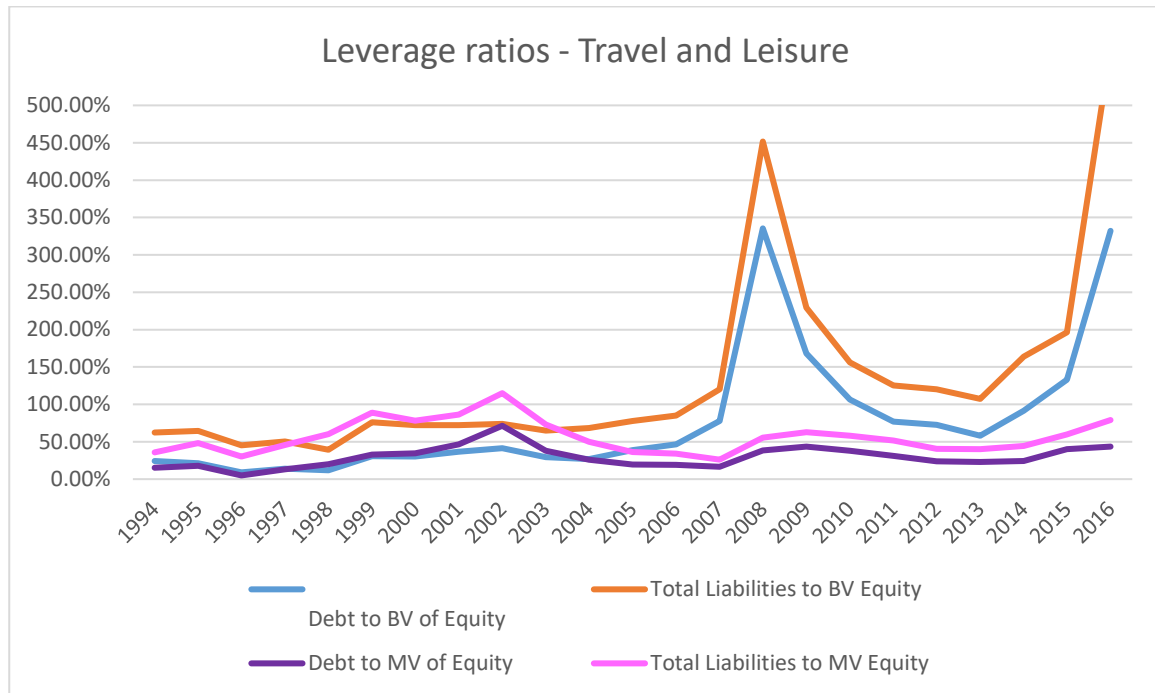
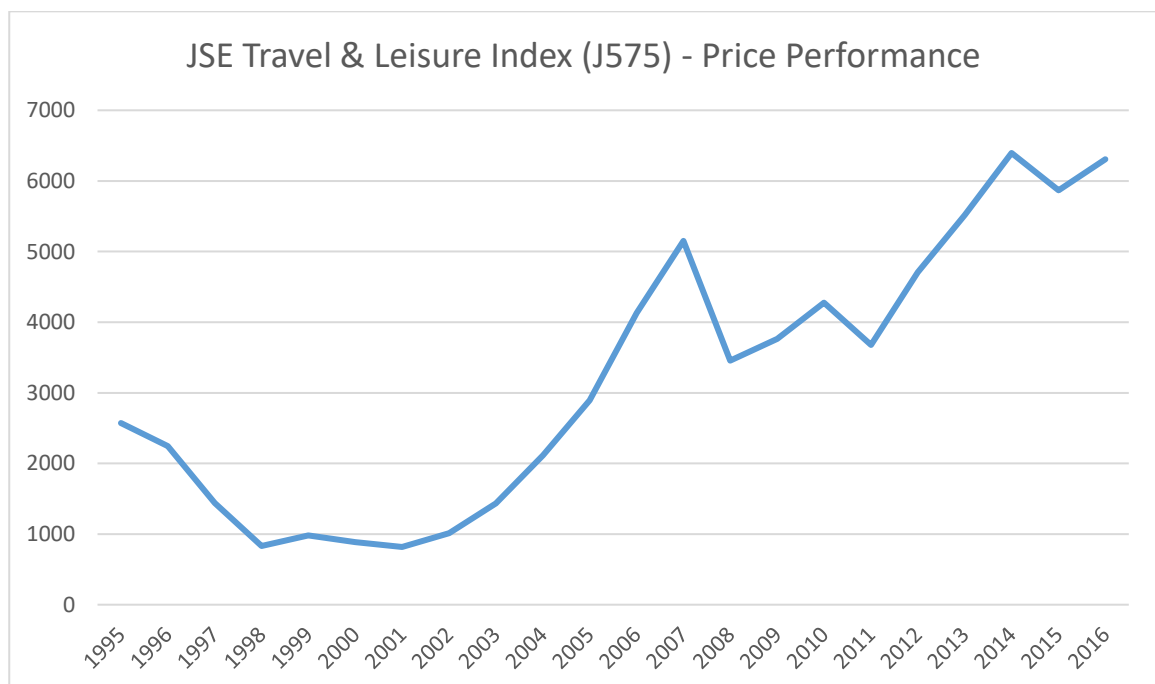


Figure 9: JSE Travel Index – Price Performance for the period 1995 – 2016



Firms within the travel and leisure sector of this study accounted for a total of 15 firms.

Figure 8 provides a graphical representation of the different leverage ratios for the Travel and Leisure sector, for period 1994 to 2016. Figure 9 is the performance of the JSE Travel & Leisure Index for the period 1995 to 2016.

Overall there has been an increase in the use of leverage, with notable increases in the years 2007, 2008 and 2015 and 2016. As described in Chapter 2, interest rates had declined in 2004 and this continued into 2006, until rates began rising to control inflation. REITs would have, therefore, found it attractive to utilise debt financing in the periods leading up to 2008. From June 2006 to June 2008, the repurchase rate had increased by 5% to 12% and the prime lending rate moved to 15.5%, consequently the use of leverage fell as seen in Figure 8. (Marcus, 2011)

To corroborate; Figure 3, presented in 4.2.1 – Total Sample – Results, displaying the benchmark 10-year government bond, portrays a decline in government bond rates for 2003 to 2006 and increasing rates thereafter. An additional and significant contributing factor can be seen in Figure 9; performance of the JSE Travel and Leisure Index. Late 2006, mid-2007 the travel and leisure index slumped significantly, a result of the Global Financial crisis, thus the market value of equity in these firms' capital structures would have declined substantially, thus inflating their debt ratios and causing the spike seen in late 2007, 2008.

The upward cycle in interest rates, used to control inflation, consequently moved into a downward trajectory, as inflation began to moderate. The repurchase rate declined to 7% by the end of 2009 and remained within the range of 5% to 7% for the years up until 2016. As expected, debt would have been relatively cheaper and thus used more extensively in the capital structure of these firms. This can be seen in the second, notable increase in leverage, beginning in 2013. (Kganyago, 2016B)

The slump in performance of equity within this sector of the JSE, occurring in 2014, as seen in Figure 9, for 2014 would also contribute to the second incline in leverage ratios, as the denominator would have declined.

The numerical analysis of each leverage ratio, for the period 1994 to 2016 is summarised in Table 15 and Appendix A-7. Individual leverage graphs, for TDBV, TDMV, TLBV and TLMV can be seen in Appendix A-8.

Table 15: Yearly Leverage for the Travel and Leisure Sector

Travel & Leisure				
	TDBV	TLBV	TDMV	TLMV
1994	24%	62%	15%	36%
1995	21%	65%	18%	48%
1996	9%	45%	5%	30%
1997	14%	51%	13%	46%
1998	12%	39%	20%	60%
1999	31%	76%	33%	89%
2000	30%	72%	35%	78%
2001	37%	72%	47%	87%
2002	41%	74%	71%	115%
2003	29%	65%	38%	73%
2004	27%	68%	26%	50%
2005	39%	78%	20%	36%
2006	47%	85%	19%	34%
2007	78%	120%	16%	26%
2008	335%	451%	38%	56%
2009	168%	229%	44%	63%
2010	106%	156%	38%	58%
2011	77%	125%	31%	52%
2012	73%	120%	24%	40%
2013	58%	107%	23%	40%
2014	91%	164%	24%	44%
2015	133%	196%	40%	60%
2016	332%	576%	43%	79%
Average	79%	135%	30%	57%
Min	9%	39%	5%	26%
Max	335%	576%	71%	115%
Std Dev	90%	130%	14%	22%
Range	326%	536%	66%	89%

4.4.2. Travel and Leisure – Term Structure of Leverage

Figure 10: Long term and Short term Debt relative to Total Debt and Long term and Short term Liabilities relative to Total Liabilities

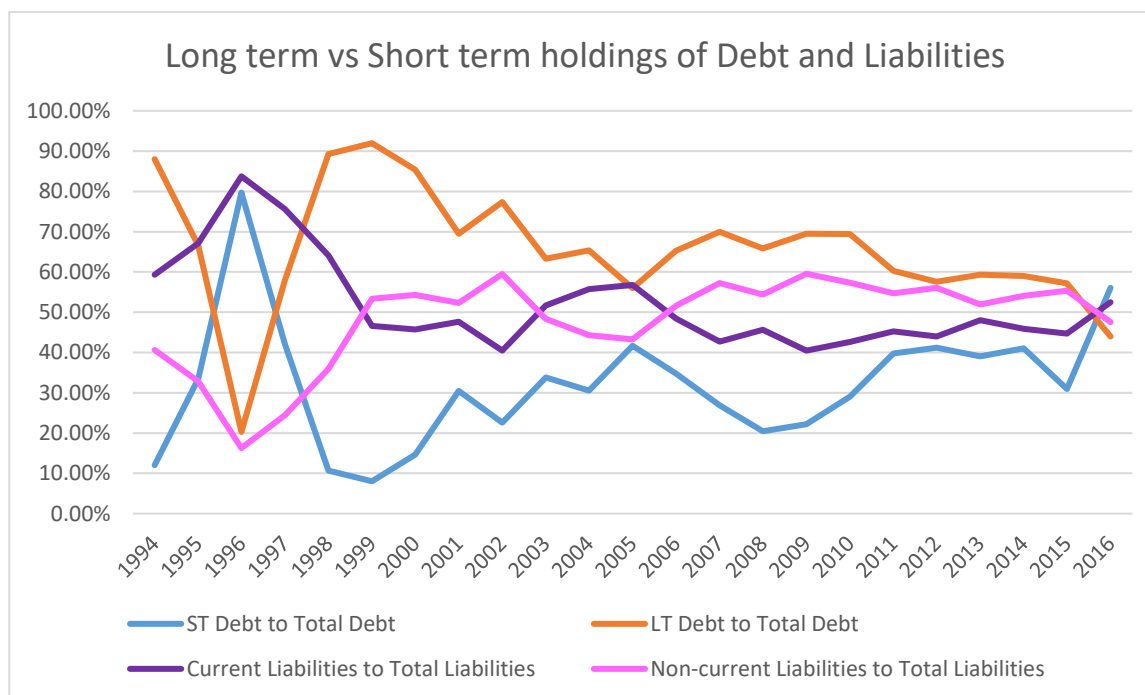


Figure 10 provides a graphical representation of the preferred term structure of debt.

This graph displays the most variation between the use of short and long term debt and liabilities, compared to the total sample and real estate and REIT and construction and materials sectors.

Similar, to the total sample, the use of short term debt significantly surpasses that of long term debt between years 1995 and 1997. In the years leading up to 1995, liquidity was low and the demand for short term financing rose significantly. Increased demand for short term funds subsequently increased interest rates. Firms, thus shifted back into relatively cheaper long term debt. Holdings of long term debt relative to total debt peaked in 1999, after which although larger, were not significantly greater than that of short term holdings. In 2005 and 2016 we see a convergence in short term and long term debt, with long term holdings decreasing and short term holdings increasing. Travel firms appear to use short and long term debt interchangeably, as seen in Figure 10, these firms commonly substitute one in place of the other.

4.4.3. Travel and Leisure – Correlation & Significance Results

The correlation analysis, for the travel and leisure sector, has been documented in a correlation matrix in Table 16, while the regression models, per leverage ratio have been summarised in Table 17, the results of the correlation and significance analysis are summarised below. Statistical significance has been documented at the 5% and 1% levels.

The results of the travel and leisure sector with regards to TDBV and TLBV, the book value measures of leverage are as follows;

- SIZE, PROF and GROWTH are positively correlated to TDBV and TLBV.
- TANG, CORD and TAX are negatively correlated to TDBV and TLBV.

There is however no statistical significance between the capital structure determinants and TDBV and TLBV, these determinants are therefore unable to predict the variability of leverage when using accounting ratios. Adjusted R², indicating that there is no good fit in the regression models; TDBV and TLBV. This finding is consistent with that of the real estate and REIT sector, presented in section 4.3.3, in which no significance was found between the capital structure determinants and accounting ratios; TDBV and TLBV.

When interpreting the results relative to TDMV and TLMV, the market value measures of leverage, the following is noted;

- Adjusted R² is higher indicating a reasonable fit in the regression models; TDMV and TLMV.
- SIZE and GROWTH are positively correlated to TDMV and negatively correlated to TLMV. SIZE has no statistical significance, while GROWTH displays a statistical significance at the 0.05 level to TLMV.
- TANG, PROF and TAX are negatively correlated to TDMV and TLMV. TANG is significantly related to TDMV at the 0.05 level, however PROF and TAX are statistically significant at the 0.01 level toward both TDMV and TLMV.
- CORD has a negative correlation to TDMV and a positive correlation to TLMV. With no statistical significance.

Interestingly, these results are supported by a study completed over a sample of firms in the lodging sector of the Turkish stock exchange. Similar, size of these Turkish firms had no relationship to leverage, nor did growth (when using the book value measures). Further, tangibility, profitability and tax rate had a statistically significant and negative relationship to leverage of these firms, exactly comparable to the findings noted above. Generally, the findings above support the pecking order theory, given the negative relationships between determinants; tangibility and profitability and leverage. Further the negative relationship between tax and leverage, specifically rejects the trade-off theory, which would imply a positive relationship. (Karadeniz, et al., 2009)

Table 16, 17 and 18 below provide a summary of the following; correlation between the four leverage ratios and 6 capital structure determinants, the regression model for each of the leverage ratios and the descriptive statistics.

Table 16: Correlation between dependent variables and determinants for the Travel and Leisure Sector

Correlation - Travel and Leisure										
	TDBV	TLBV	TDMV	TLMV	SIZE	TANG	PROF	GROW	CORD	TAX
TDBV	1.0	0.985	0.372	0.128	0.329	-0.179	0.302	0.237	-0.325	-0.501
TLBV	0.985	1.0	0.345	0.867	0.323	0.323	0.275	0.215	-0.311	-0.456
TDMV	0.372	0.345	1.0	0.867	0.018	0.018	-0.347	0.048	-0.264	-0.476
TLMV	0.128	0.867	0.867	1.0	-0.292	-0.292	-0.623	-0.181	0.069	-0.186
SIZE	0.329	0.323	0.018	-0.292	1.0	-0.143	0.353	0.910	-0.683	-0.585
TANG	-0.179	-0.242	-0.225	-0.450	-0.143	1.0	0.419	-0.291	-0.002	0.287
PROF	0.302	0.275	-0.347	-0.623	0.353	0.419	1.0	0.064	-0.318	-0.356
GROW	0.237	0.215	0.048	-0.181	0.910	-0.291	0.064	1.0	-0.523	-0.486
CORD	-0.325	-0.311	-0.264	0.069	-0.683	-0.002	-0.318	-0.523	1.0	0.725
TAX	-0.501	-0.456	-0.476	-0.186	-0.585	0.287	-0.356	-0.486	0.725	1.0

Table 17: Regression Statistics for the Travel and Leisure Sector

(a) Dependent Variable: **TDBV**

(b) Predictors: (constant), SIZE, TANG, PROF, GROW, CORD, TAX

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of Estimate
1	0.539954	0.291551	0.025882	88.74%

Anova

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	5.185333	6	0.864222	1.097422	0.405639
Residual	12.600028	16	0.787502		
Total	17.785361	22			

(a) Dependent Variable: TDBV

(b) Predictors: (constant), SIZE, TANG, PROF, GROW, CORD, TAX

Coefficients

Model	Unstandardized coefficients		t	Sig.
	B	Std. Error		
TDBV (constant)	4.830169	8.991479	0.53719	0.59853
SIZE	0.374216	1.482104	0.25249	0.80388
TANG	-1.832034	3.561965	-0.51433	0.61405
PROF	3.351156	6.877910	0.48723	0.63270
GROW	-0.321706	1.378398	-0.23339	0.81842
CORD	2.028154	8.863044	0.22883	0.82190
TAX	-14.848390	13.918556	-1.06681	0.30189

(a) Dependent Variable: TDBV

(a) Dependent Variable: **TLBV**

(b) Predictors: (constant), SIZE, TANG, PROF, GROW, CORD, TAX

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of Estimate
1	0.538546196	0.290032005	0.023794007	129%

Anova

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	10.856323	6	1.809387	1.089371	0.409810
Residual	26.575143	16	1.660946		
Total	37.431467	22			

(a) Dependent Variable: TLBV

(b) Predictors: (constant), SIZE, TANG, PROF, GROW, CORD, TAX

Coefficients

Model	Unstandardized coefficients		t	Sig.
	B	Std. Error		
TLBV (constant)	7.443135	13.058196	0.569997	0.576597
SIZE	1.148708	2.152439	0.533678	0.600901
TANG	-5.091160	5.172991	-0.984181	0.339676
PROF	4.767925	9.988690	0.477332	0.639581
GROW	-1.122052	2.001827	-0.560514	0.582893
CORD	1.137868	12.871672	0.088401	0.930655
TAX	-13.603289	20.213720	-0.672973	0.510568

(a) Dependent Variable: TLBV

(a) Dependent Variable: **TDMV**

(b) Predictors: (constant), SIZE, TANG, PROF, GROW, CORD, TAX

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of Estimate
1	0.846703	0.716907	0.610747	9.03%

Anova

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	0.330040	6	0.055007	6.753081	0.001041
Residual	0.130327	16	0.008145		
Total	0.460367	22			

(a) Dependent Variable: TDMV

(b) Predictors: (constant), SIZE, TANG, PROF, GROW, CORD, TAX

Coefficients

Model	Unstandardized coefficients		t	Sig.
	B	Std. Error		
TDMV (constant)	3.058401	0.914455	3.344507	0.004115
SIZE	0.214262	0.150734	1.421464	0.174381
TANG	0.787898	0.362260	2.174949	0.044975
PROF	-3.125360	0.699500	-4.467992	0.000388
GROW	-0.263171	0.140186	-1.877296	0.078833
CORD	1.140147	0.901393	1.264873	0.224030
TAX	-6.760759	1.415551	-4.776063	0.000206

(a) Dependent Variable: TDMV

(a) Dependent Variable: **TLMV**

(b) Predictors: (constant), SIZE, TANG, PROF, GROW, CORD, TAX

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of Estimate
1	0.885381	0.783899	0.702861	11.95%

Anova

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	0.829227	6	0.138204	9.673255	0.000140
Residual	0.228596	16	0.014287		
Total	1.057823	22			

(a) Dependent Variable: TLMV

(b) Predictors: (constant), SIZE, TANG, PROF, GROW, CORD, TAX

Coefficients

Model	Unstandardized coefficients		t	Sig.
	B	Std. Error		
TLMV (constant)	5.846917	1.211100	4.827773	0.000186
SIZE	0.259112	0.199631	1.297957	0.212702
TANG	0.145401	0.479776	0.303059	0.765749
PROF	-4.569334	0.926415	-4.932277	0.000150
GROW	-0.422445	0.185662	-2.275343	0.036993
CORD	1.720030	1.193801	1.440801	0.168924
TAX	-7.716663	1.874749	-4.116105	0.000809

(a) Dependent Variable: TLMV

Table 18: Descriptive Statistics for the Travel and Leisure Sector

Descriptive Statistics - Travel and Leisure					
	N	Minimum	Maximum	Mean	Std. Deviation
TDBV	23	9.09%	335.43%	78.79%	89.91%
TLBV	23	39.33%	575.64%	134.72%	130.44%
TDMV	23	4.93%	71.41%	29.60%	14.47%
TLMV	23	26.08%	115.02%	56.51%	21.93%
SIZE	23	13.84	15.65	14.49	0.53
TANG	23	39.93%	66.16%	54.83%	7.57%
PROF	23	6.62%	25.80%	15.72%	4.88%
GROW	23	14.34	16.08	14.95	0.48
CORD	23	8.50%	23.00%	13.36%	4.17%
TAX	23	28.00%	35.00%	29.96%	2.51%
Valid N	23				

4.5. Construction and Materials

4.5.1. Construction and Materials – Leverage Results

Figure 11: Leverage Ratios for the Construction and Materials Sector

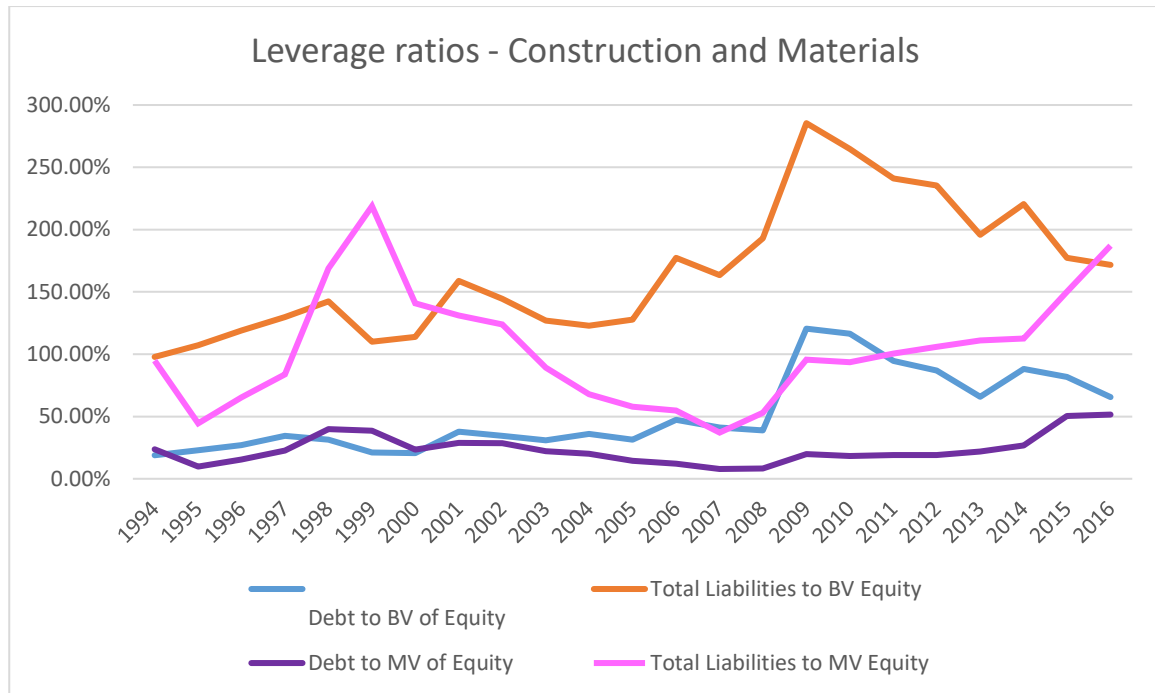
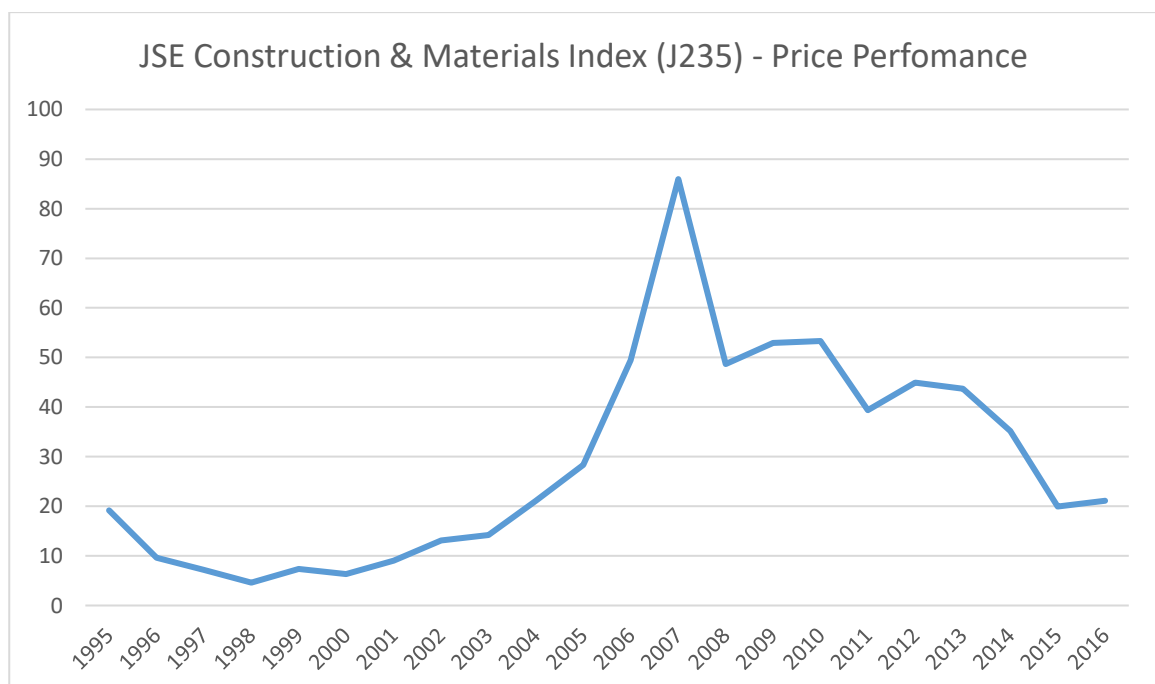


Figure 12: JSE Construction Index – Price Performance for the period 1995 – 2016



Firms within the construction and materials sector accounted for a total of 14 firms.

Figure 11 provides a graphical representation of the different leverage ratios for the construction and materials sector, for period 1994 to 2016. Figure 12 is the performance of the JSE Construction and Materials Index for the period 1995 to 2016.

The changes in leverage within this sector were muted relative to those seen in the total sample and real estate and REIT sectors. Overall debt levels increased steadily across the sample period, with an accelerated increase in leverage ratios between 2007 and 2009. This increase and subsequent decrease, however, was dissimilar to that of both the total sample and the real estate and REIT sector. The following differences can be seen;

- The increase in leverage ratios, occurred at a steady pace and did not peak as significantly and suddenly, as seen in 4.2.1 – Total Sample – Results - Figure 1 – Leverage ratios for the total sample and 4.3.1 – Real Estate and REITs – Results – Figure 5 – Leverage ratios for Real Estate and REITs.
- The subsequent decline in leverage ratios, which occurred across years; 2008, 2009 and 2010, was less abrupt compared to that of both the total sample and real estate and REIT sector, as seen comparatively in Figure 1 and 5 (full reference disclosed above).
- Further, leverage ratios within the construction and materials sector, as seen in Figure 11, did not decline significantly afterward. The decline was minor and dissimilar to the other sectors. The ratios, after declining, remained higher relative to those recorded pre-2007. These results, therefore, have an interesting interpretation.

The interpretation of trends seen in the construction sector are described as follows;

When the Global Financial Crisis crippled equity markets, sectors on the JSE contracted as their market values plummeted. Gold, platinum and construction sectors did not contract to the same extent. On inspection of Figure 12, the following is determined;

- Equity prices rise considerably from 2005 to 2007, seen in Figure 12 of the JSE Construction Index. During this timeframe we would expect to see a decline in leverage ratios (numerator increased) – this is evident and portrayed in Figure 11.

- As seen in Figure 12, a decline in the Index occurs between years 2007 and 2008 amid the Global financial crisis in which we would expect leverage ratios to increase as the numerator in each of the market ratios has decreased – this is demonstrated in the trend line in Figure 11.
- Surprising, however, performance of the construction and materials index did not dip significantly below the performance recorded prior to the spike, i.e. pre-2006.
- Gold, precious metals and the construction sector, as described in Chapter 2, were considered by the market as safe havens against major economic fluctuations and did not contract significantly during the Global Financial crisis of 2008.
- As such leverage ratios within the construction sector, did not fluctuate abruptly in response to the equity collapse. While leverage ratios increased, they did not increase to the same extent seen in each of the other sectors.
- Interest rate movements, were not a significant contributing factor to the changes noted in this sector. In support of this statement, Figure 3, is revisited. Figure 3 represents the benchmark 10-year government bond rate, for years 2003 to 2016.

On inspection of Figure 3, under sub-section 4.2.1., we note that the benchmark 10-year government bond rate increases steadily between 2006 and 2010, from 6.8% to 7.7%, therefore corporate debt became increasingly expensive across this period. As a result, we would expect leverage ratios to decline across this timeframe.

In contrast, as seen in Figure 12, leverage ratios increase at an accelerated pace between years 2007 and 2009. Leverage ratios, do not decrease, as expected, in response to the interest rate movements. Thus, in aggregate, construction firms were not altering leverage downward as a result of changes in monetary policy.

This finding, unique to the results displayed in each of the other sectors, reinforces the belief that the construction sector was hedged against major equity movements, by its nature, during the Global crisis and equity downturn. Further, interest rates had little impact on the fluctuations seen in leverage.

The numerical analysis of each leverage ratio, for the period 1994 to 2016 is summarised in Table 19 and Appendix A-9. Individual leverage graphs, for TDBV, TDMV, TLBV and TLMV can be seen in Appendix A-10.

Table 19: Yearly Leverage for the Construction and Materials Sector

Construction & Materials				
	TDBV	TLBV	TDMV	TLMV
1994	19%	98%	24%	95%
1995	23%	107%	10%	44%
1996	27%	119%	16%	65%
1997	34%	130%	23%	84%
1998	31%	142%	40%	169%
1999	21%	110%	39%	219%
2000	21%	114%	24%	141%
2001	38%	159%	29%	131%
2002	34%	145%	28%	124%
2003	31%	127%	22%	89%
2004	36%	123%	20%	68%
2005	31%	128%	14%	58%
2006	47%	177%	12%	55%
2007	41%	164%	8%	37%
2008	39%	193%	8%	53%
2009	120%	285%	20%	96%
2010	116%	265%	18%	94%
2011	95%	241%	19%	100%
2012	87%	235%	19%	106%
2013	66%	196%	22%	111%
2014	88%	220%	27%	113%
2015	82%	177%	50%	150%
2016	66%	172%	52%	187%
Average	52%	166%	24%	104%
Min	19%	98%	8%	37%
Max	120%	285%	52%	219%
Std Dev	31%	53%	12%	47%
Range	102%	188%	44%	182%

4.5.2. Construction and Materials – Term Structure of Leverage

Figure 13: Long term and Short term Debt relative to Total Debt and Long term and Short term Liabilities relative to Total Liabilities

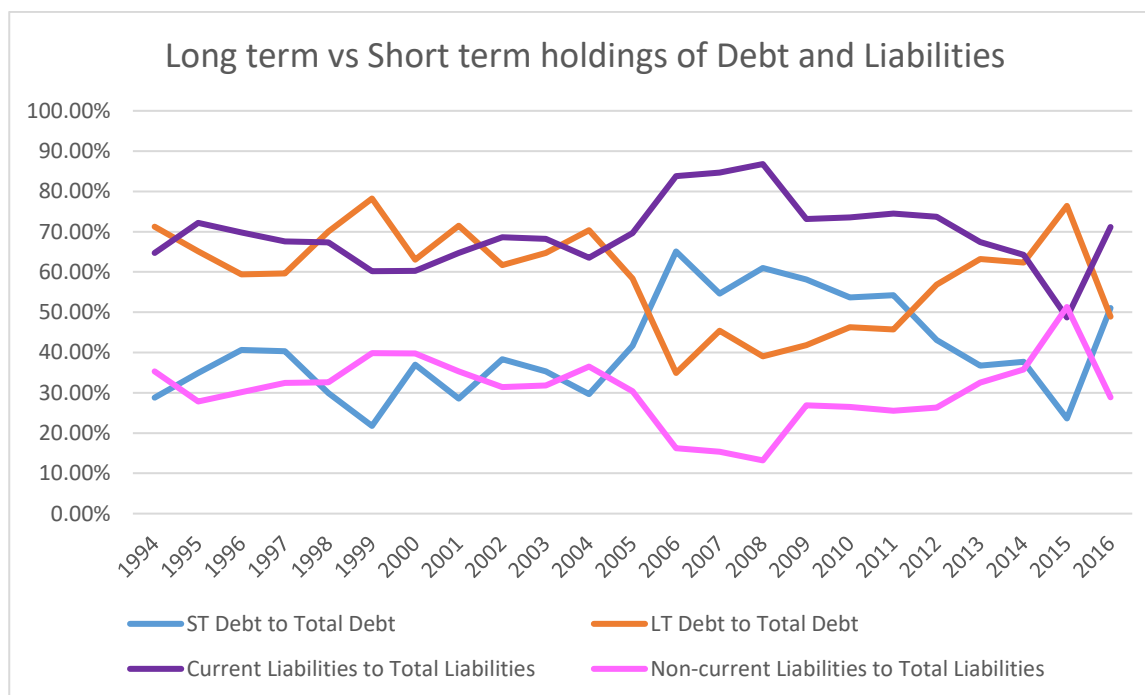


Figure 13 provides a graphical representation of the preferred term structure of debt.

An interesting finding, displayed in Figure 13, and unlike the other sectors, is the preferred use of current liabilities relative to non-current liabilities. Current liabilities were consistently and significantly greater than the use of non-current liabilities and further exceeded the use of long term debt for a sustained period of 10 years beginning in 2004.

This finding is supported by an article published by Van Zyl (2010), providing insight into the preferred use of financing within the construction and materials sector of the JSE. The findings indicated that, on average, for the period 2000 to 2009, the use of other current liabilities relative to total capital was highest at 48.83%, following that, equity at 34.15%, lastly long term and short term debt made up 8.87% and 8.05% of total capital, respectively. The results presented in this study corroborate the high use of current liabilities which averaged 69.49% of total liabilities for years 1994 to 2016.

4.5.3. Construction and Materials – Correlation & Significance Results

The correlation analysis, for the construction and materials sector has been documented in a correlation matrix in Table 20, while the regression models, per leverage ratio have been summarised in Table 21, the results of the correlation and significance analysis are summarised below. Statistical significance has been documented at the 5% and 1% levels. The results of the construction and materials sector, similar to real estate and REITs, are varied and as follows;

- All regressions models, displayed high adjusted R^2 statistics, indicating a reasonable fit within each of the linear regression models.
- SIZE is positively correlated to TDBV and TLBV ratios, while negatively correlated to both TDMV and TLMV with the following displaying statistical significance; TLBV at the 0.01 level and TDMV and TLMV at the 0.05 level.
- TANG is negatively correlated to TDBV and TLBV, the book measures of leverage, with a significant relationship to both TDBV and TLBV at 0.05 level. TANG is positively related to TDMV and TLMV, the market measures of leverage, with no statistical significance.
- PROF is negatively correlated to each of the leverage ratios. Furthermore, profitability reflects significant correlation at the 0.05 level for TDMV and at the 0.01 level for TLMV.
- GROW is positively correlated to each of the leverage ratios, except for TLMV. No significant correlation exists.
- CORD is negatively related to each of the leverage ratios, with TDBV showing statistical significance at the 0.05 level.
- TAX is negatively correlated to each of the leverage measures, with significance of TLMV at the 0.01 level.

SIZE, TANG and PROF displayed the greatest significance, thus best predicting the changes in leverage for the sample of construction and materials firms. These findings, are somewhat similar to Baharuddin, et al., (2012), who studied the capital structure determinants of construction companies in Malaysia. The authors concluded

a positive relationship between size, tangibility and growth, the former (size and tangibility) supporting the trade-off theory, while the latter (growth) supporting the pecking order theory. This study, similar to the results of Baharuddin et al. (2011), also found a negative relationship between firm profitability and leverage, also supporting the pecking order theory of capital structure. These results support, neither the trade-off theory nor the pecking order theory.

Furthermore, the results of this study follow the consensus findings as presented in Table 4, including the relationship between the cost of debt and leverage, which was found to be negative. While the Malaysian study, was in equal support of both theories, incorporating the cost of debt determinant in this study, results in overall support of the trade-off theory. (Baharuddin, et al., 2011)

Table 20, 21 and 22 below provide a summary of the following; correlation between the four leverage ratios and 6 capital structure determinants, the regression model for each of the leverage ratios and the descriptive statistics.

Table 20: Correlation between dependent variables and determinants for the Construction and Materials Sector

Correlation - Construction and Materials										
	TDBV	TLBV	TDMV	TLMV	SIZE	TANG	PROF	GROW	CORD	TAX
TDBV	1.0	0.950	0.085	0.051	0.806	-0.367	-0.156	0.833	-0.684	-0.617
TLBV	0.950	1.0	-0.080	-0.040	0.882	0.882	-0.056	0.849	-0.626	-0.678
TDMV	0.085	-0.080	1.0	0.886	-0.160	-0.160	-0.628	0.039	-0.028	-0.188
TLMV	0.051	-0.040	0.886	1.0	-0.160	-0.160	-0.726	-0.047	-0.003	-0.241
SIZE	0.806	0.882	-0.160	-0.160	1.0	-0.702	0.034	0.941	-0.623	-0.712
TANG	-0.367	-0.493	0.297	0.352	-0.702	1.0	-0.415	-0.623	0.560	0.685
PROF	-0.156	-0.056	-0.628	-0.726	0.034	-0.415	1.0	-0.078	0.036	-0.012
GROW	0.833	0.849	0.039	-0.047	0.941	-0.623	-0.078	1.0	-0.668	-0.743
CORD	-0.684	-0.626	-0.028	-0.003	-0.623	0.560	0.036	-0.668	1.0	0.725
TAX	-0.617	-0.678	-0.188	-0.241	-0.712	0.685	-0.012	-0.743	0.725	1.0

Table 21: Regression Statistics for the Construction and Materials Sector

(a) Dependent Variable: **TDBV**

(b) Predictors: (constant), SIZE, TANG, PROF, GROW, CORD, TAX

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of Estimate
1	0.909805	0.827745	0.763150	15.26%

Anova

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	1.791313	6	0.298552	12.814279	2.5027E-05
Residual	0.372774	16	0.023298		
Total	2.164087	22			

(a) Dependent Variable: TDBV

(b) Predictors: (constant), SIZE, TANG, PROF, GROW, CORD, TAX

Coefficients

Model	Unstandardized coefficients		t	Sig.
	B	Std. Error		
TDBV (constant)	-8.181001	2.005122	-4.08005	0.00087
SIZE	0.385832	0.199037	1.93849	0.07041
TANG	2.320293	0.867731	2.67398	0.01663
PROF	0.377071	0.661842	0.56973	0.57677
GROW	0.147894	0.195737	0.75558	0.46088
CORD	-2.664497	1.192275	-2.23480	0.04004
TAX	-0.599965	2.375368	-0.25258	0.80381

(a) Dependent Variable: TLBV

(a) Dependent Variable: **TLBV**

(b) Predictors: (constant), SIZE, TANG, PROF, GROW, CORD, TAX

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of Estimate
1	0.919068	0.844686	0.786443	24.68%

Anova

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	5.298289	6	0.883048	14.502803	1.13241E-05
Residual	0.974210	16	0.060888		
Total	6.272498	22			

(a) Dependent Variable: TLBV

(b) Predictors: (constant), SIZE, TANG, PROF, GROW, CORD, TAX

Coefficients

Model	Unstandardized coefficients		t	Sig.
	B	Std. Error		
TLBV (constant)	-12.516183	3.241484	-3.861251	0.001382
SIZE	1.051439	0.321764	3.267731	0.004837
TANG	3.175305	1.402776	2.263587	0.037855
PROF	0.661690	1.069935	0.618440	0.544990
GROW	-0.130671	0.316429	-0.412954	0.685121
CORD	-1.825269	1.927434	-0.946994	0.357726
TAX	-4.308431	3.840025	-1.121980	0.278427

(a) Dependent Variable: TLBV

(a) Dependent Variable: **TDMV**

(b) Predictors: (constant), SIZE, TANG, PROF, GROW, CORD, TAX

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of Estimate
1	0.828336	0.686141	0.568444	7.80%

Anova

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	0.213011	6	0.035502	5.829722	0.002207
Residual	0.097437	16	0.006090		
Total	0.310448	22			

(a) Dependent Variable: TDMV

(b) Predictors: (constant), SIZE, TANG, PROF, GROW, CORD, TAX

Coefficients

Model	Unstandardized coefficients		t	Sig.
	B	Std. Error		
TDMV (constant)	2.380347	1.025131	2.321994	0.033752
SIZE	-0.273010	0.101759	-2.682902	0.016334
TANG	0.140210	0.443633	0.316050	0.756050
PROF	-0.934295	0.338371	-2.761158	0.013911
GROW	0.195312	0.100072	1.951715	0.068702
CORD	0.667461	0.609558	1.094992	0.289730
TAX	-2.978465	1.214422	-2.452579	0.026038

(a) Dependent Variable: TDMV

(a) Dependent Variable: **TLMV**

(b) Predictors: (constant), SIZE, TANG, PROF, GROW, CORD, TAX

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of Estimate
1	0.926596	0.858581	0.805548	20.59%

Anova

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	4.118756	6	0.686459	16.189772	5.50443E-06
Residual	0.678413	16	0.042401		
Total	4.797169	22			

(a) Dependent Variable: TLMV

(b) Predictors: (constant), SIZE, TANG, PROF, GROW, CORD, TAX

Coefficients

Model	Unstandardized coefficients		t	Sig.
	B	Std. Error		
TLMV (constant)	12.715509	2.704984	4.700771	0.000240
SIZE	-0.198563	0.268509	-0.739502	0.470314
TANG	2.013802	1.170601	1.720314	0.104654
PROF	-4.677551	0.892849	-5.238903	0.000081
GROW	-0.215916	0.264057	-0.817689	0.425545
CORD	2.876477	1.608423	1.788383	0.092664
TAX	-18.711199	3.204460	-5.839111	0.000025

(a) Dependent Variable: TLMV

Table 22: Descriptive Statistics for the Construction and Materials Sector

Descriptive Statistics - Construction and Materials					
	N	Minimum	Maximum	Mean	Std. Deviation
TDBV	23	18.87%	120.50%	51.91%	31.36%
TLBV	23	97.80%	285.45%	166.40%	53.40%
TDMV	23	7.85%	51.53%	23.61%	11.88%
TLMV	23	37.09%	218.81%	103.83%	46.70%
SIZE	23	14.57	16.49	15.75	0.55
TANG	23	25.77%	49.85%	34.64%	7.21%
PROF	23	7.17%	28.54%	14.21%	6.29%
GROW	23	14.40	16.35	15.57	0.56
CORD	23	8.50%	23.00%	13.36%	4.17%
TAX	23	28.00%	35.00%	29.96%	2.51%
Valid N	23				

Chapter 5: Conclusion

The purpose of this study was to determine whether changes in the South African economic environment and capital markets resulted in a change in the capital structure of corporates in South Africa for the period 1994 to 2016. Further to this, the study investigated which capital structure determinants were best able to predict the changes in the leverage of these firms.

The study investigates 76 firms across the real estate and REIT, travel and leisure and construction and materials sectors of the JSE. Four leverage measures are used, two accounting measures; total debt to book value of equity, total liabilities to book value of equity and two market measures; total debt to market value of equity and total liabilities to market value of equity. The capital structure determinants used in the study include; firm size, asset tangibility, profitability, growth, the cost of debt and the corporate tax rate.

The South African economic landscape was characterised by the effects of notable events such as the East Asian Crisis of 1998, the US sub-prime bubble of 2007 and the Eurozone crisis of 2009. These events, including developments in the local capital market, such as the establishment of the Bond Exchange of South Africa, impacted the availability and cost of external financing for corporates. In totality, debt of South African firms increased for the period 1994 to 2016, with significant and exponential increases in the use of leverage observed in 2004 to 2007 and again from 2011 to 2013. Following each increase, sharp declines in leverage were noted in the periods 2007 to 2008 and 2013 to 2014. It follows that these changes were a result of fluctuating interest rates which impacted the attractiveness of debt financing, and the Global Financial crisis.

Lower interest rates observed in 2004, would have resulted in a greater use of relatively cheaper debt financing, further to this, improvements to the country's credit rating in 2005 had incentivised firms to issue public debt, as South African bonds became sought after. Conversely the stark increase in interest rates from June 2006 to 2008 reduced debt levels, as it became an expensive source of finance.

Similarly, low interest rates of 2012 would have encouraged the use of debt by corporates, in addition, in 2012 the BESA was included in World Government Bond

Index of Citibank, again promoting investment in bonds and encouraging South African firms to issue public debt. Moving into 2013 and 2014, however, inflation increased, and monetary policy was tightened, thus curbing the use of debt, reflected by a sharp decline in leverage. The interest rate environment and efficiency of the capital market contributed significantly to the changes seen in the capital structure of firms within SA.

The analysis of the long and short term debt relative to total debt and non-current and current liabilities relative to total liabilities, indicated that firms made use of a greater amount of long term-debt relative to total debt. This was apparent for the total sample, real estate and REITs and the construction and materials sector. Whereas, the travel and leisure sector utilised similar amounts of long and short term debt for the duration of 2000 to 2016 and utilised non-current and current liabilities in equal parts. The total sample showed preference toward non-current liabilities, similar, REITs employed significantly larger amounts of non-current liabilities. Dissimilar, the construction and materials sector showed a preference for current liabilities.

The analysis of the capital determinants on leverage had the following results;

- Firm Size; showed a positive and statistically significant relationship toward TDMV and TLMV for the total sample. Larger firms on average employ greater amounts of debt in their capital structure, this is consistent with trade off theory, as larger firms have increased diversification and thus lower chances of bankruptcy. This finding is consistent with the majority of studies reviewed in this paper, including; Smith (2010); Baharuddin et al. (2011); Harrison et al. (2011); and a study by Chipeta (2016) and Slabbert (2018) of firms listed on the JSE.

Firm size and leverage for the real estate and REIT and travel and leisure sectors showed no significance, while the construction and materials sector showed mixed statistical significance. Firm size was significantly positively correlated to TLBV, whereas firm size and TDMV and TLMV had a significant negative relationship. This negative relationship is consistent with the findings of Kumar and Bodla (2014) and Kazmierska-Jozwiak et al. (2015). Kazmierska-Jozwiak, et al. (2015) indicated that larger firms have fewer information asymmetries and as such are able to freely issue equity, this is consistent with the pecking order

theory. The results above indicate that the total sample is in support of the trade-off theory.

- Asset Tangibility; showed no statistical significance toward the total sample, however at a sector level, reflected the following; tangibility of real estate and REIT assets was positively correlated to all leverage measures, with statistical significance toward TDMV and TLMV. This positive relationship, as hypothesised by the trade-off theory, is supported by the majority of studies reviewed in this paper, including; Smith (2010); Harrison et al. (2011); Noulas and Genimakis (2011); and Chipeta (2016).

A negative relationship was found between tangibility of the travel and leisure sector and all leverage measures, with statistical significance toward TDMV. The results of the construction and materials sector varied, however a significant negative relationship was found between TDBV and TLBV. The negative relationships described above, support the pecking order theory and similar (to firm size), is a result of lower information asymmetries associated with fixed assets. Comparable results were found by Kazmierska-Jozwiak, et al. (2015) and Slabbert (2018), these authors having both conducted their study in an emerging market. An alternative explanation, as suggested by Chipeta (2016); highlights that firms with large amounts of fixed assets, may already be highly levered and wish to avoid additional debt. Further, the findings of Kazmierska-Jozwiak et al. (2015), established that firms with a higher share of fixed assets had a lower propensity to incur debt. These varied results, support, in entirety, neither the trade-off nor pecking order theory.

- Profitability; the total sample, travel and leisure sector and construction and materials sector reflected a significant negative correlation toward TDMV and TLMV, while a significantly positive relationship was found between the total sample and TDBV and TLBV. These results support the hypothesis that findings will differ based on the leverage measure used and comparable to Noulas and Genimakis, (2011) who indicated that their regression results differed significantly dependant on the leverage measure and the sector examined.

Most of the literature, including studies examining the travel and construction sectors found a negative correlation, including authors; Karadeniz et al. (2009); Baharuddin et al. (2011); Sbeti and Moosa (2012); Kazmierska-Jozwiak et al. (2015); and Chipeta (2016). Therefore, the consensus opinion and most results found in this study support for the pecking order theory, as firms with greater profitability, enjoy an increase in internal funds available for use. The positive relationship, however, would support the trade-off theory and may arise when profitable firms wish to shield earnings from tax. (Panno, 2003)

- Growth; the total sample displayed a positive relationship toward all leverage measures and a significantly positive relationship toward TDBV and TLBV. A positive relationship was also found by authors; Smith (2010); Baharuddin et al. (2011); Kazmierska-Jozwiak et al. (2015); Chipeta (2016); and Slabbert (2018). Positive findings, in support of the pecking order theory, indicate firms with higher growth opportunities have greater financing needs, therefore utilising more debt.

The travel and leisure sector had a statistically negative relationship between growth and TLMV. A comparable study completed by Karadeniz et al. (2009), in the travel and leisure sector, had insignificant results between growth and leverage. The author, regardless, in support of the trade-off theory, suggested that a negative relationship would occur if growth opportunities were associated with higher financial risk and therefore financial distress. Further to this high-growth firms may wish to finance growth with equity as to avoid idle capacity associated with debt. This may be relevant to the travel and leisure sector as it is considered capital intensive and sensitive to systematic risks, thus equity finance is preferred for growth opportunities. (Karadeniz, et al., 2009). The consensus finding, however and results of the total sample, largely support the pecking order theory.

- Cost of Debt; a negative, statistically significant result was found for both the overall sample and the construction and materials sector. These results are consistent with Harrison et al. (2011); Kumar and Bodla (2014) and Slabbert (2018), authors who found a negative relationship between the cost of borrowing and leverage. The latter two studies, similar to this paper were conducted in

emerging markets. These authors concluded that when the cost of debt increases, decision makers within the firm rely less on debt and more on equity financing. All findings, including literature, is unanimously in support of the trade-off theory of capital structure. (Kumar& Bodla, 2014) (Slabbert, 2018)

- Corporate Tax Rate; the total sample, travel and leisure sector and construction and materials sector reflected a negative relationship toward all leverage measures, with a significant negative relationship toward TDMV and TLMV. This is consistent with the findings of Karadeniz et al. (2009) and Slabbert (2018). These findings contradict the implied relationship of trade-off theory, while the pecking order theory does not specify a well-defined relationship. (Karadeniz et al., 2009)

The real estate and REIT sector displayed no statistical significance, supported by the nature of REITs who have limited tax liabilities. Tax rates would, therefore, have little bearing on the capital structure decisions of such firms.

An area for further study, would be as follows; an investigation of leverage before, during and after the Global Financial Crisis. As equity markets collapsed, firms' capital structures, when measured using market values, would have changed drastically. As a result, managers, wishing to re-stabilise these ratios would have had to reduce leverage within their capital structure. An example thereof, would be a rights issue, whereby the firm could issue share at a favourable price, resulting in both an increase in equity and funding available to reduce debt. Therefore, an investigation into how much leverage was reduced for the period occurring during and after the financial crisis would prove interesting.

To conclude this study, overall, the results offer support for both capital structure theories. Furthermore, the findings indicate that South African firms have largely increased the amount of debt in their capital structure, as a result of an increased availability of debt financing. In addition, lifting of sanctions, establishment of the Bond Exchange of South Africa, and lower exchange rates contributed significantly to the increase in debt within firms' capital structures.

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Appendix

Appendix A-1 Sample of Stocks

Share Name	Ticker	Industry
Adrenna Property Group Limited	ANA	Real Estate Investment Services
Attacq Limited	ATT	Real Estate Investment Services
Balwin Properties Pty Limited	BWN	Real Estate Investment Services
Calgro M3 Holdings Limited	CGR	Real Estate Investment Services
Capital & Counties Properties Plc	CCO	Real Estate Investment Services
Echo Polska Properties	EPP	Real Estate Investment Services
Fairvest Property Holdings Limited	FVT	Real Estate Investment Services
Globe Trade Centre SA	GTC	Real Estate Investment Services
Ingenuity Property Investments Ltd	ING	Real Estate Investment Services
MAS Real Estate Inc	MSP	Real Estate Investment Services
New Frontier Properties Limited	NFP	Real Estate Investment Services
New Europe Property Investments	NEP	Real Estate Investment Services
Putprop Limited	PPR	Real Estate Investment Services
Sirius Real Estate Limited	SRE	Real Estate Investment Services
Stenprop Limited	STP	Real Estate Investment Services
Tradehold Limited	TDH	Real Estate Investment Services
Visual International Holdings Limited	VIS	Real Estate Investment Services
Accelerate Property Fund Limited	APF	Real Estate Investment Trust
Ascension Properties Limited	AIA	Real Estate Investment Trust
Growthpoint Properties Limited	GRT	Real Estate Investment Trust
Atlantic Leaf Properties Limited	ALP	Real Estate Investment Trust
Capital & Regional Plc	CRP	Real Estate Investment Trust
Delta Property Fund Limited	DLT	Real Estate Investment Trust
Emira Property Fund Limited	EMI	Real Estate Investment Trust
Equites Property Fund Limited	EQU	Real Estate Investment Trust
Hyprop Investments Limited	HYP	Real Estate Investment Trust
Indluplace Properties Limited	ILU	Real Estate Investment Trust
Investec Australia Property Fund	IAP	Real Estate Investment Trust
Investec Property Fund Limited	IPF	Real Estate Investment Trust
Liberty Two Degrees	L2D	Real Estate Investment Trust
Mara Delta Property Holdings	GTR	Real Estate Investment Trust
Newpark REIT Limited	NRL	Real Estate Investment Trust
Octodec Investments Limited	OCT	Real Estate Investment Trust
Orion Real Estate Limited	ORE	Real Estate Investment Trust
Rebosis Property Fund Limited	REB	Real Estate Investment Trust
Redefine International Plc	RPL	Real Estate Investment Trust
SA Corporate Real Estate Limited	SAC	Real Estate Investment Trust
Safari Investments RSA Limited	SAR	Real Estate Investment Trust

Appendix A-1 Sample of Stocks (continued)

Share Name	Ticker	Industry
Schroder European Real Estate Inv. Trust plc	SCD	Real Estate Investment Trust
Stor-Age Property REIT Limited	SSS	Real Estate Investment Trust
Synergy Income Fund Limited	GPA	Real Estate Investment Trust
Texton Property Fund Limited	TEX	Real Estate Investment Trust
Tower Property Fund Limited	TWR	Real Estate Investment Trust
Redefine Properties Limited	RDF	Real Estate Investment Trust
Intu Properties Plc	ITU	Real Estate Investment Trust
Resilient REIT Limited	RES	Real Estate Investment Trust
Fortress Income Fund Limited	FFA	Real Estate Investment Trust
City Lodge Hotels Limited	CLH	Travel & Leisure
Comair Limited	COM	Travel & Leisure
Cullinan Holdings Limited	CUL	Travel & Leisure
Famous Brands Limited	FBR	Travel & Leisure
Gold Brands Investments Limited	GBI	Travel & Leisure
Gooderson Leisure Corporation Ltd	GDN	Travel & Leisure
Grand Parade Investments Limited	GPL	Travel & Leisure
Phumelela Gaming & Leisure Limited	PHM	Travel & Leisure
Spur Corporation Limited	SUR	Travel & Leisure
Sun International Limited	SUI	Travel & Leisure
Taste Holdings Limited	TAS	Travel & Leisure
Tsogo Sun Holdings Limited	TSH	Travel & Leisure
Value Group Limited	VLE	Travel & Leisure
Wilderness Holdings Limited	WIL	Travel & Leisure
Afrimat Limited	AFT	Construction & Materials
Aveng Limited	AEG	Construction & Materials
Basil Read Holdings Limited	BIK	Construction & Materials
Consolidated Infrastructure Group Ltd	CIL	Construction & Materials
Esor Limited	ESR	Construction & Materials
Group Five Limited	IPS	Construction & Materials
Mazor Group Limited	MZR	Construction & Materials
Murray & Roberts Holdings Limited	MUR	Construction & Materials
PPC Limited	PKH	Construction & Materials
Raubex Group Limited	RBX	Construction & Materials
Sephaku Holdings Limited	SEP	Construction & Materials
Stefanutti Stocks Holdings Ltd	SSK	Construction & Materials
Trellidor Holdings Limited	TRL	Construction & Materials
WG Wearne Limited	WEA	Construction & Materials
Wilson Bayly Holmes-Ovcon Limited	WBO	Construction & Materials

Appendix A-2 Summary of Correlation & significance results

Total Sample	TDBV	TLBV	TDMV	TLMV
SIZE	positive	positive	positive (0.01)	positive (0.01)
TANG	positive	positive	negative	negative
PROF	positive (0.01)	positive (0.01)	negative (0.01)	negative (0.05)
GROW	positive	positive	positive (0.01)	positive (0.05)
CORD	negative	negative	negative (0.05)	negative
TAX	negative	negative	negative (0.01)	negative

REITs	TDBV	TLBV	TDMV	TLMV
SIZE	negative	negative	positive	positive
TANG	positive	positive	positive (0.01)	negative (0.01)
PROF	positive	positive	negative	negative
GROW	negative	negative	positive	positive
CORD	positive	positive	negative	negative
TAX	positive	positive	negative	negative

Travel & Leisure	TDBV	TLBV	TDMV	TLMV
SIZE	positive	positive	positive	negative
TANG	negative	negative	negative (0.05)	negative
PROF	positive	positive	negative (0.01)	negative (0.01)
GROW	positive	positive	positive	negative (0.05)
CORD	negative	negative	negative	positive
TAX	negative	negative	negative (0.01)	negative (0.01)

Construction	TDBV	TLBV	TDMV	TLMV
SIZE	positive	positive (0.01)	negative (0.05)	negative (0.05)
TANG	negative (0.05)	negative (0.05)	positive	positive
PROF	negative	negative	negative (0.05)	negative (0.01)
GROW	positive	positive	positive	negative
CORD	negative (0.05)	negative	negative	negative
TAX	negative	negative	negative	negative (0.01)

Appendix A-3 Changes in Debt ratios across the period 1994 to 2016 for the Total Sample

Total Sample	Average (1994 to 1998)	Average (2012 to 2016)	Increase / Decrease
TDBV	215.43%	686.23%	218.54%
TDMV	22.66%	55.68%	145.69%
TLBV	285.33%	755.09%	164.64%
TLMV	71.36%	76.09%	6.63%

In detail, the following changes can be seen;

- Total Debt to Book Value of Equity (TDBV) increased from an average of 215.43% (average total debt to BV of equity from 1994 to 1998) to an average of 686.23% (average total debt to BV of equity from 2012 to 2016), thus increasing by 218.54% across the sample period.
- Total Debt to Market Value of Equity (TDMV) increased from an average of 22.66% (average total debt to MV of equity from 1994 to 1998) to an average of 55.68% (average total debt to MV of equity from 2012 to 2016), thus increasing by 145.69% across the sample period.
- Total Liabilities to Book Value of Equity (TLBV) increased from an average of 285.33% (average total liabilities to BV of equity from 1994 to 1998) to an average of 755.09% (average total liabilities to BV of equity from 2012 to 2016), thus increasing by 164.64% across the sample period.
- Total Liabilities to Market Value of Equity (TLMV) increased from an average of 71.36% (average total liabilities to MV of equity from 1994 to 1998) to an average of 76.09% (average total liabilities to MV of equity from 2012 to 2016), thus increasing by 6.63% across the sample period.

Appendix A-4 – Total Sample – Graphical representation of the different leverage ratios for the period 1994 – 2016

Figure 14: Total Debt to Book Value of Equity for the Total Sample

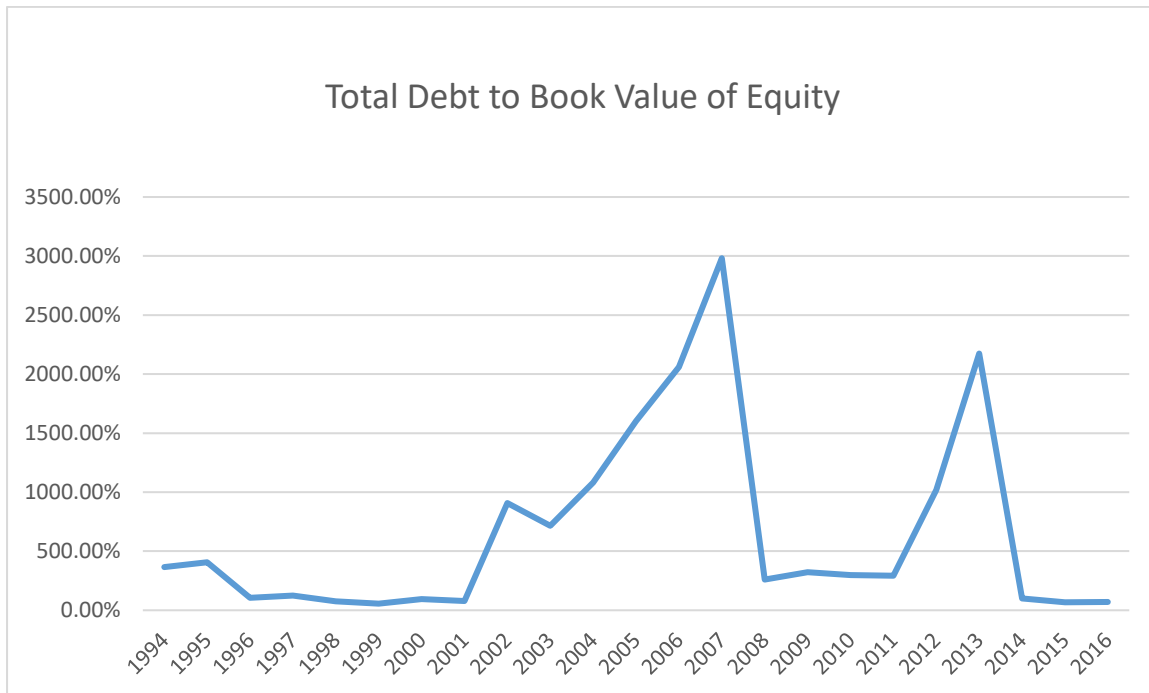


Figure 15: Total Liabilities to Book Value of Equity for the Total Sample

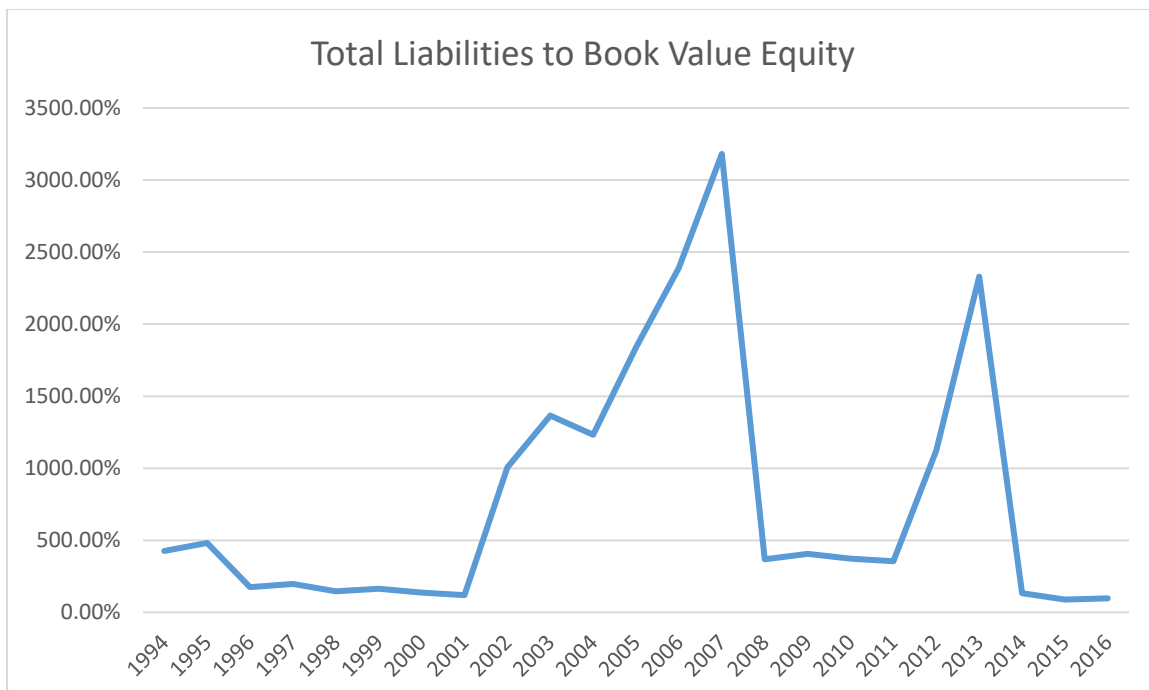


Figure 16: Total Debt to Market Value of Equity for the Total Sample

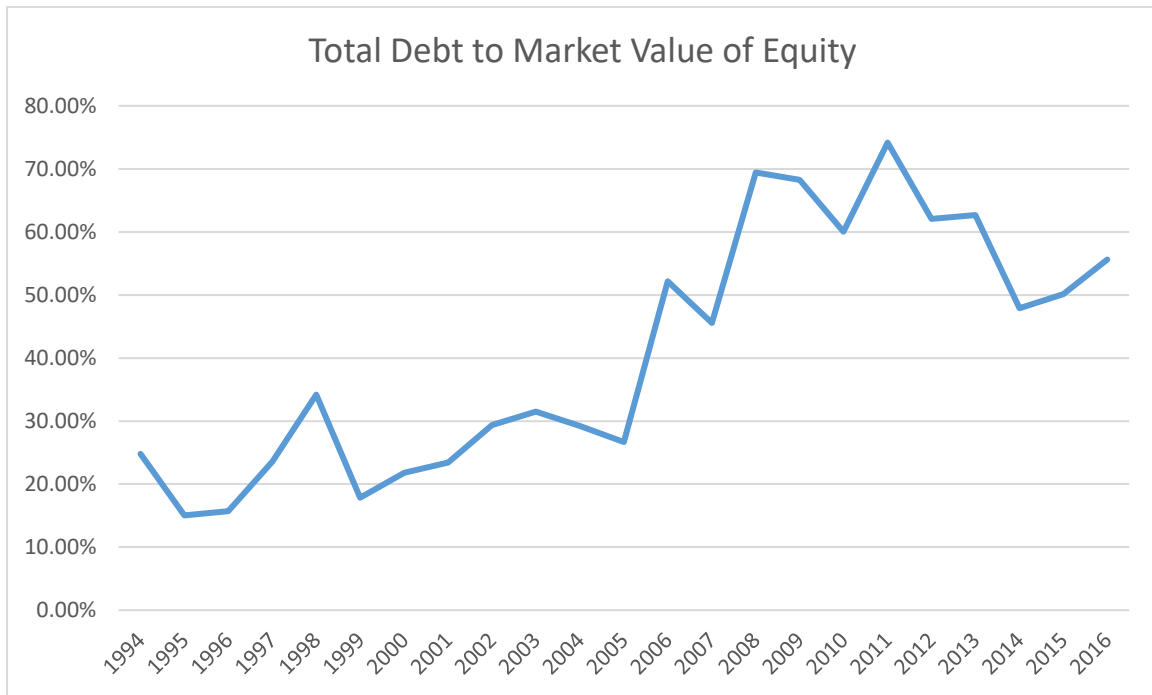
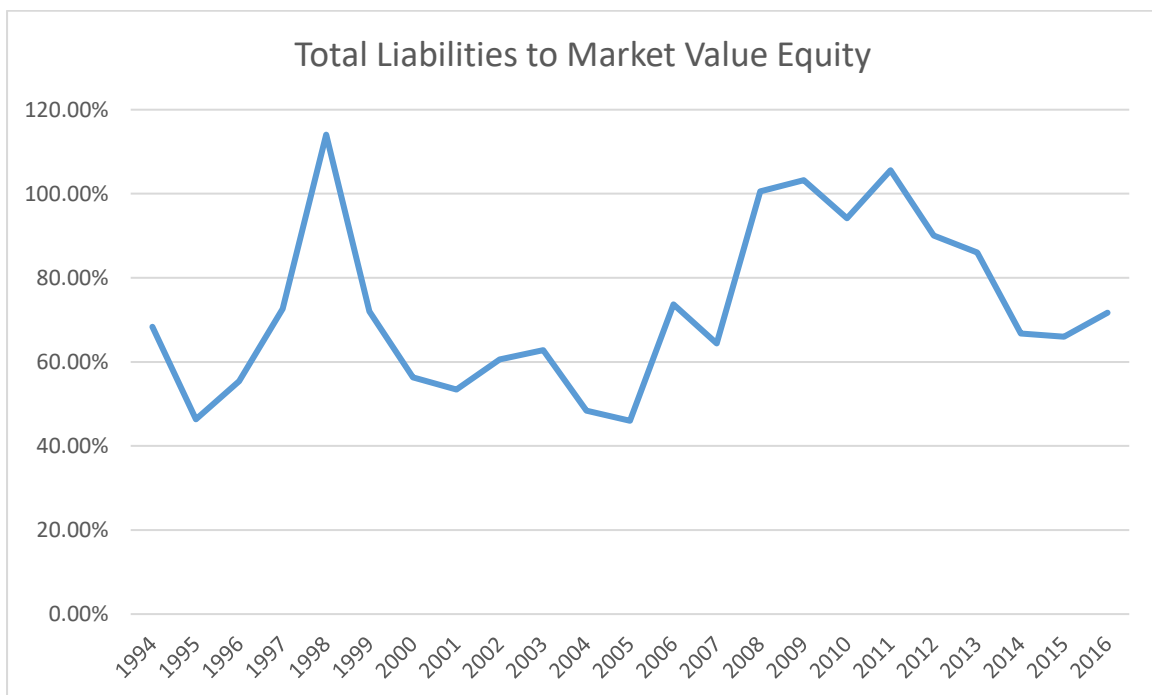


Figure 17: Total Liabilities to Market Value of Equity for the Total Sample



Appendix A-5 Changes in Debt ratios across the period 1994 to 2016 for the Real Estate and REIT Sector

Real Estate & REITs	Average (1994 to 1998)	Average (2012 to 2016)	Increase / Decrease
TDBV	2826.55%	968.31%	-65.74%
TDMV	76.10%	65.69%	-13.67%
TLBV	2878.09%	1032.32%	-64.13%
TLMV	81.75%	74.93%	-8.35%

In detail, the following changes can be seen;

- Total Debt to Book Value of Equity (TDBV) decreased from an average of 2826.55% (average total debt to BV of equity from 1994 to 1998) to an average of 968.31% (average total debt to BV of equity from 2012 to 2016), thus decreasing by 65.74% across the sample period.
- Total Debt to Market Value of Equity (TDMV) decreased from an average of 76.10% (average total debt to MV of equity from 1994 to 1998) to an average of 65.69% (average total debt to MV of equity from 2012 to 2016), thus decreasing by 13.67% across the sample period.
- Total Liabilities to Book Value of Equity (TLBV) decreased from an average of 2878.09% (average total liabilities to BV of equity from 1994 to 1998) to an average of 1032.32% (average total liabilities to BV of equity from 2012 to 2016), thus decreasing by 64.13% across the sample period.
- Total Liabilities to Market Value of Equity (TLMV) decreased from an average of 81.75% (average total liabilities to MV of equity from 1994 to 1998) to an average of 74.93% (average total liabilities to MV of equity from 2012 to 2016), thus decreasing by 8.35% across the sample period.

Appendix A-6 – Real Estate and REITs – Graphical representation of the different leverage ratios for the period 1994 – 2016

Figure 18: Total Debt to Book Value of Equity for the Real Estate Sector

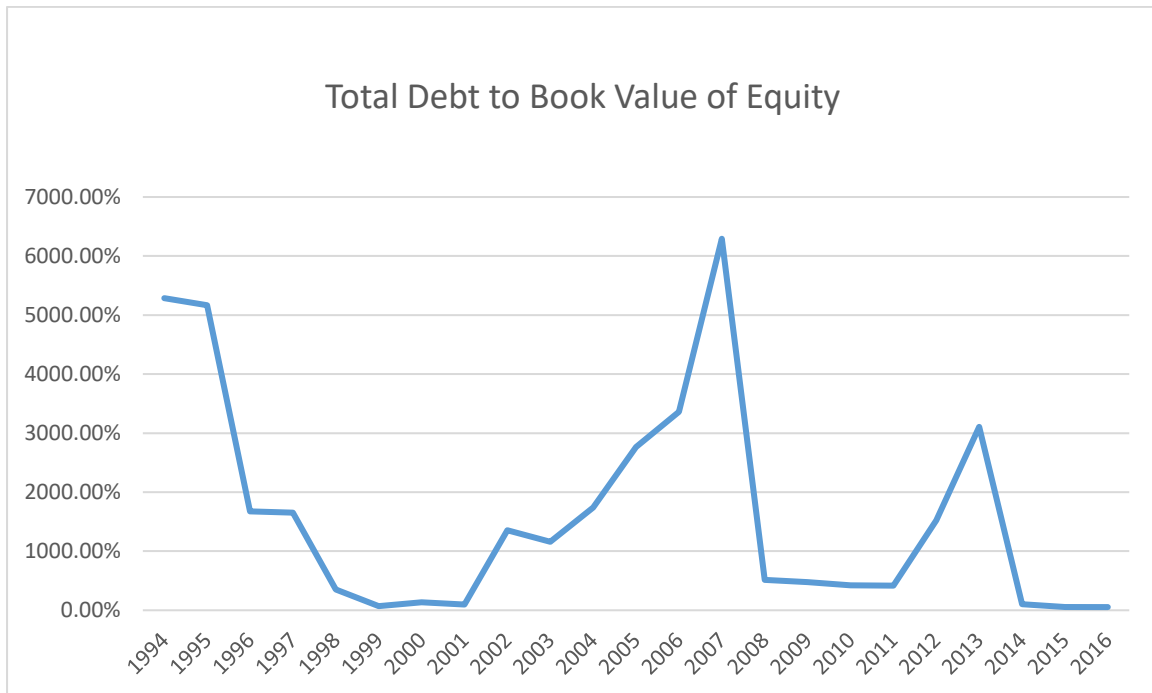


Figure 19: Total Liabilities to Book Value of Equity for the Real Estate Sector

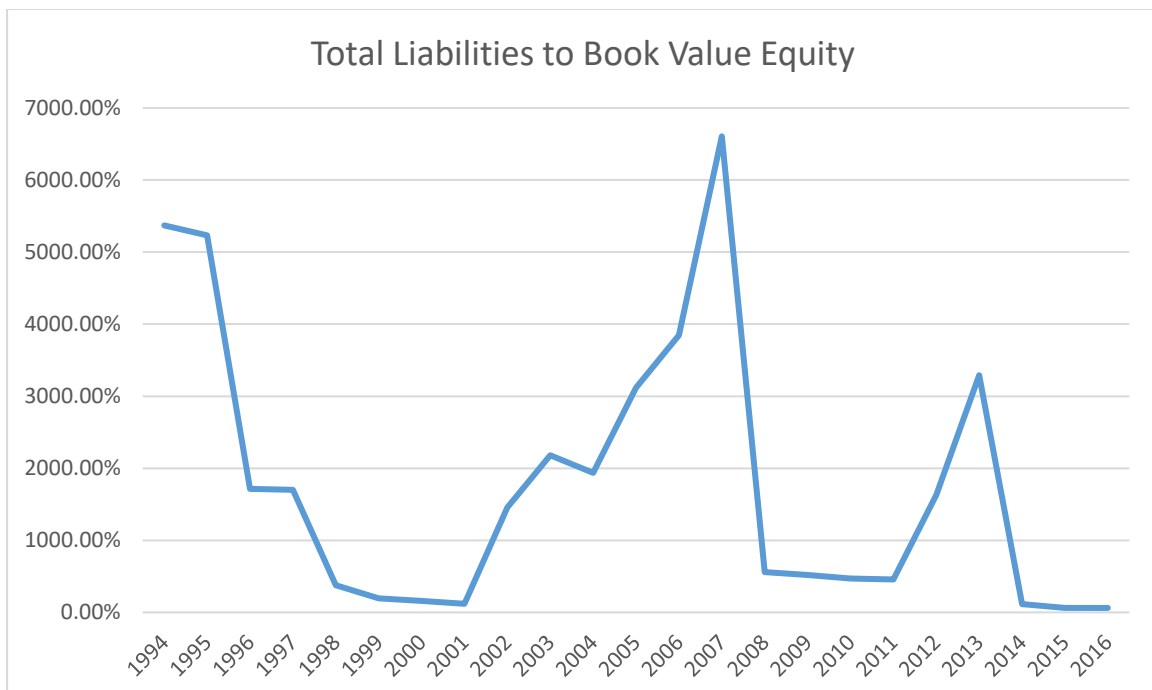


Figure 20: Total Debt to Market Value of Equity for the Real Estate Sector

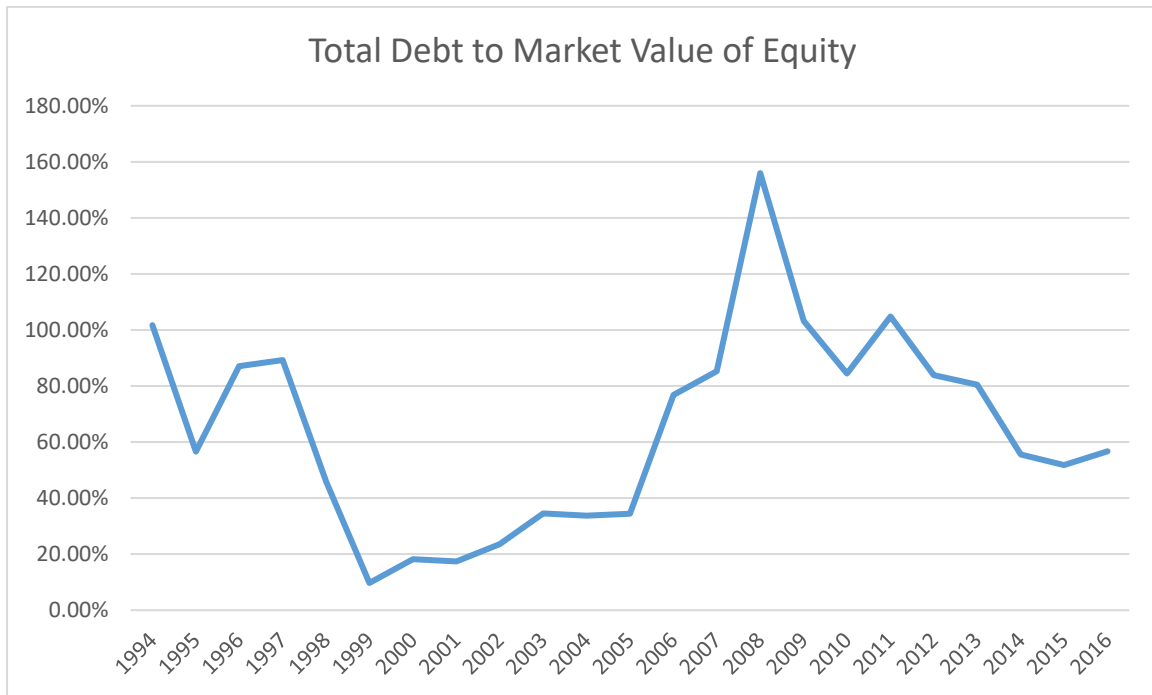
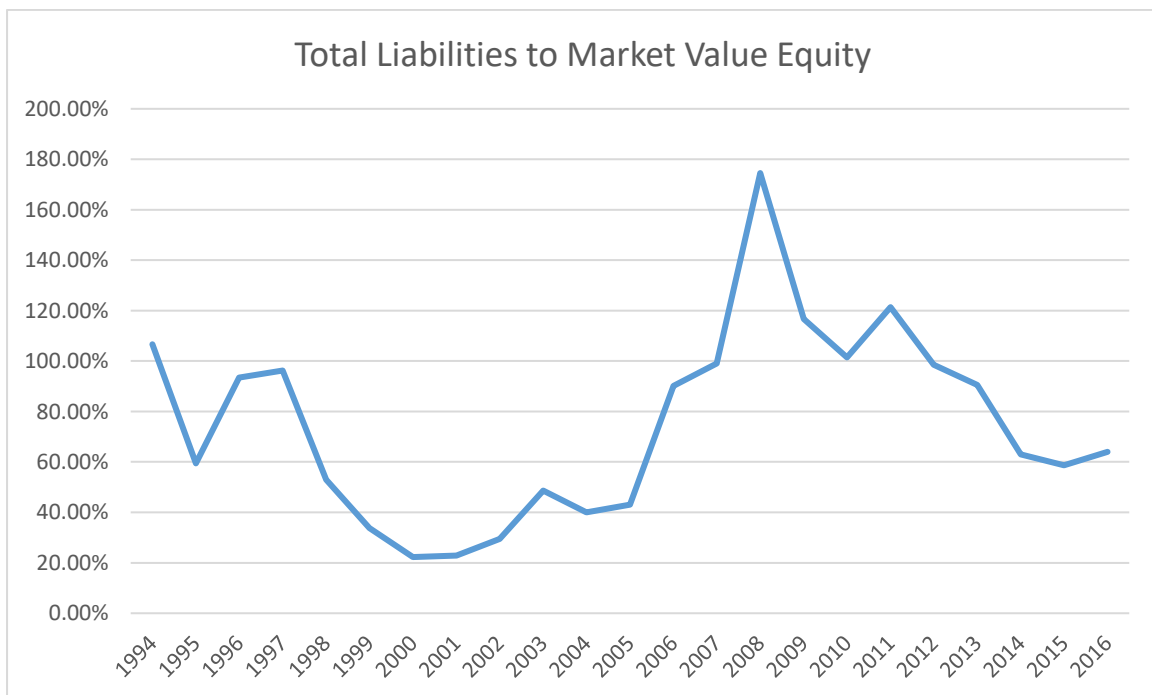


Figure 21: Total Liabilities to Market Value of Equity for the Real Estate Sector



Appendix A-7 Changes in Debt ratios across the period 1994 to 2016 for the Travel and Leisure Sector

Travel & Leisure	Average (1994 to 1998)	Average (2012 to 2016)	Increase / Decrease
TDBV	15.98%	137.48%	760.53%
TDMV	14.23%	30.89%	117.03%
TLBV	52.40%	232.68%	344.02%
TLMV	44.01%	52.76%	19.86%

In detail, the following changes can be seen;

- Total Debt to Book Value of Equity (TDBV) increased from an average of 15.98% (average total debt to BV of equity from 1994 to 1998) to an average of 137.48% (average total debt to BV of equity from 2012 to 2016), thus increasing by 760.53% across the sample period.
- Total Debt to Market Value of Equity (TDMV) increased from an average of 14.23% (average total debt to MV of equity from 1994 to 1998) to an average of 30.89% (average total debt to MV of equity from 2012 to 2016), thus increasing by 117.03% across the sample period.
- Total Liabilities to Book Value of Equity (TLBV) increased from an average of 52.40% (average total liabilities to BV of equity from 1994 to 1998) to an average of 232.68% (average total liabilities to BV of equity from 2012 to 2016), thus increasing by 344.02% across the sample period.
- Total Liabilities to Market Value of Equity (TLMV) increased from an average of 44.01% (average total liabilities to MV of equity from 1994 to 1998) to an average of 52.76% (average total liabilities to MV of equity from 2012 to 2016), thus increasing by 19.86% across the sample period.

Appendix A-8 – Travel & Leisure – Graphical representation of the different leverage ratios for the period 1994 – 2016

Figure 22: Total Debt to Book Value of Equity for the Travel and Leisure Sector

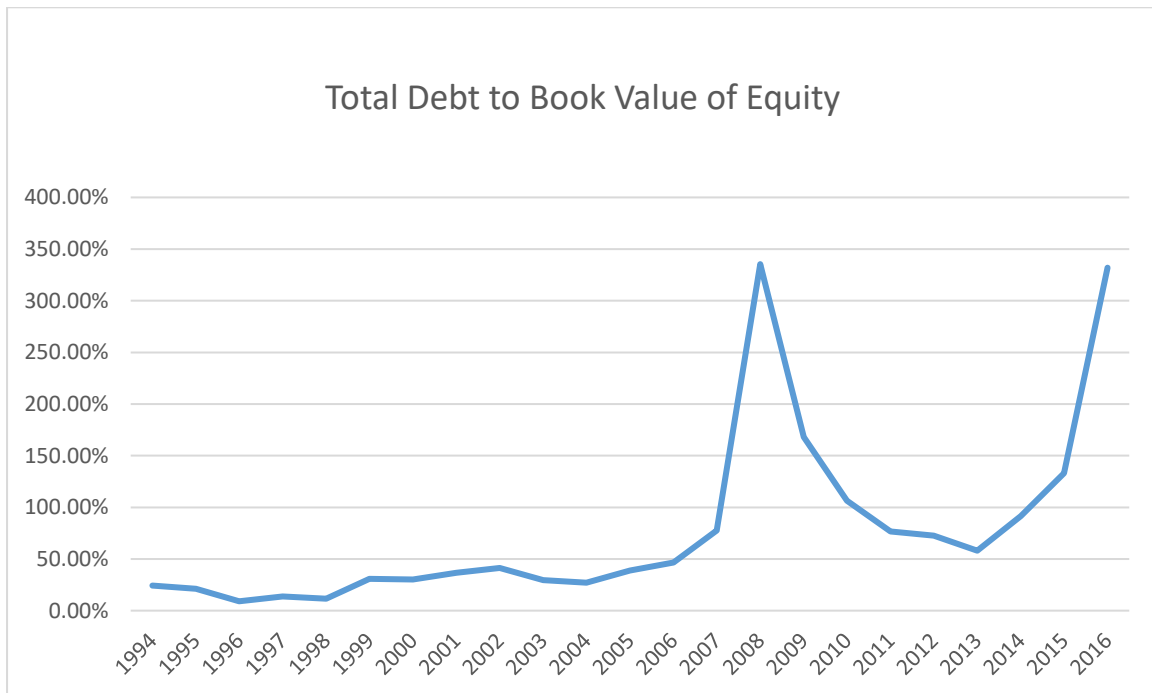


Figure 23: Total Liabilities to Book Value of Equity for the Travel and Leisure Sector

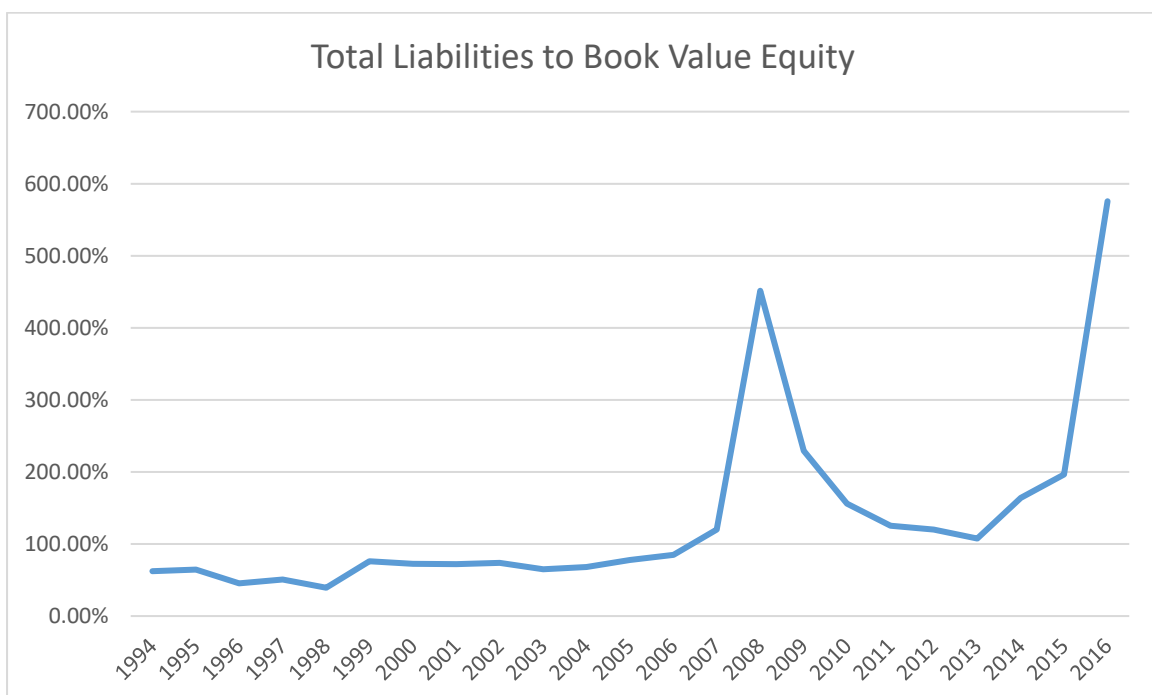


Figure 24: Total Debt to Market Value of Equity for the Travel and Leisure Sector

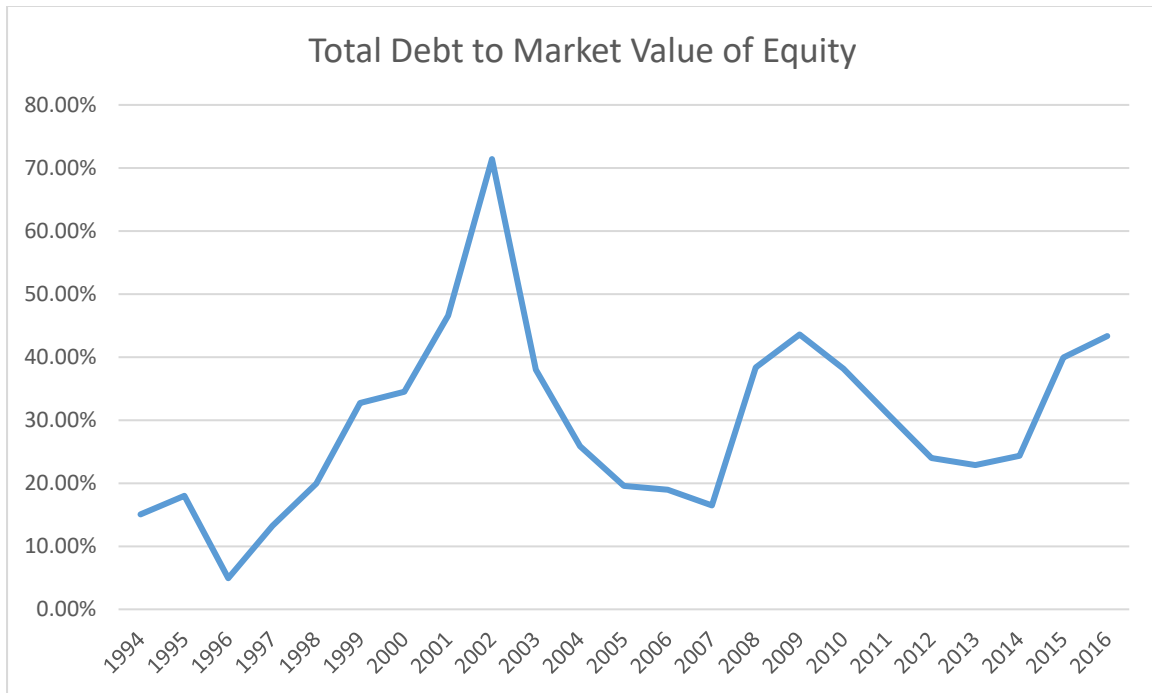
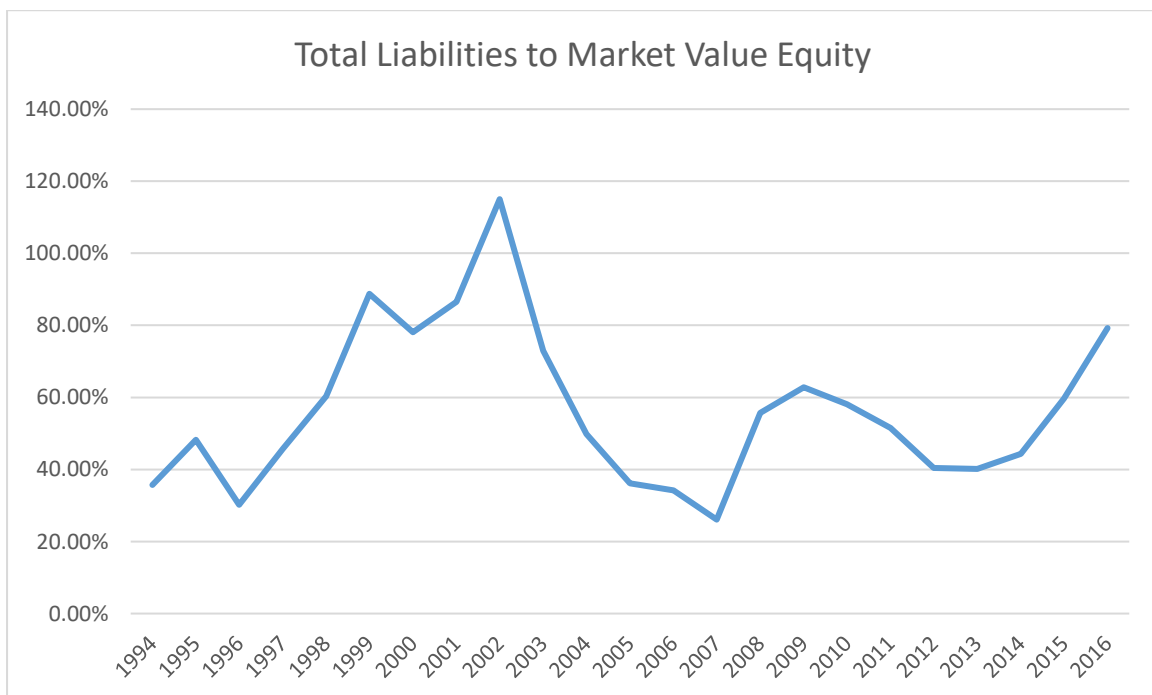


Figure 25: Total Liabilities to Market Value of Equity for the Travel and Leisure Sector



Appendix A-9 Changes in Debt ratios across the period 1994 to 2016 for the Construction and Materials Sector

Construction & Materials	Average (1994 to 1998)	Average (2012 to 2016)	Increase / Decrease
TDBV	26.91%	77.70%	188.70%
TDMV	22.29%	33.94%	52.31%
TLBV	119.29%	200.13%	67.77%
TLMV	91.47%	133.40%	45.84%

In detail, the following changes can be seen;

- Total Debt to Book Value of Equity (TDBV) increased from an average of 26.91% (average total debt to BV of equity from 1994 to 1998) to an average of 77.70% (average total debt to BV of equity from 2012 to 2016), thus increasing by 188.70% across the sample period.
- Total Debt to Market Value of Equity (TDMV) increased from an average of 22.29% (average total debt to MV of equity from 1994 to 1998) to an average of 33.94% (average total debt to MV of equity from 2012 to 2016), thus increasing by 52.31% across the sample period.
- Total Liabilities to Book Value of Equity (TLBV) increased from an average of 119.29% (average total liabilities to BV of equity from 1994 to 1998) to an average of 200.13% (average total liabilities to BV of equity from 2012 to 2016), thus increasing by 67.77% across the sample period.
- Total Liabilities to Market Value of Equity (TLMV) increased from an average of 91.47% (average total liabilities to MV of equity from 1994 to 1998) to an average of 133.40% (average total liabilities to MV of equity from 2012 to 2016), thus increasing by 45.84% across the sample period.

Appendix A-10 – Construction & Materials – Graphical representation of the different leverage ratios for the period 1994 – 2016

Figure 26: Total Debt to Book Value of Equity for the Construction and Materials Sector

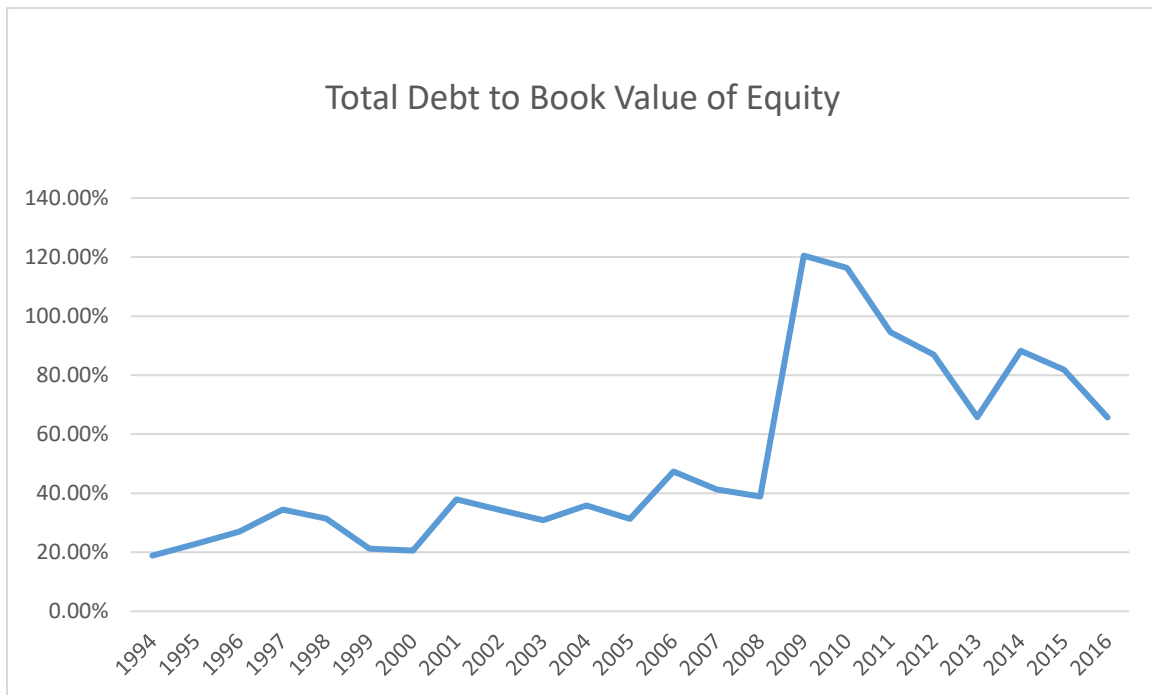


Figure 27: Total Liabilities to Book Value of Equity - Construction & Materials Sector

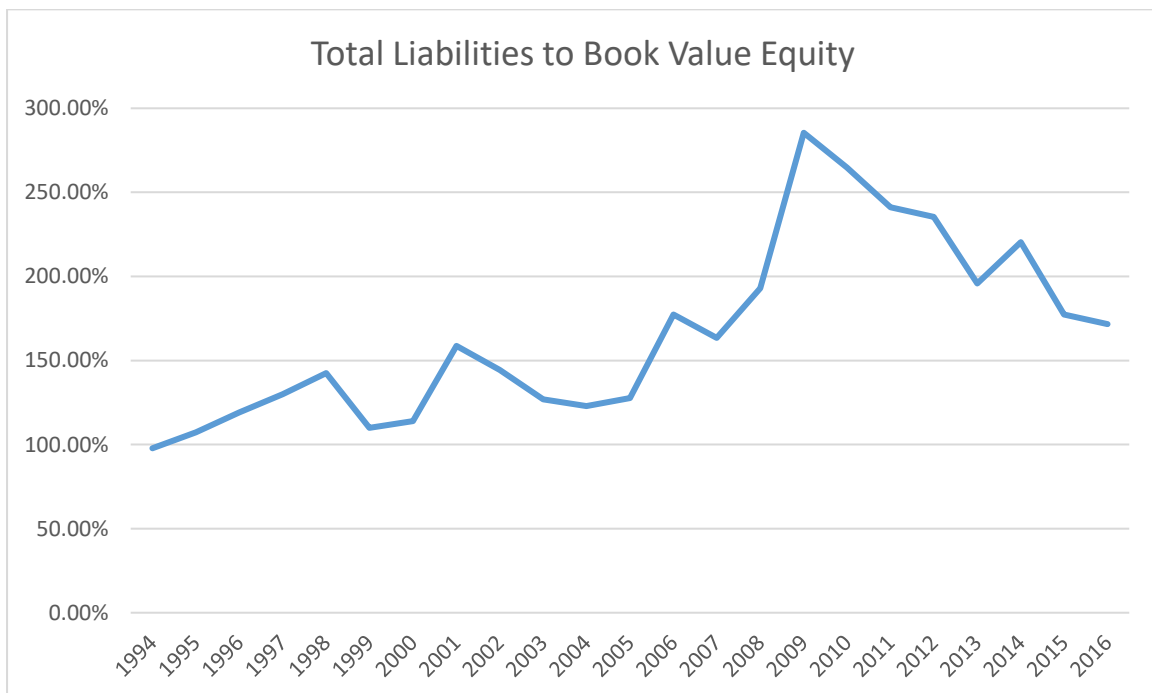


Figure 28: Total Debt to Market Value of Equity - Construction and Materials Sector

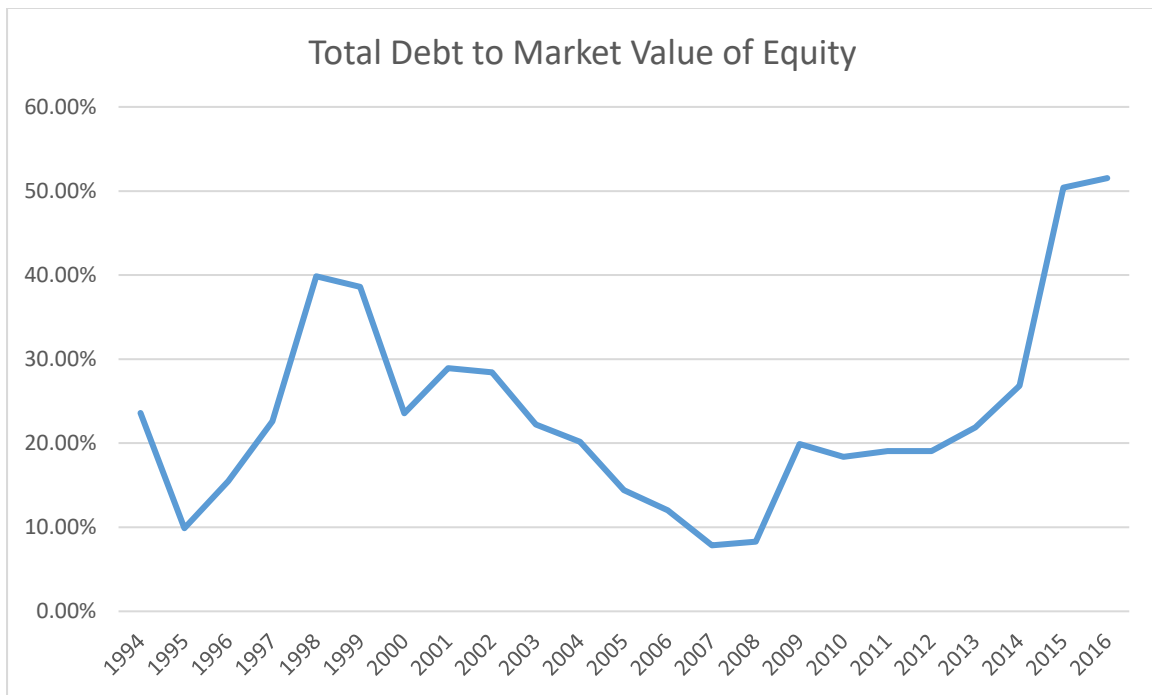
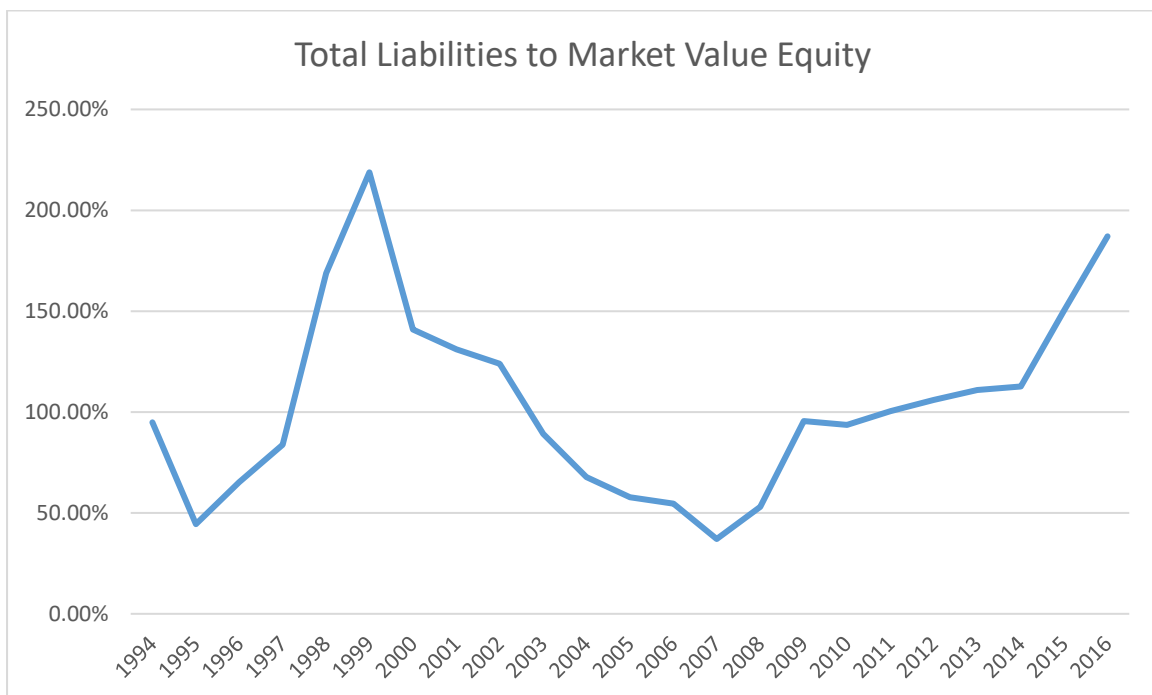


Figure 29: Total Liabilities to Market Value of Equity - Construction & Materials Sector



Appendix A-11 Total Sample Result

Total Sample														
	TDBV	TLBV	TDMV	TLMV	Firm Size	Tangibility	Profitability	Growth	Prime Rate	Tax Rate	ST Debt to Total Debt	LT Debt to Total Debt	CL to Total Liabilities	NCL to TL
1994	366.00%	426.51%	24.77%	68.36%	14.17	59.36%	13.94%	14.50	16.25%	35.00%	19.25%	80.75%	58.44%	41.56%
1995	406.58%	481.13%	15.04%	46.35%	14.67	47.80%	15.25%	14.82	18.50%	35.00%	32.26%	67.74%	66.25%	33.75%
1996	104.18%	175.64%	15.71%	55.40%	14.74	47.96%	12.56%	14.90	20.25%	35.00%	51.28%	47.74%	72.18%	27.82%
1997	123.59%	197.82%	23.60%	72.65%	14.59	51.34%	11.15%	14.73	19.25%	35.00%	38.65%	60.21%	67.72%	32.28%
1998	76.80%	145.56%	34.20%	114.06%	14.11	39.14%	13.54%	14.81	23.00%	30.00%	18.80%	69.60%	67.70%	32.30%
1999	55.94%	162.95%	17.85%	71.99%	13.07	17.00%	3.10%	15.30	15.50%	30.00%	5.97%	89.62%	25.82%	74.18%
2000	94.35%	136.82%	21.78%	56.34%	13.36	17.42%	7.08%	14.94	14.50%	30.00%	10.45%	85.67%	30.48%	69.52%
2001	78.86%	120.37%	23.42%	53.40%	13.39	15.82%	6.66%	15.13	13.00%	30.00%	10.64%	86.30%	31.21%	68.79%
2002	908.49%	1006.72%	29.38%	60.62%	13.55	19.27%	6.91%	15.21	17.00%	30.00%	13.83%	83.54%	30.87%	69.13%
2003	716.27%	1365.23%	31.48%	62.77%	13.72	24.55%	8.90%	15.19	11.50%	30.00%	15.71%	83.76%	32.74%	67.26%
2004	1082.12%	1231.57%	29.23%	48.41%	13.73	29.23%	12.69%	15.22	11.00%	30.00%	13.30%	83.79%	32.63%	67.37%
2005	1602.06%	1838.04%	26.68%	46.00%	13.95	34.01%	19.64%	15.36	10.50%	29.00%	20.28%	79.18%	34.63%	65.37%
2006	2059.07%	2391.53%	52.19%	73.71%	15.18	28.94%	17.12%	16.79	12.50%	29.00%	22.52%	77.38%	34.82%	65.18%
2007	2981.70%	3181.13%	45.55%	64.41%	15.24	38.61%	16.80%	16.45	14.50%	29.00%	25.70%	73.73%	43.68%	56.32%
2008	260.44%	367.30%	69.41%	100.57%	15.42	39.28%	7.97%	16.32	15.00%	28.00%	35.60%	62.65%	54.04%	45.96%
2009	322.02%	406.99%	68.27%	103.26%	15.22	45.64%	9.87%	16.60	10.50%	28.00%	26.13%	72.82%	36.93%	63.07%
2010	298.44%	373.39%	60.05%	94.13%	15.05	52.37%	13.00%	16.48	9.00%	28.00%	23.56%	76.18%	35.61%	64.39%
2011	291.98%	354.97%	74.16%	105.59%	15.01	54.78%	8.33%	16.71	9.00%	28.00%	24.98%	74.96%	34.14%	65.86%
2012	1018.60%	1123.66%	62.07%	90.03%	15.13	54.79%	10.56%	16.80	8.50%	28.00%	24.89%	74.84%	34.11%	65.89%
2013	2174.28%	2330.84%	62.69%	86.01%	15.04	56.94%	11.13%	16.91	8.50%	28.00%	18.38%	81.32%	29.38%	70.62%
2014	99.43%	133.61%	47.88%	66.72%	15.04	56.66%	10.73%	17.14	9.25%	28.00%	18.28%	81.68%	28.05%	71.95%
2015	67.41%	89.13%	50.12%	65.98%	15.00	62.54%	9.69%	17.40	9.75%	28.00%	14.13%	83.89%	22.83%	77.17%
2016	71.43%	98.23%	55.64%	71.73%	14.95	65.31%	6.60%	17.30	10.50%	28.00%	18.75%	79.81%	24.67%	75.33%
Average	663.48%	788.66%	40.92%	72.98%	1449.27%	41.69%	11.01%	1586.94%	13.36%	29.96%	21.88%	76.40%	40.39%	59.61%
Min	55.94%	89.13%	15.04%	46.00%	1306.65%	15.82%	3.10%	1449.56%	8.50%	28.00%	5.97%	47.74%	22.83%	27.82%
Max	2981.70%	3181.13%	74.16%	114.06%	1542.40%	65.31%	19.64%	1740.33%	23.00%	35.00%	51.28%	89.62%	72.18%	77.17%
Std Dev	8.14	8.83	0.19	0.20	0.73	0.16	0.04	0.97	0.04	0.03	0.10	0.10	0.16	0.16
Range	2925.76%	3091.99%	59.12%	68.06%	235.75%	49.49%	16.54%	290.77%	14.50%	7.00%	45.31%	41.88%	49.35%	49.35%

Appendix A-12 Real Estate Sector Results

Real Estate & REITs														
	TDBV	TLBV	TDMV	TLMV	Firm Size	Tangibility	Profitability	Growth	Prime Rate	Tax Rate	ST Debt to Total Debt	LT Debt to Total Debt	CL to Total Liabilities	NCL to TL
1994	5284.00%	5369.61%	101.72%	106.64%	10.17	89.36%	7.35%	12.36	16.25%	35.00%	1.61%	98.39%	6.61%	93.39%
1995	5165.94%	5231.11%	56.63%	59.44%	10.25	87.28%	7.65%	12.30	18.50%	35.00%	3.49%	96.51%	6.81%	93.19%
1996	1675.45%	1715.19%	87.10%	93.45%	10.07	73.05%	9.37%	12.31	20.25%	35.00%	2.97%	77.67%	27.59%	72.41%
1997	1653.30%	1699.67%	89.24%	96.25%	10.24	69.19%	9.68%	12.34	19.25%	35.00%	2.63%	78.08%	27.41%	72.59%
1998	354.04%	374.85%	45.81%	52.97%	9.99	23.39%	4.05%	13.63	23.00%	30.00%	0.61%	27.40%	76.21%	23.79%
1999	69.59%	194.24%	9.73%	33.81%	12.42	3.70%	1.37%	15.53	15.50%	30.00%	1.80%	91.79%	13.23%	86.77%
2000	134.69%	159.76%	18.20%	22.28%	12.64	4.70%	6.14%	15.06	14.50%	30.00%	0.38%	93.50%	16.71%	83.29%
2001	99.48%	117.04%	17.47%	22.87%	12.62	4.58%	5.64%	15.14	13.00%	30.00%	1.37%	94.04%	17.64%	82.36%
2002	1354.95%	1458.44%	23.59%	29.50%	12.72	9.41%	4.74%	15.20	17.00%	30.00%	3.59%	92.43%	15.66%	84.34%
2003	1160.58%	2178.97%	34.54%	48.67%	12.79	14.54%	4.55%	15.26	11.50%	30.00%	3.29%	96.36%	12.83%	87.17%
2004	1737.86%	1935.84%	33.71%	40.01%	12.94	22.24%	8.12%	15.39	11.00%	30.00%	2.89%	93.24%	14.96%	85.04%
2005	2764.37%	3118.93%	34.42%	42.99%	13.05	28.34%	13.77%	15.61	10.50%	29.00%	4.44%	95.25%	12.09%	87.91%
2006	3363.38%	3845.58%	76.82%	90.17%	15.06	23.61%	12.98%	17.77	12.50%	29.00%	1.05%	98.78%	10.22%	89.78%
2007	6293.11%	6606.63%	85.25%	99.01%	14.81	39.87%	7.15%	17.45	14.50%	29.00%	2.41%	97.45%	11.52%	88.48%
2008	515.06%	559.64%	155.98%	174.53%	14.65	48.81%	-10.41%	17.10	15.00%	28.00%	8.50%	91.35%	15.57%	84.43%
2009	478.49%	519.51%	103.21%	116.63%	14.60	50.26%	3.07%	17.19	10.50%	28.00%	7.34%	92.53%	13.96%	86.04%
2010	424.13%	468.47%	84.51%	101.46%	14.53	60.58%	11.09%	16.96	9.00%	28.00%	7.92%	91.96%	15.89%	84.11%
2011	417.65%	454.87%	104.85%	121.43%	14.63	63.63%	6.35%	17.22	9.00%	28.00%	10.80%	89.10%	16.99%	83.01%
2012	1522.76%	1630.77%	83.90%	98.49%	14.66	62.35%	9.18%	17.20	8.50%	28.00%	15.60%	84.31%	20.57%	79.43%
2013	3106.26%	3292.17%	80.48%	90.49%	14.66	64.50%	10.01%	17.34	8.50%	28.00%	9.78%	90.15%	16.82%	83.18%
2014	102.72%	113.68%	55.59%	63.03%	14.75	62.29%	10.08%	17.55	9.25%	28.00%	10.99%	88.95%	18.82%	81.18%
2015	54.88%	62.19%	51.82%	58.62%	14.83	66.61%	8.91%	17.73	9.75%	28.00%	10.34%	89.15%	16.55%	83.45%
2016	54.94%	62.77%	56.69%	64.01%	14.88	69.12%	5.74%	17.52	10.50%	28.00%	14.31%	84.06%	19.96%	80.04%
Average	1642.94%	1790.00%	64.84%	75.07%	1312.80%	45.28%	6.81%	1570.25%	13.36%	29.96%	5.57%	88.37%	18.46%	81.54%
Min	54.88%	62.19%	9.73%	22.28%	999.01%	3.70%	-10.41%	1229.55%	8.50%	28.00%	0.38%	27.40%	6.61%	23.79%
Max	6293.11%	6606.63%	155.98%	174.53%	1506.00%	89.36%	13.77%	1777.02%	23.00%	35.00%	15.60%	98.78%	76.21%	93.39%
Std Dev	18.56	19.29	0.36	0.38	1.84	0.28	0.05	1.93	0.04	0.03	0.05	0.14	0.14	0.14
Range	6238.23%	6544.44%	146.24%	152.26%	506.99%	85.66%	24.17%	547.46%	14.50%	7.00%	15.21%	71.38%	69.60%	69.60%

Appendix A-13 Travel Sector Results

Travel and Leisure														
	TDBV	TLBV	TDMV	TLMV	Firm Size	Tangibility	Profitability	Growth	Prime Rate	Tax Rate	ST Debt to Total Debt	LT Debt to Total Debt	CL to Total Liabilities	NCL to TL
1994	24.19%	62.22%	15.06%	35.67%	14.32	66.16%	14.37%	14.90	16.25%	35.00%	11.98%	88.02%	59.34%	40.66%
1995	21.18%	64.71%	18.01%	48.27%	13.92	63.82%	15.50%	14.48	18.50%	35.00%	33.36%	66.64%	67.13%	32.87%
1996	9.09%	45.25%	4.93%	30.21%	14.03	56.21%	12.16%	14.64	20.25%	35.00%	79.72%	20.28%	83.73%	16.27%
1997	13.77%	50.51%	13.21%	45.62%	14.02	53.81%	10.94%	14.63	19.25%	35.00%	42.05%	57.95%	75.61%	24.39%
1998	11.64%	39.33%	19.95%	60.30%	14.10	46.44%	18.35%	14.84	23.00%	30.00%	10.70%	89.30%	64.09%	35.91%
1999	30.65%	76.19%	32.75%	88.77%	13.99	42.68%	6.62%	14.81	15.50%	30.00%	8.04%	91.96%	46.62%	53.38%
2000	30.05%	72.36%	34.51%	78.09%	13.84	39.93%	10.95%	14.38	14.50%	30.00%	14.66%	85.34%	45.72%	54.28%
2001	36.63%	72.15%	46.59%	86.56%	14.15	49.47%	6.86%	14.90	13.00%	30.00%	30.49%	69.51%	47.65%	52.35%
2002	41.39%	73.76%	71.41%	115.02%	14.18	56.54%	8.24%	14.72	17.00%	30.00%	22.62%	77.38%	40.50%	59.50%
2003	29.47%	65.12%	37.99%	72.89%	14.13	62.36%	14.43%	14.40	11.50%	30.00%	33.81%	63.29%	51.68%	48.32%
2004	26.93%	68.25%	25.88%	49.87%	14.14	62.98%	20.86%	14.34	11.00%	30.00%	30.58%	65.34%	55.72%	44.28%
2005	38.75%	77.85%	19.57%	36.16%	14.45	62.15%	25.80%	14.60	10.50%	29.00%	41.64%	55.95%	56.76%	43.24%
2006	46.70%	85.06%	18.99%	34.19%	14.58	62.35%	21.70%	14.73	12.50%	29.00%	34.74%	65.26%	48.41%	51.59%
2007	77.60%	120.21%	16.48%	26.08%	14.72	61.91%	20.46%	15.00	14.50%	29.00%	26.85%	69.93%	42.74%	57.26%
2008	335.43%	451.49%	38.38%	55.73%	14.28	56.49%	20.40%	14.80	15.00%	28.00%	20.48%	65.80%	45.62%	54.38%
2009	168.12%	229.23%	43.57%	62.81%	14.50	60.48%	18.38%	14.94	10.50%	28.00%	22.17%	69.50%	40.46%	59.54%
2010	106.49%	156.20%	38.15%	58.12%	14.46	59.65%	16.33%	14.91	9.00%	28.00%	29.01%	69.37%	42.66%	57.34%
2011	76.79%	125.26%	31.00%	51.53%	14.71	53.04%	13.18%	15.58	9.00%	28.00%	39.76%	60.24%	45.28%	54.72%
2012	72.72%	120.15%	23.98%	40.41%	15.46	51.38%	17.89%	15.85	8.50%	28.00%	41.19%	57.56%	43.97%	56.03%
2013	58.13%	107.43%	22.86%	40.19%	15.34	49.68%	17.98%	15.62	8.50%	28.00%	39.04%	59.31%	48.06%	51.94%
2014	91.47%	163.90%	24.35%	44.29%	15.39	49.53%	17.02%	15.67	9.25%	28.00%	41.01%	58.99%	45.91%	54.09%
2015	132.99%	196.29%	39.92%	59.70%	15.65	51.53%	15.35%	16.08	9.75%	28.00%	30.94%	57.13%	44.70%	55.30%
2016	332.08%	575.64%	43.36%	79.20%	14.89	42.37%	17.81%	15.01	10.50%	28.00%	56.06%	43.94%	52.44%	47.56%
Average	78.79%	134.72%	29.60%	56.51%	1448.90%	54.83%	15.72%	1495.01%	13.36%	29.96%	32.21%	65.57%	51.95%	48.05%
Min	9.09%	39.33%	4.93%	26.08%	1384.32%	39.93%	6.62%	1433.68%	8.50%	28.00%	8.04%	20.28%	40.46%	16.27%
Max	335.43%	575.64%	71.41%	115.02%	1564.52%	66.16%	25.80%	1607.68%	23.00%	35.00%	79.72%	91.96%	83.73%	59.54%
Std Dev	0.90	1.30	0.14	0.22	0.53	0.08	0.05	0.48	0.04	0.03	0.16	0.15	0.11	0.11
Range	326.34%	536.32%	66.47%	88.94%	180.20%	26.23%	19.19%	174.00%	14.50%	7.00%	71.68%	71.68%	43.27%	43.27%

Appendix A-14 Construction Sector Results

Construction & Materials														
	TDBV	TLBV	TDMV	TLMV	Firm Size	Tangibility	Profitability	Growth	Prime Rate	Tax Rate	ST Debt to Total Debt	LT Debt to Total Debt	CL to Total Liabilities	NCL to TL
1994	18.87%	97.80%	23.60%	94.90%	14.57	48.58%	14.44%	14.40	16.25%	35.00%	28.77%	71.23%	64.72%	35.28%
1995	22.90%	107.29%	9.87%	44.45%	15.35	39.13%	15.97%	15.18	18.50%	35.00%	34.92%	65.08%	72.16%	27.84%
1996	27.00%	119.07%	15.50%	65.25%	15.48	41.72%	13.02%	15.24	20.25%	35.00%	40.60%	59.40%	69.84%	30.16%
1997	34.42%	129.86%	22.59%	83.85%	15.28	48.44%	11.40%	15.01	19.25%	35.00%	40.35%	59.65%	67.59%	32.41%
1998	31.37%	142.43%	39.87%	168.89%	15.42	39.36%	13.40%	15.16	23.00%	30.00%	29.93%	70.07%	67.37%	32.63%
1999	21.22%	110.04%	38.61%	218.81%	14.94	49.85%	7.21%	14.79	15.50%	30.00%	21.77%	78.23%	60.15%	39.85%
2000	20.52%	113.92%	23.54%	140.92%	15.16	39.15%	7.17%	14.97	14.50%	30.00%	36.95%	63.05%	60.28%	39.72%
2001	37.87%	158.72%	28.94%	131.03%	15.37	32.03%	9.81%	15.21	13.00%	30.00%	28.54%	71.46%	64.69%	35.31%
2002	34.39%	144.51%	28.44%	123.97%	15.56	31.35%	12.32%	15.44	17.00%	30.00%	38.30%	61.70%	68.60%	31.40%
2003	30.91%	126.92%	22.23%	89.21%	15.57	31.03%	16.10%	15.36	11.50%	30.00%	35.29%	64.71%	68.21%	31.79%
2004	35.89%	122.95%	20.15%	67.83%	15.44	29.10%	19.58%	15.25	11.00%	30.00%	29.65%	70.35%	63.49%	36.51%
2005	31.27%	127.66%	14.41%	57.73%	15.58	30.31%	28.54%	15.26	10.50%	29.00%	41.66%	58.34%	69.61%	30.39%
2006	47.36%	177.38%	12.01%	54.68%	15.74	25.77%	24.33%	15.51	12.50%	29.00%	65.09%	34.91%	83.78%	16.22%
2007	41.25%	163.54%	7.85%	37.09%	16.00	27.09%	27.41%	15.79	14.50%	29.00%	54.59%	45.41%	84.65%	15.35%
2008	38.87%	192.99%	8.30%	52.99%	16.32	27.36%	19.48%	16.08	15.00%	28.00%	60.98%	39.02%	86.78%	13.22%
2009	120.50%	285.45%	19.90%	95.55%	16.49	32.93%	17.99%	16.20	10.50%	28.00%	58.16%	41.84%	73.14%	26.86%
2010	116.36%	264.81%	18.37%	93.57%	16.37	32.46%	15.60%	16.13	9.00%	28.00%	53.70%	46.30%	73.52%	26.48%
2011	94.52%	241.09%	19.05%	100.49%	16.31	31.03%	10.37%	16.11	9.00%	28.00%	54.24%	45.76%	74.48%	25.52%
2012	86.94%	235.33%	19.08%	106.02%	16.49	30.71%	8.66%	16.26	8.50%	28.00%	43.12%	56.88%	73.66%	26.34%
2013	65.75%	195.84%	21.89%	110.98%	16.43	30.09%	9.43%	16.22	8.50%	28.00%	36.77%	63.23%	67.46%	32.54%
2014	88.27%	220.43%	26.84%	112.60%	16.44	30.60%	7.92%	16.22	9.25%	28.00%	37.65%	62.35%	64.23%	35.77%
2015	81.87%	177.43%	50.38%	150.23%	15.67	40.37%	7.89%	16.35	9.75%	28.00%	23.59%	76.41%	48.70%	51.30%
2016	65.66%	171.64%	51.53%	187.16%	16.17	28.21%	8.75%	16.06	10.50%	28.00%	51.07%	48.93%	71.16%	28.84%
Average	51.91%	166.40%	23.61%	103.83%	1574.59%	34.64%	14.21%	1557.38%	13.36%	29.96%	41.12%	58.88%	69.49%	30.51%
Min	18.87%	97.80%	7.85%	37.09%	1456.89%	25.77%	7.17%	1439.51%	8.50%	28.00%	21.77%	34.91%	48.70%	13.22%
Max	120.50%	285.45%	51.53%	218.81%	1649.07%	49.85%	28.54%	1634.82%	23.00%	35.00%	65.09%	78.23%	86.78%	51.30%
Std Dev	0.31	0.53	0.12	0.47	0.55	0.07	0.06	0.56	0.04	0.03	0.12	0.12	0.08	0.08
Range	101.62%	187.65%	43.68%	181.72%	192.18%	24.08%	21.37%	195.31%	14.50%	7.00%	43.31%	43.31%	38.08%	38.08%

