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RESEARCH PROJECT

Debt leverage, company growth and job creation: South African manufacturing

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ABSTRACT

Unemployment and lack of economic growth have been an issue in South Africa. This research project studied the impact debt leverage has on a company's ability to grow revenue and create jobs. Most recent literature focused on debt leverage and the increase in company investment but not extensively in company revenue growth. Furthermore, most literature was based on the developed economies. Also, the emphasis of most recent literature was on metrics that would benefit the investor more than it would benefit broad-based economic interests. A panel data regression was used to analyse cross-sectional data primarily sourced from 'McGregor BFA Research Domain'. This analysis covered 74 publicly-listed South African companies which were from manufacturing, mining or construction sectors from 1992 to 2017. From this, it was found that debt leverage does not predict company growth or job creation. However, it was found that short-term debt leverage does predict company growth for companies whose total assets' market value is less than total assets' book value. Additionally, it was found that company size can, under most conditions, predict company growth and job creation.

KEYWORDS: Capital structure, debt leverage, company growth, revenue growth, job creation,

DECLARATION

I declare that this research project is my own work. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration at the Gordon Institute of Business Science, University of Pretoria. It has not been submitted before for any degree or examination in any other University. I further declare that I have obtained the necessary authorisation and consent to carry out this research.

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CHAPTER 1: INTRODUCTION

1.1. INTRODUCTION TO THE PROBLEM AND PURPOSE

In the recent decade, unemployment in South Africa as an emerging economy has increased to unprecedented levels (Daily Maverick, 2017). This is also attributable to a stifled economic growth (Solomons, 2017). The question is, “are South African manufacturing companies adopting adequate risk to leverage on opportunities that would allow them to grow and create jobs?” This research project serves to address this question and to add to the body of knowledge on how debt leverage can be a predictor of company growth and job creation in the context of the South African economy as an emerging economy. Revenue growth was used as a metric for company growth. This is because revenue growth feeds into economic growth, as economic growth, in gross domestic product (GDP) terms, is the measure of the production of output in an economy (Miles & Scott, 2005). Similarly, job creation, measured as an increase of employees of a company, was studied to determine how debt leverage can predict job creation.

For this research project, the term ‘debt leverage’ refers to firstly, the long-term debt to total assets ratio and secondly, the short-term debt to total assets ratio. In mathematical terms, it is the debt in question divided by the total assets obtained from the balance sheet of any particular company. Also, companies can finance their assets by debt or equity; this financing structure is referred to as ‘capital structure’ (Ardalan, 2017), which in simple terms can be interpreted as debt leverage.

The research project was limited to the asset-based sectors such as the manufacturing, mining and construction. The reason for choosing these sectors is that they are asset-based sectors where investment is injected into equipment and machinery, whereas in the service sector the investment in assets is relatively small (Park & Jang, 2013). In other words, the balance sheets of manufacturing companies are heavily based on the assets required for them to produce for the markets they serve as opposed to the service sector.

This chapter is structured first to define the problem relating the economy and the way capital structure has been managed. Secondly, a section on purpose details some gaps which previous research has not covered and how this research project can be used to solve the problem. Finally, the scope of the research is given as a summary of this chapter.

1.2. DEFINITION OF THE PROBLEM AND PURPOSE

1.2.1. Definition of the problem

Emerging economies are faced with problems of low national incomes per capita and higher levels of inequality. In particular, South Africa is currently faced with very high levels of unemployment standing at an unemployment rate of 26.7% (Statistics SA, 2016). Furthermore, the economy in terms of its GDP has only grown at a rate of approximately two percent from 2006 to 2016 (Trading Economics, 2017).

Unemployment is further exacerbated by the fact that the education system in South Africa is weak as it is ranked 127 for the quality of primary education with a score of 2.7 as reported by Schwab, Sala-i-Martín, Samans, & Blanke (2016). An economy where people are uneducated would benefit from industrialisation. This notion is supported by Studwell's (2013) argument that, in Asia, investment in manufacturing was required because a workforce, with limited productive skills, can perform many entry-level jobs in manufacturing. This notion can also be interpreted as a workforce with little or no formal higher education. Studwell (2013) further argues that policy interventions were required in the financial sector to focus on manufacturing developments to accelerate economic transformation.

Such policy interventions could include how capital structure can be employed to encourage some risk-taking to promote optimal debt leverage for manufacturing companies. Determining the real effect of debt leverage is challenging because debt leverage at any particular point in time is chosen according to the industry conditions then (Cookson, 2016). Cookson (2016) found that casinos with low debt leverage were able to increase capacity more than the high leveraged casinos could. This could be because higher debt leverage increases risk, as the trade-off theory suggests that at some high level of debt the risk of undergoing bankruptcy outweigh the tax benefits of debt (Kraus & Litzenberger, 1973). This implies that higher debt leverage creates risk which highly leveraged companies prefer to avoid.

From a different angle of discussion, there have been debates relating to whether South African companies are holding excessive cash (Nyamgero, 2015). These debates are also relevant to debt leverage because of cash, which a company possesses, directly affect the capital structure in terms of the short-term debt leverage and the long-term debt leverage. If cash is converted to productive assets, these debt leverage variables will change, and this may also affect the performance and growth of a company.

A higher debt leverage means a reduction in cashflow, and as a result, agency issues are reduced which can occur when management spends money on projects which do not

increase company value (Park & Jang, 2013). Moreover, a higher debt leverage implies that free cashflow is spent more on servicing debt which would have been invested in revenue-generating assets (Park & Jang, 2013). This argument implies that company growth and job creation can be realised if higher debt leverage is employed. It was expected, in this research, that more debt could grow a company and create jobs because the debt employed would be used as an additional stream of finance for additional capital projects. The contradictory findings of various authors on positive and negative effects of debt leverage on company growth and job creation leave room for investigation in the emerging economy context such as South Africa.

1.2.2. Purpose of this research

A few recent studies have been completed for the study of the correlation between debt leverage, company growth and job creation. Such a study includes Cookson (2016) where the scholar illustrates that low-leverage new casino entrants can expand physical capacity by 30%. His study was based on the American casino industry. Another example of such a study includes that of Kim (2016) which shows that market share correlates directly with the debt leverage used by a company's group debt leverage. Most studies have been focused on company growth in terms of asset investment of a company but not in terms of revenue. Market share studies relate to company revenue and therefore share some light on debt leverage and company growth, in terms of revenue. The choice to base this research project revenue growth rather than on investment was motivated by the fact that revenue is what contributes to the measurement of GDP (Miles & Scott, 2005) and, hence, company revenue growth should feed into economic growth, in GDP terms.

Studies which focused on job creation and debt leverage did share some insight. These studies, however, were conducted in the context of macroeconomic events and were mostly focused on developed economies. For instance, Voulgaris, Agiomirgianakis and Papadogonas (2014) studied job creation and destruction of Greek manufacturing companies and how it correlates with debt leverage and other factors; the scholars' study was based on the context of an economic crisis. Similarly, Giroud and Mueller (2016) studied debt leverage of United States companies and its impact on job losses during the great depression. This research project, however, was not based on any particular macroeconomic event and was based on South Africa as an emerging economy.

In contrast, there are a plethora of studies that investigated the relationship between debt leverage and company performance (Dawar, 2014). For instance, Dawar (2014) observes that most of these studies have been based on developed countries and, as such, little is known about this relationship in emerging economies. Both Dawar (2014) and Fosu (2013) conducted studies in emerging economies, namely, India and South Africa,

respectively. In Dawar's (2014) study, debt leverage has a negative impact on financial performance of Indian firms. However, Fosu (2013) suggests that debt leverage has a positive and significant on South African companies' performance listed on the JSE. It is observed that company performance, on these studies, has been mostly defined as Return on Assets or the Return on Equity. For instance, the ROA calculation is presented as follows:

$$ROA = \frac{Net\ Income}{Total\ Assets} \qquad (1\text{-}1)$$

While the ROE calculation is presented as follows:

$$ROE = \frac{Net\ Income}{Total\ Equity} \qquad (1\text{-}2)$$

As shown in the equations above, it is recognised that the above equations do not directly relate to company growth or job creation as a company can still show performance even when it reduces its size. To demonstrate this phenomenon, a company could merely maximise its net income by reducing costs such as overheads. Furthermore, removing certain assets would reduce the asset base by selling off some of its assets. These methods would result in higher ROA and ROE even if the methods resulted in a reduction in company size which may result in job losses. It is concluded that these studies, were primarily conducted for the investors' benefit which is to solely maximise the investors' investment through maximisation of profit or share value. In other words, these studies serve the selfish interests of investors rather than to serve broad-based economic interests. It is also important to note that Fosu's (2013) South African study included a correlation matrix from which company growth, in terms of revenue, was correlated with debt leverage. Although the correlation matrix shows no correlation between debt leverage and company growth, the matrix is deemed too simplistic to conclude this relationship adequately. This is because the correlation matrix focuses on a relationship between two variables where a multi-variable regression takes into account the impact of other predictors on a dependent variable, such as the one employed in this research project, takes into account other control variables (Creswell, 2012).

It is for the above reasons that this research project was undertaken so that it can serve to benefit the broad-based economic interests of the South African economy. Furthermore,

to the philanthropic investor, who seeks to invest in job-generating companies, debt leverage can be an additional criterion which can give further insight to whether the investment may yield further growth and jobs contrary to using financial performance indicators. On the other hand, government funding institutions such as the Industrial Development Corporation (IDC) can use the research to understand further the implications of debt leverage in the funding they involve themselves in. IDC's mission is to "contribute to the creation of balanced, sustainable economic growth in South Africa and on the rest of the continent" (Industrial Development Corporation, 2015, p. 3) and, as such, the research project could further help them realise their mission. Moreover, a research project like this serves to add to the body of knowledge for the South African economy by examining the relationship between debt leverage, company growth and job creation. Most importantly, company Growth also means resources would be required, more specifically, the human capital. Job creation should, on a macroeconomic level, reduce unemployment.

In summary, the research project gives insight to various stakeholders in South Africa's as an emerging economy. Furthermore, it contributes to the body of knowledge about debt leverage in emerging economies.

1.3. RESEARCH SCOPE

This research was conducted based on the works of scholars such as Fosu (2013), Dawar (2014) and Lang, Ofek and Stulz (1996). The measurement of company growth and job creation was chosen as revenue growth and rate of employment growth, respectively. This is different from the choice of investment growth. This quantitative research was undertaken by collecting the relevant data from the McGregor BFA Research Domain. From this data, the ratio based variables were determined and used to perform the panel data regression required to test the hypotheses of the project. The hypotheses were based on company growth hypotheses and job creation hypotheses. Each of these groups was based on three categories: all companies, irrespective of Tobin's q ratio, companies with an average Tobin's q less than one and companies with an average Tobin's q greater than one. Relevant control variables were also regressed to allow for other effects which contribute to company growth or job creation.

This research project is structured in seven main chapters. The first chapter is this introduction, which includes the definition of the problem and purpose of the research project. The second chapter covers the theory and literature review where the work of other scholars in the capital structure area is discussed. The third chapter covers the hypotheses that were used to cover the gaps which have not been covered by other scholars. The fourth chapter covers the research methodology and design by

demonstrating the steps undertaken to test the hypotheses. The fifth chapter covers the results obtained and how they relate to the hypotheses. The sixth chapter covers the discussion of results, which links the results chapter and the literature review. Finally, the conclusion which summarises the findings of the research outlines limitations and outlines recommendations for future research.

CHAPTER 2: THEORY AND LITERATURE REVIEW

2.1. INTRODUCTION TO THEORY AND LITERATURE REVIEW

This chapter discusses the theory and the literature review about debt leverage and its relation to company growth and also to job creation. The theory covers the capital structure theory, the trade-off theory, agency cost theory, Tobin's q ratio and the pecking order theory. Following this, determinants of capital structure were covered which includes production flexibilities, creditor rights, tax systems and other determinants. The relationship between debt leverage and company growth and performance was then covered. Following this, the relationship between debt leverage and job creation was covered. The final sections include discussions about the effect of company size on debt leverage and how debt leverage can be impacted by companies when they exist for the sake of survival.

2.2. THEORY

2.2.1. Capital Structure Theory

Modigliani and Miller (1958) argued about the purpose of employing debt being to serve two criteria; firstly, the maximisation of profits and secondly, the maximisation of market value. About the first criterion, any asset which is to be acquired is only worth acquiring if it would increase the net profit of the shareholders of the company. Net profit can only be expected to increase if the rate of return on the asset acquired through debt is higher than the rate of the debt in question. On the second criterion, an asset is worth acquiring if it increases the value of the company shares or the owner's equity. This will hold true if the rate at which the market value of the company increases is higher than the interest rate of the debt which is used to acquire the asset in question. Scholars such as Ardalan (2017) have recognised limitations of Modigliani and Miller (1958) theory as it is based on certain assumptions. These assumptions include no agency costs, all cash flow streams being perpetual and companies assumed to be in the same risk category.

For this research project, the first criterion mostly matches the topic of the research project. If profit is maximised, cashflow should then increase in the long term. Excess cash can then be utilised in the investment of assets. These assets would then generate more revenue, and this revenue growth means that the company is growing which may eventually increase the number of employees (i.e. job creation). In simple words, profitability is expected to feed into assets which increase revenue, then increases company size and ultimately job creation.

2.2.2. Trade-Off Theory

In an ideal world a company's value, according to scholars, such as Hirshleifer, Robichek, Myers, and Stiglitz, have shown that a company's market value does not depend on its capital structure (Kraus & Litzenberger, 1973). This is because company debt can be increased continuously while reaping the benefits of leveraging by debt (Kraus & Litzenberger, 1973). However, in reality, there are two conditions which are central to market imperfections, namely, the taxation of profits and the existence of bankruptcy (Kraus & Litzenberger, 1973). A tax benefit of debt financing arises because interest on the debt is tax deductible (Kraus & Litzenberger, 1973). Hence, Kraus and Litzenberger (1973) argue that a company's optimisation of its debt leverage will involve a trade-off between the tax benefits of debt and the possible consequences of bankruptcy. Similarly, Myers (1977), in his paper, argues that if there's a tax advantage to increasing company debt, the optimal strategy for a company would involve a trade-off between the tax benefits of debt and the costs of the suboptimal future investment strategy.

2.2.3. Agency Cost Theory

Jensen and Meckling (1976) identified two main types of agency costs. The first type occurs due to the conflict of interest between the manager and the shareholders (Jensen & Meckling, 1976). Since profit is shared between the managers and the shareholders, the manager is incentivised to take risks that could be detrimental to the company for their benefit (Fosu, 2013). Fosu (2013) notes that this behaviour calls for higher monitoring levels, incentive schemes or contractual relations. Consequently, higher costs are incurred which increase as shareholder participation increases (Fosu, 2013). Thus, a higher debt leverage could mitigate such costs (Fosu, 2013) as the cashflow that resulted from profit would be used to service the debt.

The second type occurs due to the conflict of interest between the shareholders and the issuers of debt (Jensen & Meckling, 1976). Shareholders are predisposed to taking excessive risks since they benefit from the accrued profit whereas losses are proportionally shared with creditors (Fosu, 2013). Because creditors are cognisant of such behaviour, costs of business loans may, as a result, be higher (Fosu, 2013). This suggests that debt leverage could detrimentally affect the company performance, especially when the company is already highly leveraged.

2.2.4. Tobin's Q Ratio

Tobin's q ratio is given the following formula (Tobin & Brainard, 1976):

$$Tobin's\ q = \frac{MV}{V} \qquad (2\text{-}1)$$

MV, in the above formula, is the market value of a company. The market value includes three categories, namely, the commons stock, preferred stock and long-term debt (Tobin & Brainard, 1976). V, in the above formula, is the invested cost at replacement cost (Tobin & Brainard, 1976). A Tobin's q of greater than one means that the company's market value is higher than its total assets' replacement cost. Vice versa, Tobin's q of lower than one means that its market value is lower than the assets replacement costs. Wahba (2014) argues that when market conditions are in equilibrium, Tobin's q will be one. He further argues investment in a company is stimulated when Tobin's q that is higher than one.

Tobin's q is pertinent to the research project as Lang, Ofek, and Stulz (1996) illustrated that leverage and investment growth is negatively correlated with companies of a low Tobin's q. On the contrary, they show that there's a positive correlation between debt leverage and investment growth with companies of a high Tobin's q.

2.2.5. Pecking Order

Myers and Majluf's (1984) theory, known in the capital structure area as the 'Pecking Order' theory, details that companies tend to first rely on internal sources of finance. The authors refer to these internal sources as cash on hand and the risk-free marketable securities. Secondly, they argue that companies would prefer debt before equity. Their theory is that issuing new shares sends a negative signal, to the market, that would devalue the share price of the existing and issued shares. Lastly, Myers and Majluf (1984) argue that equity would be used to finance new investments.

2.3. DETERMINANTS OF CAPITAL STRUCTURE

In this section factors, which determine the capital structure, are discussed. These include the production flexibilities of manufacturing companies, the creditor rights which may exist in an economy, the tax systems and other factors such as market share.

2.3.1. Production Flexibilities

Reinartz and Schmid (2016) conducted a study to determine the relationship between the production flexibility and debt leverage. The scholars define production flexibility as the flexibility upon which the operating level of an asset can be changed. In other words, this is the company's ability to quickly change the production volume of an asset without incurring high operational losses in the process. Their study was focused on the power (electricity) supply companies that operate power plants such as gas-fired, nuclear or coal power plants. The scholars argue that, in theory, flexibility can increase tax benefits on debt financing while decreasing costs during financial distress. They found that companies with higher production flexibility tend to have a relatively higher reliance on debt financing. This phenomenon is essential as the research project was based on the manufacturing sector which is based on production assets. In some instances capital structure, in particular, debt leverage may have resulted from the production flexibilities.

2.3.2. Creditor Rights

Cho, El Ghoul, Guedhami and Suh (2014) conducted a study from a large sample of 48 countries. From their study, they find evidence that strong creditor rights result in low long-term debt leverage for any particular country. Furthermore, they argue that an economy that has very strong creditor protection will naturally discourage companies from pursuing higher debt levels. South Africa, having a relatively stronger creditor right (Cho et al., 2014), may indicate that little or no companies, in the sample of the research project, have ever operated beyond their optimal capital structure at which there's a trade-off between higher leverage and lower leverage. Stronger creditor rights may incentivise the managers to seek other ways of financing growth opportunities. Managers of a company may prefer to use equity financing over debt in strong creditor right environments, which is different financing preference proposed by Myers and Majluf's (1984) pecking order theory.

2.3.3. Tax Systems

A majority of tax systems, as mentioned by Feld, Heckemeyer and Overesch (2013), allow interest payments on debt to be fully deductible from the company taxable income. This is the reason that scholars such as Park and Jang (2013) argue that debt finance is cheaper than equity finance whereas dividends payout to equity financiers (shareholders) are not. From their study, Feld et al. (2013) find that tax influence on debt policy does substantially affect the debt leverage policy of a company.

2.3.4. Other Determinants

De Jong, Kabir and Nguyen (2008) studied 12 000 companies across 42 countries from 1997 to 2001. De Jong et al. find that there are exogenous and endogenous factors which affect the capital structure. Exogenous factors, as expressed by De Jong et al., include the GDP growth, bond market development and the creditor right protection. The authors argue that companies operating in a country with robust legal environment and favourable economic conditions are prone to take less debt. In this case, as argued by de Jong et al., the endogenous factors are reinforced. These endogenous factors, as expressed by de Jong et al., include tangibility, profitability, company risk and growth opportunities.

In their study, Kayo and Kimura (2011) studied the exogenous and endogenous factors that influence a company's debt leverage. The author's study shows that the majority of factors which affect a company's debt leverage are exogenous rather than endogenous. The authors note that exogenous factors cannot be ignored entirely as they also have potential to affect the debt leverage and its entire capital structure.

2.3.5. Analysis of Determinants of Debt Leverage

The determinants of capital structure are important to note for this project as they have consequences for any study such as this one. Creditor rights (Cho et al., 2014) and tax systems (Feld et al., 2013) are exogenous factors which determine the capital structure and the debt leverage which the companies will employ. These factors affect the economy-wide capital structure of companies in any given economy. These are factors which are controlled by the legal system of any particular economy, and the government can use these as levers to promote an efficient use of debt and to mitigate agency factors. Also, these two factors can influence how companies, in any given economy, will follow Myers and Majluf's (1984) pecking order theory.

From Myers and Majluf's (1984) point of view, it can be understood why a company would want to finance their expansion by debt before they issue equity. As is shown by Aivazian, Ge and Qiu (2005), companies with high growth prospects (high Tobin's q) tend to have a lower debt leverage. This study suggests that Myers and Majluf's (1984) pecking order theory is fallible and a company may negatively impact its growth should they follow the pecking order theory.

If companies do not follow Myers and Majluf's (1984) pecking order and use debt as their last financing alternative, it can be assumed that managers would make efficient use of the cashflow available. This means the efficient use of cashflow would make a company more profitable and would increase the market value of the company stock. The increase would then attract more equity financiers. This may explain why studies such those of

Cookson (2016) and Kim (2016) show that companies with lower debt leverage grow faster than those with higher debt leverage.

2.4. DEBT LEVERAGE, GROWTH AND PERFORMANCE

2.4.1. Company Growth

In this section, the literature on debt leverage and company growth is discussed. There are conflicting views by different authors on whether debt leverage can positively or negatively affect company growth. For instance, Cookson (2016) found, through his studies on the American casino industry, that high debt leverage in new casinos inhibits them from responding to entry threats. In contrast, he found that casinos with lower debt leverage expand physical capacity by 30% where highly leveraged ones do not. From Cookson's study, it can be inferred that debt leverage is a negative predictor of company growth.

From market share point of view, Kim (2016) studied Korean group companies during the period 1999 to 2006 just after the Asian Financial crisis. Kim (2016) shows that a group company's debt leverage can lead to loss of a market share to competing industry rivals when an affiliated firm is financially weak. A high debt leverage of group company, according to Kim (2016), is detrimental to companies that operate in fast-growing industries. This discourages affiliated firms from investing while the rivals are encouraged to invest. Kim (2016) studied empirical studies of other scholars which indicate that higher levels of debt financing weaken a company's position in its industry. Furthermore, the scholar found that large cash reserves disproportionately benefits a company's market share at the expense of industry rivals. Kim's (2016) findings further substantiate that debt leverage is a negative predictor of company growth.

From a global expansion point of view, the study of Joliet and Muller (2013) has brought some insight. Joliet and Muller (2013) conducted their study on the effect of a non-financial company expansion into other countries. The authors argue that revenue generated from their international branches do not necessarily imply that capital had to be employed in the pursuit of this additional revenue. Joliet and Muller find that the debt leverage of any particular company is not significantly affected by the success in the new foreign market when the company in question has already developed the target market. Also, they find that the debt leverage of a company increases when it expands into a region or country where the company had no prior operation. Joliet and Muller's (2013) study means that an increased debt leverage is required for acquiring assets required to establish a sales territory in an untapped territory. This does not suggest that debt leverage as a result of debt financing is a perpetual contributor to company success. From

Joliet and Muller's (2013) study, it appears as though the increased debt leverage occurs during periods of expansion and returns to the pre-expansion phase over time. Joliet and Muller's (2013) study implies that debt leverage may induce company growth during expansion but does not necessarily induce company growth when a company is operating on the same asset base.

Contrary to the literature above which argues that debt leverage negatively affects company growth, Huynh and Petrunia (2010) shared a different finding. Huynh and Petrunia (2010) conducted an empirical study on Canadian companies to determine if debt leverage, amongst other factors, has an impact on the company growth. They define size as the company sales revenue. The authors find that there is a positive relationship between company growth and debt leverage. Another study which supports this notion of a positive relationship with debt leverage was conducted by Mitani (2014). Mitani (2014) studied the effect of debt leverage on the competitive position of companies. The author concluded that a company's debt leverage positively affects the market share and vice versa. Assuming market share as a proxy for company growth, in Mitani (2014), it is inferred that debt leverage positively affects company growth.

From Tobin's q levels, Aivazian, Ge and Qiu (2005) illustrate that Tobin's q has relevance on how debt leverage relates to company growth. Aivazian et al. (2005) empirically studied publicly listed Canadian companies with the intent to understand the impact of debt leverage on company investment. In their study, they observed the relevance impact of Tobin's q on how debt leverage relates to company investment. In their study, they found that debt leverage is negatively related to investment. Moreover, they found the negative relation is even stronger for companies with a low Tobin's q. The insight of this study is valuable as it highlights an argument that Kim (2016) and Cookson (2016) shared that debt leverage negatively predicts company growth. The Tobin's q relevance brought by Aivazian, Ge and Qiu (2005) differs with the argument which Lang et al. (1996) shared on Tobin's q.

In their study, Aivazian et al. (2005), categorise a company with high growth prospects as that with a high Tobin's q. Inversely, they define a company with low growth prospects by a low Tobin's q. Aivazian et al. argue that companies with a high Tobin's q have more resources for investment as the growth prospects can be financed from the capital market. In contrast, as argued by the authors, companies with a low Tobin's q find it challenging to source finance due to their perceived weak growth prospects. They also recognised that this argument does not explain the positive correlation between debt leverage and company value of low Tobin's q companies in the empirical studies they had access to during the publishing of their work. Lang et al. (1996) studied the relationship between

debt leverage, investment and company growth. From their study, they find that a negative relationship between debt leverage and future growth for companies with a low Tobin's q. Conversely, they find that debt leverage has a positive relationship with future growth of companies of a high Tobin's q. They further interpret their findings as debt leverage does not, necessarily, reduce growth for companies with good growth prospects but would reduce growth for companies which are not recognised as growth companies by the capital markets.

A similar study by Billett, King and Mauer (2007) brought a different view to this discussion. Billett et al. (2007) studied the impact of growth opportunities with regard to a company's choice of debt leverage, debt maturity and most importantly, covenants. They find that there is a negative relationship between debt leverage and growth opportunities where there are no covenants. However, where there are covenants, the authors find that the relationship between debt leverage and growth opportunities is positive. Billett et al. recognise that covenants can mitigate the debt-related agency costs for high growth companies. However, Billett et al.'s (2007) study was based on growth opportunities and not on increased investment nor was it based on company revenue. Nevertheless, the measurement of growth opportunities has relevance on how debt leverage predicts company growth or company investment. The impact of covenants brings insight on how other factors can mitigate the behaviour of debt.

On the other hand, Wu and Au Yeung (2012) describe three distinct growth types for companies and how they determine leverage. Wu and Au Yeung name the three growth types as low growth, high growth and mixed growth. Wu and Au Yeung define low growth companies as those whose with a low Tobin's q and a high tangibility (fixed asset to total assets). The authors explain that high growth companies to be those with high Tobin's q and a low tangibility. A mixed growth company, Wu and Au Yeung's definition, would be that with a medium Tobin's q and medium tangibility. The authors argue that the growth type that company finds themselves in, in any particular year, will significantly determine its financing and investment decisions in the following year. Furthermore, the authors claim that there are persistent patterns of a company's financing behaviour. For instance, Wu and Au Yeung argue that as economic conditions improve, low growth companies tend to finance their new projects with debt than with equity. In contrast, the authors argue that high growth companies will tend to finance their new projects with equity than with debt. This suggests that pecking order theory by Myers and Majluf (1984) is followed according to the conditions which the company finds itself in. From Wu and Au Yeung's (2012) study, it appears companies with a higher Tobin's q (high growth) did not follow pecking order. These higher Tobin's q companies seemingly have the luxury to issue equity easier as their equities are highly valued by the markets in which they operate.

Agency issues can play a factor in company growth and thus Park and Jang's (2013) study is relevant to this discussion as it also touches, to a certain extent, on the growth aspect. Park and Jang (2013) studied the inter-connections between capital structure, free cash flow, diversification and company performance. From their study, they argued that managers are inclined to expand the scale of their companies using available cashflow for their benefit. The scholars further argued that managers would expand even if the expansion would result in the pursuit of poor projects that would eventually reduce company value. The scholars refer to this as an over-investment problem, and they advise that this could be mitigated by reducing the availability of free cashflows. They argue that since debt repayment would reduce the cashflows available to these managers, debt can mitigate this over-investment problem.

Another supporting study on agency issues is that of Billett et al. (2007). Billett et al. (2007) find that debt leverage is negatively related to growth opportunities for a company. However, they find that with the presence of covenants, debt leverage positively correlates with company growth. The fact that covenants prove to change the relationship between debt leverage and growth opportunities (Billett et al., 2007) further supports the argument that there are instruments which, if employed, can make debt leverage a lever by which a company can effectively be grown. In Billett et al.'s study, covenants have proven to mitigate agency costs. By the same notion, having a high creditor rights system (Cho et al., 2014) and a pyramidal ownership structure where agency issues are not expected to occur between management and financiers (Fosu, 2013), South Africa is assumed to have sufficient factors required mitigate the agency costs.

In summary, literature as discussed above indicates that company growth negatively correlates with debt leverage. What Lang et al. (1996) have discovered is that this negative relation depends on Tobin's q. Additionally, Lang et al. (1996) argued that the 'high growth' companies (those with a high Tobin's q) seem to grow with higher debt leverage in contrast to those with 'low growth' companies (those with a low Tobin's q). Also, Aivazian, Ge and Qiu (2005) supports the finding that the negative correlation between investment growth and debt leverage worsens with low growth companies. It is possible that phenomenon can be explained by the management skills of the companies' management. Management skills can play a factor in the pursuit of opportunities which effectively grow companies. Thus, it is a plausible argument that the companies which have maintained a high growth structure have maintained high share prices due to the recent successes in the markets which they operate in as indicated by their high Tobin's q. Also, the high share prices (also high Tobin's q) are due to the future growth perceived by the capital markets.

2.4.2. Company Performance

Park and Jang (2013) studied the inter-connections between capital structure, free cash flow, diversification and company performance. The scholars argued that debt leverage is an efficient way to reduce free cashflows and enhance firm performance as they show that debt leverage has a positive effect on the company‘s performance. The scholars further argue that, compared to equity, debt is cheaper because it is tax deductible. They further warn that an excessive use of debt creates a detrimental risk of bankruptcy. They argue through the trade-off theory that companies set an optimal target debt leverage determined by the trade-off between the benefits of tax deductions and the costs of debt.

Contrary to findings of Park and Jang (2013), Vo and Ellis (2016) argue through their study on Vietnamese companies that those with a lower debt leverage are likely to create value for shareholders. They further argue that this could be the result of many Vietnamese companies showing relatively higher levels of debt leverage. This may support Park and Jang's (2013) argument that excessive use of debt poses a detrimental risk of bankruptcy. From these arguments, it inferred that a highly leveraged company incurs much higher interest rates and thus erode the profitability required to increase the ROA/ROE. This argument by Vo and Ellis (2016) of a negative relationship between debt leverage and company performance is consistent with most of the literature on debt leverage and company growth discussed on 2.4.1 above.

Other scholars who support the premise of trade-off theory is that of Danis, Rettl, and Whited (2014). Danis, Rettl, and Whited (2014) argue that leverage and profitability can either be positively related or negatively related. They argued that there is a level at which the relationship can change for any particular company. They also referred to this level as the optimal debt leverage level. This optimal debt level, according to Danis et al. (2014), explains why the relationship between debt leverage and profitability is at other times negative and at other times positive. Their argument further supports the trade-off theory and arguments of other scholars relevant to this topic. From their study, they find a positive correlation exists between debt leverage and profitability for companies operating at the optimum debt leverage. Conversely, they find a negative correlation when companies are not operating at the optimum debt leverage.

In contrast, Dawar (2014) studied the interrelationships between agency theory in relation to debt leverage and company performance for publicly-listed Indian companies. Dawar (2014) illustrates that both short-term debt leverage and long-term debt leverage negatively predicts company performance. From the agency discussion, Dawar (2014) argues that separation of ownership and control in companies creates a conflict of interest between shareholders and managers. The scholar attributes this to managers who often

indulge in investing company's resources in projects that would complement their benefits as opposed to maximising the company's value. Similarly, the scholar further argues that managers resist giving up control of a company even if it would benefit the shareholders. As Park and Jang (2013) argued, higher debt leverage means a reduction in cashflow and as a result, the agency costs are reduced which, for example, can occur when management spends money on projects which do not increase company value.

On a similar study, Wahba (2014) argues, through evidence from Egyptian companies, that the managerial ownership moderates the relationship between the debt employed and the performance of the firm. For instance, the relationship is found, by Wahba (2014), to be negative in the presence of managerial ownership concentration where the relationship is found to be positive in the absence of managerial ownership concentration. This phenomenon, according to Wahba (2014), implies that optimal capital structure is the result of several factors, including but not limited to, roles, power and the stakes of internal and external actors.

Agency costs of debt leverage can have an impact on how debt leverage can impact performance (Fosu, 2013), and it is recognised that this could also have an impact on growth prospects of a company. For this reason, it is essential to understand this factor as it plays a role in how debt is effectively used to fund a company's prospective projects. Fosu (2013) adds the implications that the agency costs of debt can be extended to the conflict of interest between the company and its stakeholders, more specifically, the customers. He cites Titman (1984) that argues that leverage increases the company's risk of liquidation. Liquidation is argued, by Fosu (2013), to be costly to both the company's customers and creditors. As such, customers may be willing to trade with a highly leveraged company if its prices are reduced. It is thus inferred that the debt leverage and company performance or its growth is not a linear relationship. This point further supports Ardalan's (2017) criticism of the capital structure theory presented by Modigliani and Miller (1958). Ardalan's (2017) criticism is that the theory is unrealistic and contradictory to the mainstream academic finance.

South African companies' ownership structure is largely pyramidal, and a considerably large portion of those listed on the JSE are controlled by groups with a pyramidal ownership structure (Fosu, 2013). Fosu (2013) studied the relationship between debt leverage and performance of South African companies. The scholar's findings are that debt leverage does affect company performance positively. Furthermore, the scholar argues that in South African public companies, conflict of interest mostly plays a role between minority and majority shareholders rather than between managers and

shareholders or between creditors and shareholders as it can be found in the United States and the United Kingdom.

In summary, debt leverage has different effects on the performance of a company. This performance, as pointed out in section 1.2.2, is based on an investor based measure of performance. This measure disregards the macroeconomic impact which can be measured by company growth and job creation. Company growth and company performance are not mutually exclusive scenarios, hence it is evident that a growth of a company should mean growth of profits which drive the performance metrics (ROI and ROA). It is also possible to increase company market value even when the ROI and ROA are low. To increase market value would require an investment of in resources that would increase company size and should eventually increase company market value in proportion to the company size.

2.4.3. Agency Implications

Agency implications do play a significant role as shown in the literature. These agency factors can be mitigated by other exogenous factors such as legal structures of a country such as allowing high creditor rights (Cho et al., 2014) and tax system (Feld et al., 2013). As (Fosu, 2013) argues, the agency problem can be extended to customers where customers may prefer not to deal with highly debt leveraged companies. Also, the fact that free cashflow could be used by managers to invest in projects that would personally benefit the managers (Park & Jang, 2013) is a factor that affects the capital structure and debt leverage of a company. Wahba's (2014) study also shows that the presence or absence managerial ownership can affect the impact of debt leverage on performance.

In South Africa, the ownership structure of the public companies is mostly pyramidal (Fosu, 2013). As these pyramidal structures control most of the JSE listed companies, agency issues are experienced mostly between the minority and majority shareholders, rather than by between managers and financiers (Fosu, 2013). As most literature points to agency issues between managers and financiers, it is expected that the agency issues for South African companies to be homogeneous across all sectors. For this reason, the effect of agency issues has not been considered in this research project.

2.5. DEBT LEVERAGE AND JOB CREATION

In this section, the literature on debt leverage and job creation is discussed. For job creation, there seems to be a consensus that debt leverage can positively or negatively affect job creation. For instance, Voulgaris, Agiomirgianakis and Papadogonas (2014) studied job creation, job destruction of Greek manufacturing companies during an economic crisis. From their study, Voulgaris, Agiomirgianakis and Papadogonas (2014) argue that debt leverage, among other factors, correlates with job creation or destruction. They further argue that there are various factors which influence the ability of a company to create jobs. These factors include, amongst other factors, debt leverage, research and development (R&D), human capital and export activities (Voulgaris et al., 2014). They further add that modest debt leverage, in a company's capital structure, can grow a company and create jobs. They argue that debt leverage can reduce the weighted average cost of capital (WACC) of a company and maximise the company value.

Similarly, Giroud and Mueller (2016) studied debt leverage of United States' companies in relation to the employment losses and consumer demand during the great depression. From their study, Giroud and Mueller (2016) found that companies with higher debt leverage are predisposed to job destruction during times of shocks of local consumer demand. Furthermore, companies with a higher debt leverage at the onset of the Great Recession are more likely to close down during the consumer demand shocks (Giroud & Mueller, 2016). Hence, the closing of companies is inferred as a cause for loss of jobs. Accordingly, debt leverage could also impact employment, in this regard.

Simintzi, Vig, and Volpin (2015) conducted a study on the effect of employee protection legislation (EPL). In their study, they found that employee protection legislation has a negative effect on debt leverage. In other words, the debt leverage of companies tends to reduce following a reform that increases employee protection. They attribute this to their finding that an increase in employee protection increases the costs involved in restructuring. These higher costs of restructuring increase the costs of financial distress for a particular debt level (Simintzi et al., 2015). On the other hand, Schwab and Sala-i-Martín (2016) report that restrictive labour regulation as one of the most problematic factors for doing business in South Africa. From these points, it is inferred that employee protection legislation present in South Africa may have consequently lowered debt leverage levels in the country.

The above brings the discussion to Agrawal and Matsa's (2013) argument that reducing debt leverage reduces the risk of a company undergoing financial distress which could result in retrenchments. These scholars studied labour unemployment risk and how this relates to company financing decisions. Agrawal and Matsa (2013) further argue that the

reduction of debt leverage means that companies need to spend less for unemployment risk insurance. Moreover, they suggest that debt policy can be another alternative which can be utilised by companies to mitigate unemployment risk.

Adding to the points above, Akyol and Verwijmeren (2013) showed a strong correlation between salaries and debt leverage from their study of the relations between human capital costs, company debt leverage and unemployment rates. The scholars argued that the workforce in both the United States and the Netherlands economies, prefer to work in low leveraged companies. As such, they would demand a higher salary for highly debt leveraged companies in contrast with low debt leveraged companies (Akyol & Verwijmeren, 2013). Furthermore, they find that a negative correlation between salaries unemployment rates. From Akyol and Verwijmeren's (2013) work, it is inferred that since debt leverage positively correlates with salaries, and salaries negatively correlate with unemployment rates, debt leverage does negatively correlate with unemployment rates. This phenomenon could imply that debt leverage reduces jobs in the economy. This phenomenon is further supported by Bae, Kang and Wang's (2011) argument that a highly leveraged company is likely to increase cash flows, during financial distress, by cutting costs related to employee benefits. Bae et al. (2011) argued that high debt leverage incentivises a company to forego lucrative investment opportunities.

In summary, literature here illustrates that debt leverage negatively correlates with job creation. This is consistent with the literature which shows a negative correlation between debt leverage and company growth as the growth of companies is expected to create jobs. Voulgaris et al. (2014) suggested that job creation is possible with higher debt leverage should debt be used in the modest form. The ‘modest form’ described by Voulgaris supports the trade-off theory which suggests that at some point the risk of bankruptcy outweigh the tax benefits of debt (Myers, 1977). Other exogenous factors can also exacerbate the negative impact of debt leverage on jobs as consumer demand (Giroud & Mueller, 2016) and employee protection also play a factor (Simintzi et al., 2015).

The relevance of the above on South Africa is Schwab and Sala-i-Martín's (2016) report that illustrates restrictive labour regulations as one of the most problematic factors for doing business in doing business in South Africa. To add to this, Simintzi, Vig, and Volpin (2015) argued that an employee protection legislation tend to induce lower debt leverage levels. From these points, it is inferred that South African companies operate at sub-optimal debt leverage levels.

2.6. COMPANY SIZE EFFECT

Many scholars argue that company size as a significant predictor of company growth and job creation. For instance, Shyu (2013) studied the performance of Taiwanese group affiliated companies and how it relates to these companies' ownership structure and capital structure. Shyu (2013) found that size has a significant negative effect on performance. This phenomenon applies to companies that are affiliated with group companies. Shyu (2013) further argues that this demonstrates that small companies may benefit from being affiliated with group companies.

From market share's view, Kim (2016) studied how Korean group companies' debt leverage can lead to affiliated companies to lose market share for the period 1999 to 2006. Kim (2016) argues that it is more challenging for smaller companies to obtain external finance. This phenomenon suggests that the growth of smaller companies is accelerated more by equity that it is by debt even though bigger companies have higher access to debt. The financing behaviour among smaller and bigger companies does not follow the same order. This may imply that bigger companies are predisposed to follow pecking order theory whereas smaller companies are not.

On job creation, Voulgaris et al. (2014) found that small companies take the lead on job creation. Furthermore, they find that profitability negatively correlates with job creation. Also, they argue that the older companies are the leading job creators as they have more experience and also benefit from the reputation they have built for themselves. Similarly, Brown, Earle, and Morgulis (2015) studied job creation rates among small companies, large companies and young companies in the United States context. From their study, they determined that more jobs are most likely to be created by smaller companies than they are to be created by big companies. Furthermore, they found that job creation decreases with company age.

2.7. DEBT LEVERAGE AND COMPANY SURVIVAL

Chung, Na and Smith (2013) conducted their study on oil exploration companies to determine the effect that debt leverage policy has on the company's survival. By survival, the authors refer to when the company is operating at a risk of failure or a risk of acquisition. The authors find that while companies with high debt leverage in one year are likely to fail or be acquired in the next, the causes of failure are more fundamental and affect capital structure. They further argue that companies tend to increase their debt leverage, when faced with operating problems, with the purpose of increasing their cash requirements. In contrast, the authors argue that companies which are highly leveraged before being acquired, have increased their leverage as a result of attractive investment

opportunities available to them. Chung et al. concluded that there is little evidence that an optimal capital structure does exist. This phenomenon is contrary to the trade-off theory which suggests that at some point the benefits of debt leverage are overshadowed by the risk of undergoing a costly bankruptcy (Kraus & Litzenberger, 1973). The notion of the trade-off theory suggests that an optimal theory does in fact exist. This notion has also been supported by authors who found a positive correlation between debt leverage company growth (Huynh & Petrunia, 2010), job creation (Voulgaris et al., 2014) or company performance (Park & Jang, 2013).

2.8. SUMMARY OF THEORY AND LITERATURE REVIEW

In this section, the capital structure theory by (Modigliani & Miller, 1958) was discussed. The theory details that the purpose of debt-financing a company is to maximise profits and market value. The maximising of profits is, to a certain extent, related to growing a company and creating jobs. The trade theory was also covered in the literature which details that at some point the debt leverage can be beneficial up to a point where the tax benefits of debt financing are undermined by the high risk and costs that would be involved should a company undergo bankruptcy (Kraus & Litzenberger, 1973). Also, the impact of debt leverage on company growth, performance or job creation is dependent on the management of the company (Jensen & Meckling, 1976). This point speaks to the agency costs and can be mitigated by factors such as covenants (Billett et al., 2007) or creditor rights (Cho et al., 2014). The pecking order theory, which states that companies would prefer to finance their opportunities with debt before equity (Myers & Majluf, 1984), has been shown not to be consistent with the findings of other scholars.

Literature which was uncovered during this research project indicates that debt leverage does, indeed, predict company growth. However, this company growth has been measured, by scholars such as Lang et al. (1996), as an increase in investment and not revenue growth as has been measured in this research project. A study by Joliet and Muller (2013) shows that debt leverage does not necessarily change revenue growth, but for new expansions, the debt leverage intermittently increases as debt is employed to finance an expansion. This study contradicts Huynh and Petrunia (2010) who argue that debt leverage positively predicts company growth, in terms of revenue growth. Aivazian, Ge and Qiu (2005) illustrates that the relation between debt leverage and company growth can be either positive or negative depending on Tobin's q (less than one or greater than one) of a company.

Because most literature suggests that debt leverage predicts company growth, hypotheses, in this research project, were constructed so that the null hypotheses reflect literature. The null hypotheses were constructed to state that there is no prediction occurs

between debt leverage and company growth. On the other hand, the alternative hypotheses were constructed to state that debt leverage predicts company growth. Also, the impact of Tobin's q, on the relationship between debt leverage and company growth could, not be ignored. As a result, two sets of hypotheses had to be tested if a company's Tobin's q affected this relationship.

On job creation, most of the literature shows that debt leverage predicts company growth. Literature covered on job creation is mostly based on the relationship of debt leverage and job creation under specific macroeconomic events. For instance, Voulgaris, Agiomirgianakis and Papadogonas (2014) studied job creation and destruction of Greek manufacturing companies and how it correlates with debt leverage and other factors; the scholars' study was based on the context of an economic crisis. Similarly, Giroud and Mueller (2016) studied debt leverage of United States companies and its impact on job losses during the great depression. Company size is also illustrated by literature, as a significant determinant of company performance, company growth and also job creation. This is indicated by scholars such as Shyu (2013) as the scholar argued that smaller companies perform better whilst Voulgaris et al. (2014) argued that smaller companies tend to create jobs faster.

Because most literature suggests that debt leverage predicts job creation, hypotheses, in this research project, were also constructed so that the null hypotheses reflect these literature findings. The null hypotheses were constructed to state that debt leverage does not predict job creation. The alternative hypotheses were constructed to state that debt leverage does predict job creation. Following the fact that Tobin's q has shown significant impact on company growth studies, the same analogy of constructing hypotheses around Tobin's q was adopted for job creation hypotheses.

CHAPTER 3: HYPOTHESES

3.1. INTRODUCTION TO HYPOTHESIS

Recent literature which focused on debt leverage and company growth, in terms of revenue growth, was limited. This limitation also applies to literature which studied debt leverage and job creation (Giroud & Mueller, 2016; Voulgaris et al., 2014). Otherwise, factors which alter these relationships from a negative one to a positive one are factors such as the existence of covenants (Billett et al., 2007) and the level of Tobin's q (Lang et al., 1996). Conversely, scholars such as Mitani (2014) and Huynh Petrunia (2010) argue that debt leverage has a positive effect on company growth.

Because various scholars do not show a consensus about the impact that debt leverage has on company growth, hypotheses, in this research project, were constructed to reflect this. For this reason, two-tailed hypotheses were constructed where null hypotheses reflect no prediction of company growth or job creation by debt leverage. Conversely, the alternative hypotheses were constructed to reflect a prediction of company growth or job creation by debt leverage.

Also, the impact of Tobin's q on the relationship between debt leverage and company growth could not be ignored as illustrated by scholars such as Lang et al. (1996) and Billett et al. (2007). For example, Lang et al. (1996) and Billett et al. (2007) note that Tobin's q is a factor which affects the relation between debt leverage and company growth. Their studies indicate that companies with higher Tobin's q tend to have a positive relationship between company growth and debt leverage. As a result, two additional sets of two-tailed hypotheses were tested. The first set is based on Tobin's q of less than one while the second one is based on Tobin's q of greater than one.

Other factors whose literature have not been covered but expected to have an impact on the company growth or job creation included control variables such as companies' size, companies' age, advertising costs, research and development (R&D), liquidity and tangibility. These control variables were not the subject of the hypotheses but are discussed in the methodology section of this research project (see 0 below). The hypotheses for company growth and job creation are given in sections 3.2 and 3.3, respectively.

3.2. DEPENDENT VARIABLE: COMPANY GROWTH:

Where the symbol, ρ, denotes the coefficient of correlation between the independent variable (debt leverage variables) and the dependent variable (company growth), the hypotheses are given as follows:

HA: General Hypothesis (All ranges of Tobin's q):

- HA0: Debt leverage does not predict company growth:

$$\rho_{debt\ leverage\ vs\ company\ growth} = 0 \qquad (3\text{-}1)$$

- HA1: Debt leverage is a predictor of company growth

$$\rho_{debt\ leverage\ vs\ company\ growth} \neq 0 \qquad (3\text{-}2)$$

The null hypothesis, HA0, would not be rejected based on a p-value that is greater than 0.05

As shown by Lang et al. (1996) and Aivazian et al. (2005), Tobin's q can predict the predictability that debt leverage has on company growth. The second set of hypotheses was tested to determine this relationship for Tobin's q of below one and above one.

HB: Tobin's q of less than one (q < 1.0):

- HB0: Debt leverage does not predict company growth for companies of Tobin's q of less than one:

$$\rho_{debt\ leverage\ vs\ company\ growth} = 0 \qquad (3\text{-}3)$$

- HB1: Debt leverage is a predictor of company growth for companies of Tobin's q of less than one:

$$\rho_{debt\ leverage\ vs\ company\ growth} \neq 0 \qquad (3\text{-}4)$$

The null hypothesis, HB0, would not be rejected based on a p-value of higher than 0.05.

HC: Tobin's q of greater than one (q > 1.0):

- HC0: Debt leverage does not predict company growth for companies of Tobin's q of greater than one:

$$\rho_{debt\ leverage\ vs\ company\ growth} = 0 \qquad (3\text{-}5)$$

- HC1: Debt leverage is a positive predictor of company growth for companies of Tobin's q of greater than one:

$$\rho_{debt\ leverage\ vs\ company\ growth} \neq 0 \qquad (3\text{-}6)$$

The null hypothesis, HC0, would not be rejected based on a p-value of higher than 0.05.

3.3. DEPENDENT VARIABLE: JOB CREATION:

Where the symbol, ρ, denotes the coefficient of correlation between the independent variable (debt leverage variables) and the dependent variable (job creation), the hypotheses are given as follows:

HD: General Hypothesis (All ranges of Tobin's q):

- HD0: Debt leverage does not predict job creation:

$$\rho_{debt\ leverage\ vs\ job\ creation} = 0 \qquad (3\text{-}7)$$

- HD1: Debt leverage is a predictor of job creation

$$\rho_{debt\ leverage\ vs\ job\ creation} \neq 0 \qquad (3\text{-}8)$$

The null hypothesis, HD0, would not be rejected based on a p-value of higher than 0.05.

As illustrated by Lang et al. (1996) and Aivazian et al. (2005), Tobin's q can mediate the relationship between debt leverage and company growth. Likewise, Tobin's q was expected to mediate the relationship between debt leverage and job creation. The following set of hypotheses was tested to determine this relationship for companies of Tobin's q of less than one and above one:

HE: Tobin's q of less than one (q < 1.0):

- HE0: Debt leverage does not predict job creation for companies of Tobin's q of below one:

$$\rho_{debt\ leverage\ vs\ job\ creation} = 0 \qquad (3\text{-}9)$$

- HE1: Debt leverage is a predictor of job creation for companies of Tobin's q of below one:

$$\rho_{debt\ leverage\ vs\ job\ creation} \neq 0 \qquad (3\text{-}10)$$

The null hypothesis, HE0, would not be rejected based on a p-value of higher than 0.05

HF: Tobin's q of greater than one (q > 1.0):

- HF0: Debt leverage does not predict job creation for companies of Tobin's q of greater than one:

$$\rho_{debt\ leverage\ vs\ job\ creation} = 0 \qquad (3\text{-}11)$$

- HF1: Debt leverage is a predictor of job creation for companies of Tobin's q of greater than one:

$$\rho_{debt\ leverage\ vs\ job\ creation} \neq 0 \qquad (3\text{-}12)$$

The null hypothesis, HF0, would not be rejected based on a p-value of higher than 0.05

3.4. SUMMARY OF HYPOTHESIS

Most literature covered in this research project shows that debt leverage predicts company growth and job creation. Some literature also shows that this prediction can change to a positive one based on the level of Tobin's q (Aivazian et al., 2005; Lang et al., 1996) or other agency mitigating factors are employed (Billett et al., 2007). There are two groups of hypotheses presented, namely company growth hypotheses and job creation hypotheses which total six hypotheses. Each group of hypotheses concerns three categories namely, all companies irrespective of their Tobin's q, companies with Tobin's q less than one and companies with Tobin's q greater than one.

CHAPTER 4: RESEARCH METHODOLOGY AND DESIGN

4.1. INTRODUCTION TO RESEARCH METHODOLOGY AND DESIGN

In this section, the methodology and design of the research project are described. This research project was a causal study, based on quantitative data. Thus, secondary data was obtained from a public database 'McGregor BFA Research Domain' whose link is as follows: "https://uplib.idm.oclc.org/login?url=http://research.mcgregorbfa.com".

This research project was based on a 26 years period from 1992 to 2017 as was available from the database mentioned above. From this data, a lag of two years for the long-term debt leverage variable and a one year lag for the short-term debt leverage variable were allowed for, in the data analysis. The data was filtered to limit the data to companies that are in the manufacturing sector. Then, companies which did not meet the manufacturing sector criteria and which did not have other pertinent information required for the data analysis were omitted. As a result, 74 companies were included in this research project. Because the information as sourced needed to be translated into the variables required in this research project, calculations of these variables (which are mostly ratio based) were performed. Control variables were also included in the research project to compensate for company-related and industry-related effects which may have had a significant effect on the dependent variables studied.

A panel data regression methodology was chosen for this research project as inspired by authors such as Dawar (2014), Fosu (2013) and Wahba (2014). This methodology was chosen because the data sourced had cross-sectional and time-series properties. Free and open-source software, gretl, was chosen to perform the panel data regression required in this research project. For each category of hypotheses, namely, company growth hypotheses and job creation hypotheses, three hypotheses were tested. The three hypotheses tests included first, testing for all companies irrespective of their Tobin's q, second by testing for companies whose Tobin's q average during the period of study was less than one and third testing for companies whose Tobin's q average during the period of study was greater than one.

4.2. CHOICE OF METHODOLOGY

4.2.1. Panel Data Regression

This research project is a quantitative study where a panel data regression methodology was used to analyse archival, secondary data similar to Dawar's (2014) study. This research project aims to understand the causal nature of debt leverage to induce company growth and job creation. Dawar's (2014) methodology was adapted for this

research project to ensure that it fits the context of this research project. That was primarily because Dawar (2014) studied company performance as the dependent variable, which he defined as ROE and ROA. In contrast, the dependent variables which were studied, in this research project, were company growth and job creation.

To summarise the above, panel data regression was used to analyse data with cross-section and time series data (Gujarati, 2003). In this research project, the cross-section data was the company growth or job creation of any particular company in the research project. The time-series data were the variables which were included for every year considered in this research project. There were 74 companies that were analysed using panel data regression. The panel data analysis performed included three methods, namely, pooled data methodology, fixed effect methodology or random effect methodology (Gujarati, 2003) as described below:

Pooled Data Methodology, also Pooled Ordinary Least Squares (Pooled OLS)

A pooled data regression ignores the heterogeneity of the companies that are being analysed (Gujarati, 2003). Gujarati (2003) further states that the model assumes that the intercept and the coefficients of all the companies are the same. In other words, this form of analysis assumes that all data for all companies can be analysed as if they belong to the same company.

Fixed Effect Methodology

The fixed effect methodology allows for the individuality of each company as it allows the intercept of each company to vary and that it is time-invariant (Gujarati, 2003). However, this methodology is based on the assumption that coefficients of the independent variables are constant across all companies in our study (Dawar, 2014).

Random Effect Methodology

On the contrary, random effects methodology is the opposite of the fixed effect methodology in theory; it assumes that correlation does not exist between variables and therefore random effects are applied when conducting the regression (Dawar, 2014). Also, random effects methodology ignores the need for generating dummy variables and uses a disturbance term together with the error term (Dawar, 2014).

Hausmann Specification Test

The choice between the Fixed Effect Method and the Random Effect Method is based on the Hausman test (Gujarati, 2003). The Hausman's test statistic has an asymptotic χ^2 distribution. From this, the Hausmann test statistic was used to reject or accept the null hypothesis as follows (Gujarati, 2003):

- H0: The random fixed-effect method and fixed effect method do not significantly differ
- H1: The random fixed-effect method and fixed effect method do significantly differ

The null hypothesis of the test deduced that the fixed effect and the random effect regressions do not differ significantly, and therefore the fixed effect method would apply (Gujarati, 2003). The random effect model would be applied when the null hypothesis would be rejected (Gujarati, 2003).

Breusch-Pagan test statistic:

To test if the validity of the Pooled OLS model, the Breusch and Pagan (1979) test for heteroscedasticity was applied. This test uses the Lagrangian Multiplier (LM) test framework to determine the validity of the Pooled OLS model in accordance with the following hypothesis:

- H0: The Pooled OLS model suffices against the Random Effects model
- H1: The Random Effects model suffices against the Pooled OLS model

Joint significance of differing group means:

This test was conducted to determine if the data is fit for the Pooled OLS model which assumes that the intercepts of the cross-sectional units are sufficient in comparison to the Fixed Effect Model (Black, 2012), which assumes that every cross-sectional unit has a unique intercept. The test conducted using the F-Test statistic based on a p-value of 0.05 (Black, 2012). The choice between the two models was determined in accordance with the following hypothesis:

- H0: The Pooled OLS model suffices against the Fixed Effects model
- H1: The Fixed Effects model suffices against the Pooled OLS model

4.2.2. Software Choice

The software choice for analysing the data was *Gnu Regression, Econometrics and Time-series Library* (gretl) which was obtained from http://gretl.sourceforge.net/. This is free and open-source software. It was chosen for its ability to perform unbalanced panel data regression analysis without incurring direct costs of purchase as it the software is available free of charge.

4.2.3. Type Of Panel

Except for the results' panel of Tobin's q less than one, the panels analysed were short panels because the time periods were less than the number of companies analysed (Cameron, 2007). Oppositely, the panel of results of Tobin's q that is greater than one, these were long panels; the same applies to hypotheses pertaining to all companies irrespective of their average Tobin's. The panel of results for Tobin's q less than one were short panel as the time periods were more than the number of companies analysed (Cameron, 2007). Additionally, all the data analysed was unbalanced data as the time periods, for any company, was not be available for the entire period of study (Gujarati, 2003); this is because not every company was listed on the JSE during the period of study.

4.3. POPULATION

The entire manufacturing population of the JSE listed companies was considered. Only the companies, whose required data is not accessible, were eliminated from the study. To avoid survivorship bias, companies which had been delisted were also included in this research project. For context, some of the manufacturing companies in the Top 40 of the JSE include companies such as Sasol, Anglo American Plc, Glencore and Mondi Plc (BusinessTech, 2016).

4.4. UNIT OF ANALYSIS

The unit of analysis is a company listed on the JSE from the manufacturing, mining or construction sectors

4.5. SAMPLING METHOD AND SIZE

A sum of 74 companies was included in this study. Also, each company would have been listed for at least three years during the period of observation. The sampling was based on the following criteria:

- The company was in the manufacturing, mining or construction sectors.
- Each company that was included in the regression data analysis had the required data for at least three consecutive time periods during the period which was studied. A simultaneity bias was mitigated by lagging the debt leverage variables as follows: two year lag for the long-term debt leverage and one year for the short-term debt leverage. This is similar to the method that Fosu (2013) utilised to handle data.

4.6. MEASUREMENT INSTRUMENT

The measuring instrument on this research project was not applicable as secondary data was used in this archival study. Consequently, no specific measurement instrument was created to collect data for this research project.

4.7. DATA GATHERING PROCESS

Secondary Data was gathered from a public archival system: McGregor BFA Research Domain (https://uplib.idm.oclc.org/login?url=http://research.mcgregorbfa.com). The data were exported to a Microsoft Office Excel format (xlsx). From then, the downloaded data was sorted and filtered to limit the sample to the manufacturing companies only. From this point, company data which does not have the relevant data was eliminated from the study. The companies that were considered in the sampling process had the following information reported for at least three consecutive years between the periods of study:

a) Each company to fall in the manufacturing sector
b) Revenue
c) Number of employees
d) Total Asset value
e) Total Liability value
f) Share Price
g) Number of issued shares
h) Short-term debt
i) Total Operating Expenses
j) Research and development (R&D)

When available, the company year of registration, which was used as a year of inception, was obtained from the respective companies' websites, Google website (https://www.google.com) or Mbendi website (https://www.mbendi.com). The data was then sanitised in order to remain with the essential data required for data analysis as described in the following section.

4.8. ANALYSIS APPROACH

A panel data regression analysis was conducted to analyse the secondary data obtained during this research project. Data analysis using panel data regression, as described in 4.2.1 above, was conducted for each of the two dependent variables: company growth and job creation. Before the regression, data which lacked company growth data and long-term debt leverage variables was removed. Also, companies which did not have at least three years of consecutive data were removed.

4.8.1. Dependent Variables

Two dependent variables were studied to determine their relationship with debt leverage variables. The first depended variable studied is the revenue growth rate of a company; this is also referred to as company growth. The logarithmic value of annual revenue growth rate, in the research project, was used for estimating company growth. Company growth for the year n was calculated according to the following formula:

$$\boldsymbol{CG}(Annual\ company\ growth\ rate\ of\ year\ n) = lin\left(\frac{Revenue_n}{Revenue_{n-1}}\right) \qquad (4\text{-}1)$$

Revenue in the above formula was adjusted for inflation in a similar manner that Lang et al. (1996) adjusted for the inflation. The consumer price index (CPI) was used to allow for inflation. The information for the CPI figures was obtained from a public website: inflation.eu via the following direct link: http://www.inflation.eu/inflation-rates/south-africa/historic-inflation/cpi-inflation-south-africa.aspx.

The second variable was the company annual employment growth rate (referred to as 'job creation') for the year in question (year n). This was calculated using a logarithmic value of the increase in the number of employees, as follows:

$$\boldsymbol{JC}\ (Job\ creation\ rate\ of\ year\ n) = lin\left(\frac{No.of\ employees_n}{No.of\ employees_{n-1}}\right) \qquad (4\text{-}2)$$

4.8.2. Independent Variables

Debt Leverage Variables

The primary variables which were regressed are the debt leverage variables. These are the debt to equity ratio and the short-term debt to total assets ratio as given below.

- **LTD:** Long-term debt to total assets ratio (Dawar, 2014). This was the primary debt leverage variable analysed for this research project and a lagging effect of two years was allowed for this debt leverage variable. This was calculated as the total debt divided by the book value of the total long-term assets as follows:

$$LTD = \frac{Total\ debt}{Book\ value\ of\ total\ long\ term\ assets} \quad (4\text{-}3)$$

- **STD:** Short-term debt to total assets ratio (Dawar, 2014). This was the second debt leverage variable which was analysed for this research project and a lagging effect of a one year was allowed for this debt leverage variable. This was calculated by dividing short-term debt by the book value of long-term assets at the end of the financial year as follows:

$$STD = \frac{Short\ term\ debt}{Book\ value\ of\ total\ aong\ term\ assets} \quad (4\text{-}4)$$

Control Variables

In the same manner that Dawar (2014) accounted for company-related or sector-related factors by regressing specific variables, the same method of allowing for control variables was adhered to in this research project. The variables that were chosen as control variables include company size, company age, advertising expenses as a ratio of total expenses and liquidity.

- **Size:** To control for the variability associated with the company size, the logarithmic value of the total assets was used. The decision to control for this variable was based on prior research which shows that company size can have an impact on its performance as a bigger company can have easier access to markets and ability to diversify (Dawar, 2014). The total assets, too, were adjusted for inflation using the CPI index. This was calculated as follows:

$$Size\ of\ year\ n = lin\left(\frac{Total\ Assets\ of\ n + Total\ Assets\ of\ n-1}{2}\right) \quad (4\text{-}5)$$

- **Age:** To control for company age, calculated as the number of years of each company since its inception until the year of observation is used. The decision to incorporate this variable is based on the fact that older companies have more experience compared to the new companies and can mitigate risk due to this (Dawar, 2014). The age of company in years. This was calculated as follows:

$$Age = Year\ of\ observation - Year\ of\ inception + 1 \quad (4\text{-}6)$$

- **RND:** This variable is the ratio of the research and development (R&D) costs to the total operating expenses; this variable was included to control for the effect that R&D costs can have on company growth over time. Research and development, according to Shyu (2013), facilitates growth in profits which increases company value and shareholder wealth. This variable was calculated as follows:

$$RND = \frac{Research\ and\ Development\ Costs}{Total\ Operating\ Expenses} \quad (4\text{-}7)$$

- **q:** Tobin's q which was calculated as the market value of the of the company's assets divided by the total book value of the assets (Tobin & Brainard, 1976). This variable was included to allow for factors which impact the market price of a company. A high q ratio can be associated with a company that is perceived, by the market, as a company that has disproportionately high growth opportunities relative to the rest of the market (Tobin & Brainard, 1976). This means that the company can easily raise finance in order to take advantage of the growth opportunities (Tobin & Brainard, 1976). This variable was calculated as follows:

$$q\ of\ year\ n = \frac{(Market\ Value\ of\ assets\ of\ n) + (Market\ Value\ of\ assets\ of\ n-1)}{(Total\ book\ value\ of\ assets\ of\ n) + (Total\ book\ value\ of\ assets\ of\ n-1)} \quad (4\text{-}8)$$

  - *Market Value* equals *'Number of Shares'* x *'Average share price'* + *'Total Liabilities'*

- **Liq:** This is the liquidity variable and was measured by dividing the cash by the current liabilities. This control variable was included to control for industry related, company-specific and business cycle factors (Dawar, 2014). This was calculated as follows:

$$LIQ\ of\ year\ n = \frac{(Cash\ of\ n) + (Cash\ of\ n-1)}{(Current\ Liabilities\ of\ n) + (Current\ Liabilities\ of\ n-1)} \quad (4\text{-}9)$$

- **Tang:** This is the tangibility variable and is measured by dividing the fixed assets by the total assets. Dawar (2014) argued that tangible assets enhance a company's attractive level of collateral. Dawar further argued that companies with a high level of tangibility tend to attract more investment opportunities in the long run. Tangibility was calculated as follows:

$$Tang\ for\ year\ n = \frac{(Fixed\ Assets\ of\ n) + (Fixed\ Assets\ of\ n-1)}{(Total\ Assets\ of\ n) + (Total\ Assets\ of\ n-1)} \quad (4\text{-}10)$$

4.8.3. Empirical Model

The following regression formulae which were adapted from those of Dawar (2014), with the variable, $\mu_{i,t}$, being the stochastic error were used for the analysis of the panel data:

$$CG_{it} = \beta_{0,i} + \beta_1 \times LTD_{i,t} + \beta_2 \times STD_{i,t} + \beta_3 \times Age_{i,t} + \beta_4 \times Size_{i,t} + \beta_5 \times q_{i,t} + \beta_6 \times Liq_{i,t} + \beta_7 \times Tang_{i,t} + \beta_8 \times RND + \mu_{i,t} \quad (4\text{-}11)$$

$$JC_{it} = \beta_{0,i} + \beta_1 \times LTD_{i,t} + \beta_2 \times STD_{i,t} + \beta_3 \times Age_{i,t} + \beta_4 \times Size_{i,t} + \beta_5 \times q_{i,t} + \beta_6 \times Liq_{i,t} + \beta_7 \times Tang_{i,t} + \beta_8 \times RND + \mu_{i,t} \quad (4\text{-}12)$$

In the above formulae, *i* and *t* denote the company and the time period, respectively. The variables are explained in section 4.4 above. The betas (β_1 to β_8) in the above formula are the coefficients which were e computed with the gretl statistics software; β_0, in the above formulae, is the intercept. For the hypotheses (i.e. HB, HC, HE and HF). which are regressed based on the average Tobin's q, the formulae above were modified by excluding removing the fifth variable, $q_{i,t}$ *above*, as follows:

$$CG_{it} = \beta_{0,i} + \beta_1 \times LTD_{i,t} + \beta_2 \times STD_{i,t} + \beta_3 \times Age_{i,t} + \beta_4 \times Size_{i,t} + \beta_6 \times Liq_{i,t} + \beta_7 \times Tang_{i,t} + \beta_8 \times RND + \mu_{i,t} \quad (4\text{-}13)$$

$$JC_{it} = \beta_{0,i} + \beta_1 \times LTD_{i,t} + \beta_2 \times STD_{i,t} + \beta_3 \times Age_{i,t} + \beta_4 \times Size_{i,t} + \beta_6 \times Liq_{i,t} + \beta_7 \times Tang_{i,t} + \beta_8 \times RND + \mu_{i,t} \quad (4\text{-}14)$$

4.9. LIMITATIONS

The agency costs were not part of the scope of the research as Fosu (2013) has highlighted that groups mostly control South African companies; this is because there was not sufficient data to enable the computation of the statistical effect of various ownership structures. Also, the research project was limited to the manufacturing companies. Moreover, the study was limited to a 26 year period. On the other hand, production flexibilities did not form part of the scope of this research project. Additionally, the impact of the companies' different year-ends was assumed to be negligible.

The control variable relating to advertising was not controlled for due to the lack of data from the database which the secondary data was obtained. This variable would have included the ratio of the advertising, marketing and distribution expenses to the total operating expenses; this variable was included to control for factors that relate to a specific industry and specific company (Dawar, 2014). Advertising was expected to drive sales and contribute to higher rates of company growth.

The McGregor Database was used to source the companies and to classify the companies according to the Standard Industrial Classification (SIC) descriptions which have the following keywords in their descriptions: 'manufacturing', 'mining' and 'construction'. Also, Companies which did not have SIC descriptions and where it could not be determined if they were manufacturing related were not included.

4.10. SUMMARY TO THE RESEARCH METHODOLOGY

In this section, the research method was discussed. As the data analysed in this project was time-series cross-sectional data, a panel data regression methodology was used. The data sourced from the McGregor BFA Research Domain included, for each company manufacturing, revenue, number of employees, total asset value, total liability value, share price, number of issued shares, short-term debt, total operating expenses and research and development expenses. Company registration year was obtained manually from the respective company's websites, google.com or Mbendi.com. For the data analysis, there were three models which were used including the pooled data model, fixed effects model and the random effects model. The choice of which method to use was based on three tests. These tests included the Hausmann specification test which was used to test which regression model was appropriate between the Fixed Effects Model and the Random Effects Model. The Breusch-Pagan test was used to choose between the Pooled OLS Model and the Random Effects Model. The Joint significance test between means was used to choose between the Fixed Effects Model and the Pooled OLS model.

CHAPTER 5: RESULTS

5.1. INTRODUCTION TO RESULTS

In this chapter, results are presented, and where applicable, the null hypothesis was rejected on a p-value of less than 0.05. This chapter presents the descriptive statistics followed by the correlation matrix. The subsequent sections relate directly to the hypotheses as presented in the hypotheses chapter (see Chapter 3 above). These subsequent sections include the presentation of the results of debt leverage versus company growth hypotheses. Following this, a presentation of the results of debt leverage versus job creation hypotheses succeeds.

5.2. DESCRIPTIVE STATISTICS

5.2.1. General: All Tobin's q ranges

The following table shows the descriptive statistics for the companies which were included in the study. These descriptive statistics include a detailed level to give insight all companies irrespective of their level of Tobin's q.

Table 5-1: Descriptive Statistics: All ranges of Tobin's q

Summary Statistics, using the observations 1:01 - 90:26
(missing values were skipped)

Variable	Mean	Median	Minimum	Maximum
CG	0.036945	0.040335	-12.072	7.4921
JC	-0.0072876	0.0000	-5.2319	3.2394
LTD	0.14433	0.10492	0.00013056	0.90229
STD	0.072590	0.040808	0.0000	0.95023
Age	58.192	51.000	1.0000	166.00
Size	6.1634	6.2375	3.4482	9.8195
Q	2.2934	1.3169	0.16679	69.296
Liq	0.41961	0.27561	0.0000	6.6914
Tang	0.28323	0.26242	0.0000	0.97981
RND	0.0057837	0.0000	-0.00015133	0.69450

Variable	Std. Dev.	C.V.	Skewness	Ex. kurtosis
CG	0.60690	16.427	-5.8780	188.05
JC	0.44521	61.091	-2.6358	47.113
LTD	0.13964	0.96751	1.7183	3.4659
STD	0.095887	1.3209	3.1034	14.989
Age	38.010	0.65318	0.56785	-0.40145
Size	0.85404	0.13857	-0.27051	0.65669
Q	4.1009	1.7881	8.1102	94.210
Liq	0.53634	1.2782	4.7643	35.757
Tang	0.20310	0.71708	0.51065	-0.29322
RND	0.040417	6.9881	13.822	207.08

Variable	5% Perc.	95% Perc.	IQ range	Missing obs.
CG	-0.37586	0.48973	0.22935	1347
JC	-0.34919	0.34460	0.14329	1347
LTD	0.0043022	0.44123	0.14650	1437
STD	0.00072879	0.25502	0.083620	1347
Age	7.0000	122.05	56.000	1422
Size	4.6019	7.3968	1.0373	1347
Q	0.55861	6.4028	0.98959	1257
Liq	0.026193	1.2328	0.36421	1347
Tang	0.0012269	0.62781	0.32328	1347
RND	0.0000	0.017944	0.0017504	1257

5.2.2. Tobin's q < 1.0

The following table shows the descriptive statistics for the companies which were included in the study which demonstrated an average Tobin's q of less than one.

Table 5-2: Descriptive Statistics: Tobin's q less than one

Summary Statistics, using the observations 1:01 - 19:26
(missing values were skipped)

Variable	Mean	Median	Minimum	Maximum
CG	-0.029797	0.0058420	-12.072	4.6940
JC	-0.042372	-0.012324	-1.7721	0.89451
LTD	0.12929	0.11333	0.0022222	0.67543
STD	0.10232	0.047253	0.0000	0.70387
Age	52.206	55.000	9.0000	117.00
Size	5.7768	5.8599	3.8445	9.8195
Liq	0.28918	0.14980	0.0000	2.0345
Tang	0.36281	0.32805	0.0011880	0.97981
RND	0.021851	0.0000	0.0000	0.69450
	Std. Dev.	**C.V.**	**Skewness**	**Ex. kurtosis**
CG	1.1750	39.434	-7.5425	82.740
JC	0.23906	5.6419	-2.5536	21.009
LTD	0.12774	0.98802	1.7879	3.9758
STD	0.13340	1.3038	2.0978	5.1344
Age	32.049	0.61390	0.33170	-0.96054
Size	1.1613	0.20103	0.86178	1.3811
Liq	0.38156	1.3195	2.1386	4.9630
Tang	0.25813	0.71146	0.50857	-0.59360
RND	0.10483	4.7973	5.1834	26.898
	5% Perc.	**95% Perc.**	**IQ range**	**Missing obs.**
CG	-0.47004	0.52659	0.25439	360
JC	-0.41490	0.24148	0.12347	360
LTD	0.0039413	0.45019	0.15551	379
STD	0.00013149	0.37079	0.14105	360
Age	11.000	111.60	52.000	387
Size	4.0159	8.1157	1.2614	360
Liq	0.0027662	1.1893	0.29859	360
Tang	0.014096	0.80819	0.38015	360
RND	0.0000	0.088373	0.0000	341

5.2.3. Tobin's q > 1.0

The following table shows the descriptive statistics for the companies which were included in the study which demonstrated an average Tobin's q of greater than one.

Table 5-3: Descriptive Statistics: Tobin's q greater than one

Summary Statistics, using the observations 1:01 - 71:23
(missing values were skipped)

Variable	Mean	Median	Minimum	Maximum
CG	0.047357	0.045616	-3.4254	7.4921
JC	-0.0018147	0.0041795	-5.2319	3.2394
LTD	0.14652	0.10323	0.00013056	0.90229
STD	0.067953	0.039859	0.0000	0.95023
Age	58.982	50.000	1.0000	166.00
Size	6.2238	6.3103	3.4482	7.9617
Liq	0.43996	0.29953	0.0000	6.6914
Tang	0.27081	0.25407	0.0000	0.89517
RND	0.0031403	0.0000	-0.00015133	0.084376
	Std. Dev.	**C.V.**	**Skewness**	**Ex. kurtosis**
CG	0.45939	9.7007	4.2051	92.904
JC	0.46913	258.52	-2.5785	43.855
LTD	0.14123	0.96389	1.7041	3.3776
STD	0.087819	1.2924	3.3239	18.792
Age	38.676	0.65573	0.56660	-0.42666
Size	0.77927	0.12521	-0.55346	0.26386
Liq	0.55403	1.2593	4.8336	35.444
Tang	0.19031	0.70275	0.34822	-0.76196
RND	0.0074219	2.3634	4.2823	28.455
	5% Perc.	**95% Perc.**	**IQ range**	**Missing obs.**
CG	-0.35381	0.48823	0.22714	774
JC	-0.33183	0.35667	0.14909	774
LTD	0.0045106	0.43857	0.14517	845
STD	0.00084431	0.23734	0.080521	774
Age	7.0000	124.00	56.000	822
Size	4.7248	7.3542	1.0386	774
Liq	0.039595	1.2740	0.35658	774
Tang	3.6293e-005	0.58895	0.31349	774
RND	0.0000	0.018035	0.0022036	703

5.3. CORRELATION MATRICES

5.3.1. General: All Tobin's q ranges

The table below demonstrates a correlation matrix for all companies which were included in the study. This correlation matrix includes the coefficients of correlation which give a general insight of relationships between various variables for companies irrespective of their level of Tobin's q.

Table 5-4: Correlation Matrix: All Tobin's q ranges

Correlation coefficients, using the observations 1:06 - 89:25
(missing values were skipped)
5% critical value (two-tailed) = 0.0408 for n = 2308

CG	JC	LTD	STD	Age	
1.0000	0.3786	-0.0347	-0.0071	-0.0509	**CG**
	1.0000	-0.0006	-0.0287	-0.0078	**JC**
		1.0000	0.1258	0.2128	**LTD**
			1.0000	0.1638	**STD**
				1.0000	**Age**

Size	Q	Liq	Tang	RND	
-0.1097	-0.0685	0.0321	-0.0236	0.0102	**CG**
-0.0416	-0.0225	0.0050	-0.0054	0.0054	**JC**
0.1163	0.2985	-0.0590	0.1295	-0.0522	**LTD**
-0.0075	0.0167	-0.2233	-0.0368	0.2663	**STD**
0.0931	0.2355	-0.0489	0.1257	-0.0704	**Age**
1.0000	0.0853	0.0652	0.1761	0.0369	**Size**
	1.0000	0.0101	0.0567	-0.0278	**Q**
		1.0000	-0.0405	-0.0125	**Liq**
			1.0000	-0.0282	**Tang**
				1.0000	**RND**

5.3.2. Correlation Matrix for Tobin's q < 1.0

The table below demonstrates a correlation matrix for companies which demonstrated an average Tobin's q of less than one. This correlation matrix includes the coefficients of correlation which give a general insight of relationships between various variables for companies of an average Tobin's q of less than one.

Table 5-5: Correlation Matrix: Tobin's q less than one

Correlation coefficients, using the observations 1:20 - 19:14
(missing values were skipped)
5% critical value (two-tailed) = 0.0911 for n = 463

CG	JC	LTD	STD	Age	
1.0000	0.1049	0.0352	-0.0211	-0.0708	**CG**
	1.0000	0.1391	0.0225	-0.0936	**JC**
		1.0000	0.0050	-0.2876	**LTD**
			1.0000	-0.0302	**STD**
				1.0000	**Age**

Size	Liq	Tang	RND	
-0.0971	0.0473	-0.0605	0.0117	**CG**
0.0898	0.0739	-0.0175	0.0217	**JC**
0.1258	-0.0429	0.1374	-0.0858	**LTD**
0.1384	-0.2346	-0.2178	0.4933	**STD**
0.0700	-0.0309	0.3167	-0.2401	**Age**
1.0000	0.0907	0.4299	0.0879	**Size**
	1.0000	0.0294	0.0400	**Liq**
		1.0000	-0.1222	**Tang**
			1.0000	**RND**

5.3.3. Correlation Matrix for Tobin's q > 1.0

The table below demonstrates a correlation matrix for companies which demonstrated an average Tobin's q of greater than one. This correlation matrix includes the coefficients of correlation which give a general insight of relationships between various variables for companies of an average Tobin's q of greater than one.

Table 5-6: Correlation Matrix: Tobin's q greater than one

Correlation coefficients, using the observations 1:03 - 70:22
(missing values were skipped)
5% critical value (two-tailed) = 0.0489 for n = 1607

CG	JC	LTD	STD	Age	
1.0000	0.5309	-0.0828	0.0102	-0.0678	**CG**
	1.0000	-0.0126	-0.0322	-0.0047	**JC**
		1.0000	0.1596	0.2615	**LTD**
			1.0000	0.2163	**STD**
				1.0000	**Age**

Size	Liq	Tang	RND	
-0.1413	0.0283	0.0055	0.0685	**CG**
-0.0707	-0.0030	0.0023	0.0351	**JC**
0.1107	-0.0655	0.1383	-0.0920	**LTD**
-0.0283	-0.2207	-0.0078	0.0283	**STD**
0.0894	-0.0574	0.1076	0.0509	**Age**
1.0000	0.0440	0.1416	0.1376	**Size**
	1.0000	-0.0350	-0.0404	**Liq**
		1.0000	0.0198	**Tang**
			1.0000	**RND**

5.4. COMPANY GROWTH

In this section, the results associated with hypotheses regarding debt leverage and company growth are presented. The results are presented under three categories, namely, all companies irrespective of the Tobin's q level, then companies with an average Tobin's q of less than one and, finally, companies with an average Tobin's q of greater than one. The hypotheses are summarised as follows:

HA: General Hypothesis (All ranges of Tobin's q):

- HA0: Debt leverage does not predict company growth.
- HA1: Debt leverage is a predictor of company growth.

HB: Tobin's q of less than one (q < 1.0):

- HB0: Debt leverage does not predict company growth for companies of Tobin's q of less than one.
- HB1: Debt leverage is a positive predictor of company growth for companies of Tobin's q of less than one.

HC: Tobin's q of greater than one (q > 1.0):

- HC0: Debt leverage does not predict company growth for companies of Tobin's q of greater than one.
- HC1: Debt leverage is a predictor of company growth for companies of Tobin's q of greater than one.

In each hypothesis, above, the null hypothesis would not be rejected on a p-value of greater than 0.05. To test the hypotheses, three regression models were applied. These were a Pooled OLS, Fixed Effects and the Random Effects. To choose the best model, the Hausman test, Breusch-Pagan test and the Joint Significance test were used to determine the most accurate model for the data analysed.

5.4.1. HA: General Hypothesis (All ranges of Tobin's q)

The following tests were conducted to determine the best suitable regression model, as follows:

Hausman test statistic:

- H = 34.1015 with p-value = prob(chi-square(8) > 34.1015) = 3.89415e-005

(A low p-value counts against the null hypothesis that the random effects model is consistent, in favour of the fixed effects model.)

Joint significance of differing group means:

- F(73, 690) = 0.975711 with p-value 0.537315

(A low p-value counts against the null hypothesis that the pooled OLS model is adequate, in favour of the fixed effects alternative.)

Regression Results:

The Pooled OLS results were the most accurate results for this as shown below. From the results, it was evident that there is no correlation between the Company Growth and the debt leverage variables. The null hypothesis (HA0) was not rejected.

Table 5-7: Company Growth Regression Results: All Tobin's q ranges

```
Model 1: Pooled OLS, using 772 observations,
Included 74 cross-sectional units,
Time-series length: minimum 1, maximum 21
Dependent variable: CG
```

	coefficient	std. error	t-ratio	p-value	
const	0.516061	0.171673	3.006	0.0027	***
LTD	−0.00570609	0.154223	−0.03700	0.9705	
STD	0.0841763	0.242813	0.3467	0.7289	
Age	−0.000232487	0.000572797	−0.4059	0.6849	
Size	−0.0759897	0.0271078	−2.803	0.0052	***
Q	−0.00421737	0.00534327	−0.7893	0.4302	
Liq	0.0327157	0.0414585	0.7891	0.4303	
Tang	−0.0176004	0.104776	−0.1680	0.8666	
RND	0.0925033	0.645054	0.1434	0.8860	

Mean dependent var	0.026950	S.D. dependent var	0.564005
Sum squared resid	241.8076	S.E. of regression	0.562954
R-squared	0.014062	Adjusted R-squared	0.003724
F(8, 763)	1.360267	P-value(F)	0.210482
Log-likelihood	−647.3355	Akaike criterion	1312.671
Schwarz criterion	1354.512	Hannan-Quinn	1328.771
rho	0.116798	Durbin-Watson	1.477721

```
Excluding the constant, p-value was highest for variable 5 (LTD)
```

5.4.2. HB: Tobin's q of less than one (q < 1.0):

The following tests were conducted to determine the best suitable regression model, as follows:

Hausman test statistic:

- H = 36.1338 with p-value = prob(chi-square(7) > 36.1338) = 6.83978e-006

(A low p-value counts against the null hypothesis that the random effects model is consistent, in favour of the fixed effects model.)

Joint significance of differing group means:

- F(13, 58) = 2.06155 with p-value 0.0310061

(A low p-value counts against the null hypothesis that the pooled OLS model is adequate, in favour of the fixed effects alternative.)

Regression Results:

The Fixed Effects Model was the most accurate model for our regression whose results are shown below.

Table 5-8: Company Growth Regression Results: Tobin's q less than one

```
Diagnostics: using n = 14 cross-sectional units, 79 observations
Time-series length: minimum 1, maximum 17
Dependent variable: CG
Fixed effects estimator allows for differing intercepts by cross-
sectional unit
            coefficient   std. error   t-ratio    p-value
  ---------------------------------------------------------
  const       19.1415      3.84396      4.980     6.05e-06 ***
  LTD          0.115017    1.55654      0.07389   0.9414
  STD          4.78416     2.19211      2.182     0.0331   **
  Age         -0.162228    0.0464193   -3.495     0.0009   ***
  Size        -1.31566     0.285827    -4.603     2.32e-05 ***
  Liq          0.751960    0.577605     1.302     0.1981
  Tang        -8.78320     2.17621     -4.036     0.0002   ***
  RND        -10.7692      7.29018     -1.477     0.1450
Residual variance: 118.262/(79 - 21) = 2.03901
```

From these results, it was evident that short-term debt leverage variable can predict company growth (based on a p-value of 0.05). The long-term debt leverage cannot predict

growth. Moreover, age, size and tangibility seem to be negatively correlated with company growth of companies with Tobin's q of less than one. Because the long-term debt leverage variable (LTD) is not statistically significant (p-value is higher than 0.05), the null hypothesis was not rejected.

5.4.3. HC: Tobin's q of greater than one (q > 1.0)

The following tests were conducted to determine the best suitable regression model, as follows:

Hausman test statistic:

The Hausman test statistic was conducted to deduce whether the Fixed Effects Model is preferred to the Random Effects Model. From Hausman test below, it was evident that Fixed Effects Model is preferred, based on a p-value that is lower than 0.05:

- H = 19.5092 with p-value = prob(chi-square(7) > 19.5092) = 0.00673336

(A low p-value counts against the null hypothesis that the random effects model is consistent, in favour of the fixed effects model.)

Joint significance of differing group means:

A joint significance of differing group means was tested for which indicated that the Fixed Effects Model is more accurate for the data regressed as the p-value is less than 0.05

- F(59, 626) = 2.34338 with p-value 2.56404e-007

(A low p-value counts against the null hypothesis that the pooled OLS model is adequate, in favour of the fixed effects alternative.)

Regression Results:

The Fixed Effects Model was the most accurate model for our regression whose results are shown below. From these results, it was evident that debt leverage does not predict company growth for companies of Tobin's q of greater than one. The only significant predictor is age, which shows a negative correlation with company growth. This makes sense that bigger companies grow slower than smaller ones. The null hypothesis (HC0) was not rejected.

Table 5-9: Company Growth Regression Results: Tobin's q greater than one

```
Diagnostics: using n = 60 cross-sectional units, 693 observations
Included 60 cross-sectional units
Time-series length: minimum 1, maximum 21
Dependent variable: CG
Fixed effects estimator allows for differing intercepts by cross-
sectional unit
```

	coefficient	std. error	t-ratio	p-value	
const	0.516918	0.341733	1.513	0.1309	
LTD	−0.147191	0.114172	−1.289	0.1978	
STD	0.0554595	0.179893	0.3083	0.7580	
Age	−0.0104536	0.00283795	−3.684	0.0002	***
Size	0.0279929	0.0621007	0.4508	0.6523	
Liq	−0.0265406	0.0404813	−0.6556	0.5123	
Tang	0.0327707	0.200355	0.1636	0.8701	
RND	−0.789007	2.75919	−0.2860	0.7750	

```
Residual variance: 52.1698/(693 - 67) = 0.0833383
```

From the above results, long-term debt leverage (LTD) shows a very minimal negative correlation as the p-value is 0.1979. This could suggest that long-term debt leverage could have some correlation with company growth if other control variables were included in the study.

5.5. JOB CREATION

In this section, the results associated with hypotheses regarding debt leverage and job creation are presented. The results are presented under three categories, namely, all companies irrespective of the Tobin's q level, then companies with an average Tobin's q of less than one and, finally, companies with an average Tobin's q of greater than one. The hypotheses are summarised as follows:

HD: General Hypothesis (All ranges of Tobin's q):

- HD0: Debt leverage does not predict job creation.
- HD1: Debt leverage is a predictor of job creation.

HE: Tobin's q of less than one (q < 1.0):

- HE0: Debt leverage does not predict job creation for companies of Tobin's q of less than one.
- HE1: Debt leverage is a predictor of job creation for companies of Tobin's q of less than one.

HF: Tobin's q of greater than one (q > 1.0):

- HF0: Debt leverage does not predict job creation for companies of Tobin's q of greater than one.
- HF1: Debt leverage is a predictor of job creation for companies of Tobin's q of greater than one.

In each hypothesis, above, the null hypothesis would not be rejected on a p-value of greater than 0.05. To test the hypotheses, three regression models were applied. These were a Pooled OLS, Fixed Effects and the Random Effects. To determine the best fit model, three tests were conducted, namely, the Hausman test, Breusch-Pagan test and the Joint Significance test.

5.5.1. HD: General Hypothesis (All ranges of Tobin's q)

The following tests were conducted to determine the best suitable regression model, as follows:

Hausman test statistic:

- H = 6.7736 with p-value = prob(chi-square(8) > 6.7736) = 0.561245

  (A low p-value counts against the null hypothesis that the random effects model is consistent, in favour of the fixed effects model.)

Breusch-Pagan test statistic:

- LM = 2.9849 with p-value = prob(chi-square(1) > 2.9849) = 0.0840445

(A low p-value counts against the null hypothesis that the pooled OLS model is adequate, in favour of the random effects alternative.)

Regression Results:

The Pooled OLS regression was the most accurate model for the data whose results are shown below. From these results, it was evident that there is no variable, including the debt leverage variables (LTD and STD), that predict job creation. The null hypothesis was not rejected.

Table 5-10: Job Creation Regression Results: All Tobin's q ranges

```
Model 2: Pooled OLS, using 772 observations,
Included 74 cross-sectional units,
Time-series length: minimum 1, maximum 21
Dependent variable: JC
```

	coefficient	std. error	t-ratio	p-value
const	0.160805	0.105654	1.522	0.1284
LTD	0.0612712	0.0949143	0.6455	0.5188
STD	−0.0187840	0.149436	−0.1257	0.9000
Age	7.50458e-05	0.000352520	0.2129	0.8315
Size	−0.0262257	0.0166831	−1.572	0.1164
Q	0.00220259	0.00328844	0.6698	0.5032
Liq	−0.0166485	0.0255151	−0.6525	0.5143
Tang	−0.0224546	0.0644828	−0.3482	0.7278
RND	−0.0135604	0.396990	−0.03416	0.9728

Mean dependent var	−0.001247	S.D. dependent var	0.345624
Sum squared resid	91.58754	S.E. of regression	0.346462
R-squared	0.005572	Adjusted R-squared	-0.004854
F(8, 763)	0.534423	P-value(F)	0.831000
Log-likelihood	−272.5885	Akaike criterion	563.1769
Schwarz criterion	605.0178	Hannan-Quinn	579.2773
rho	−0.138130	Durbin-Watson	2.151894

```
Excluding the constant, p-value was highest for variable 12 (RND)
```

5.5.2. HE: Tobin's q of less than one (q < 1.0)

The following tests were conducted to determine the best suitable regression model, as follows:

Hausman test statistic:

- H = 7.81521 with p-value = prob(chi-square(7) > 7.81521) = 0.349171

(A low p-value counts against the null hypothesis that the random effects model is consistent, in favour of the fixed effects model.)

Breusch-Pagan test statistic:

- LM = 1.78566 with p-value = prob(chi-square(1) > 1.78566) = 0.181456

(A low p-value counts against the null hypothesis that the pooled OLS model is adequate, in favour of the random effects alternative.)

Regression Results:

The Pooled OLS regression was the most accurate model for the data whose results are shown below. From these results, it was evident that there is no variable, including the debt leverage variables (LTD and STD), that predict job creation for companies of Tobin's q lower than one. The null hypothesis was not rejected.

Table 5-11: Job Creation Regression Results: Tobin's q less than one

```
Model 2: Pooled OLS, using 79 observations
Included 14 cross-sectional units
Time-series length: minimum 1, maximum 17
Dependent variable: JC
```

	coefficient	std. error	t-ratio	p-value
const	−0.0998862	0.0961940	−1.038	0.3026
LTD	0.192575	0.160021	1.203	0.2328
STD	−0.108595	0.168808	−0.6433	0.5221
Age	0.000320345	0.000723974	0.4425	0.6595
Size	0.0103665	0.0176855	0.5862	0.5596
Liq	−0.00852180	0.0576573	−0.1478	0.8829
Tang	−0.0794373	0.0907191	−0.8756	0.3842
RND	0.174457	0.237001	0.7361	0.4641

Mean dependent var	−0.035196	S.D. dependent var	0.167818
Sum squared resid	2.118737	S.E. of regression	0.172747
R-squared	0.035495	Adjusted R-squared	-0.059597
F(7, 71)	0.373268	P-value(F)	0.914972
Log-likelihood	30.83965	Akaike criterion	−45.67929
Schwarz criterion	−26.72371	Hannan-Quinn	−38.08511
rho	−0.237651	Durbin-Watson	2.139601

Excluding the constant, p-value was highest for variable 10 (Liq)

5.5.3. HF: Tobin's q of greater than one (q > 1.0)

The following tests were conducted to determine the best suitable regression model, as follows:

Hausman test statistic:

The Hausman test statistic was done to deduce whether the Fixed Effects Model is preferred to the Random Effects Model. From Hausman test below, it was evident that Random Effect Model is more accurate, based on a p-value that is higher than 0.05:

- H = 10.4762 with p-value = prob(chi-square(7) > 10.4762) = 0.163155

(A low p-value counts against the null hypothesis that the random effects model is consistent, in favour of the fixed effects model.)

Breusch-Pagan test statistic:

A Breusch-Pagan test statistic was conducted to deduce whether the Random Effects Model is a better regression of the data compared to the Pooled OLS Model. From this statistic, it is evident that the Pooled OLS Model is a better fit as the p-value is higher than 0.05.

- LM = 3.34976 with p-value = prob(chi-square(1) > 3.34976) = 0.0672149

(A low p-value counts against the null hypothesis that the pooled OLS model is adequate, in favour of the random effects alternative.)

Regression Results:

The Pooled OLS regression was the most accurate model for the data whose results are shown in Table 5-12 above. From these results, it is evident that the only variable that predicts job creation is company size. The relationship is negative which implies that bigger companies create jobs at a lower rate than the smaller companies. The debt leverage variables (LTD and STD), do not significantly predict job creation. Therefore, the null hypothesis (HF0) was not rejected for companies with Tobin's q of greater than one.

Table 5-12: Job Creation Regression Results: Tobin's q greater than one

```
Model 2: Pooled OLS, using 693 observations,
Included 60 cross-sectional units
Time-series length: minimum 1, maximum 21, Dependent variable: JC
             coefficient    std. error    t-ratio    p-value
  ---------------------------------------------------------
  const       0.294646      0.135747       2.171     0.0303  **
  LTD         0.0481914     0.102064       0.4722    0.6370
  STD        -0.0110951     0.179478      -0.06182   0.9507
  Age         0.000163802   0.000383078    0.4276    0.6691
  Size       -0.0458083     0.0213577     -2.145     0.0323  **
  Liq        -0.0229651     0.0274713     -0.8360    0.4035
  Tang       -0.00262848    0.0744359     -0.03531   0.9718
  RND        -1.35969       1.89766       -0.7165    0.4739

Mean dependent var   0.002623   S.D. dependent var   0.360240
Sum squared resid    88.88355   S.E. of regression   0.360218
R-squared            0.010234   Adjusted R-squared   0.000120
F(7, 685)            1.011829   P-value(F)           0.421411
Log-likelihood      -271.7163   Akaike criterion     559.4327
Schwarz criterion    595.7609   Hannan-Quinn         573.4822
rho                 -0.141854   Durbin-Watson        2.166021

Excluding the constant, p-value was highest for variable 11 (Tang)
```

5.6. SUMMARY OF RESULTS

In this section, it was shown that debt leverage is, generally, not a predictor of company growth or job creation; see Table 5-13 below for a summary of results. An exception was for the test, HB, where it was illustrated that short-term debt leverage has a positive effect on company growth. However, the results of the congruent job creation test, HE, do not illustrate the same effect of short-term debt leverage. At a p-value of less than 0.2, long-term debt leverage appears to be a negative predictor of company growth on companies a high Tobin's q as illustrated by the test, HC. However, the same does not supply for the congruent test, HF.

Table 5-13: Summary of regression results

	Hypotheses					
	Company Growth			Job Creation		
Tobin's Q	**All Q**	**Q<1**	**Q>1**	**All Q**	**Q<1**	**Q>1**
	HA	**HB**	**HC**	**HD**	**HE**	**HF**
Const	***0.516061	***19.1415	Δ0.516918	Δ0.160805	−0.0998862	**0.294646
LTD	−0.00570609	0.115017	Δ−0.147191	0.0612712	0.192575	0.0481914
STD	0.0841763	**4.78416	0.0554595	0.018784	−0.108595	−0.0110951
Age	−0.000232487	***−0.162228	***−0.0104536	0.000075046	0.000320345	0.000163802
Size	***−0.0759897	***−1.31566	0.0279929	Δ−0.0262257	0.0103665	**−0.0458083
Q	−0.00421737			0.00220259		
Liq	0.0327157	Δ0.75196	−0.0265406	−0.0166485	−0.00852180	−0.0229651
Tang	−0.0176004	***−8.78320	0.0327707	−0.0224546	−0.0794373	−0.00262848
RND	0.0925033	Δ10.7692	−0.789007	−0.0135604	0.174457	−1.35969

*Significant at p-value of: Δless than 0.2 *less than 0.1, **less than 0.05, ***less than 0.01*

Except for tests, HC and HE, company size is illustrated to be a significant negative predictor of company growth or job creation on most of the tests conducted. However, the test, HD, indicates a negative prediction of job creation by company size at a p-value of less than 0.2. From this, it can be inferred that as companies grow, the rate of company growth and job creation decelerate. As illustrated above, company age indicates a negative prediction of company growth as shown in tests HB and HC, whilst tangibility negatively predicts company growth of low Tobin's q companies as illustrated by test HB.

CHAPTER 6: DISCUSSION

6.1. INTRODUCTION TO DISCUSSION

In this chapter, the discussion of results and how they connect to literature is discussed. In the discussion, it is argued that results are not supported by the majority of the literature covered in this research project. Also, the implications of the control variable, company size, are discussed as it is the only control variable which shows significant correlation on most of the hypotheses tests conducted; literature also supports this correlation. This chapter is structured to discuss two groups of hypotheses, namely company growth hypotheses and job creation hypotheses which total six hypotheses. Each group of hypotheses concerns three categories namely, all companies irrespective of their Tobin's q, companies with Tobin's q less than one and companies with Tobin's q of greater than one.

6.2. COMPANY GROWTH

6.2.1. HA: Debt Leverage Predicts Company Growth

For this hypothesis, the null hypothesis was not rejected. This suggests that neither the short-term and long-term debt leverage predict company growth. This contradicts the study by Cookson (2016) which illustrates that debt leverage negatively predicts company investment. Another study which studies investment and debt leverage is that of Aivazian et al. (2005) where they illustrated that debt leverage negatively predicts company investment. Lang et al. (1996) also discovered that debt leverage has a strong relationship with company investment, but this relationship would depend on the company's Tobin's q.

About debt leverage and company revenue, Kim (2016) illustrates that a company's increased debt leverage can lead to a loss in market share. A loss in market share, in Kim's (2016) study, was assumed, for this research project, to imply that company's revenues would diminish as a result of a loss of market share. The results of the hypothesis test, HA, do not support Kim's (2016) argument as results of this test illustrate no correlation.

Another study to note is that of international expansion by authors Joliet and Muller (2013). The authors argue, through their study, that additional revenue generated from existing asset base of companies' international branches did not require additional debt for this revenue. In other words, increased revenue did not require manipulation of debt leverage on existing asset base. To a certain extent, this argument by Joliet and Muller is consistent with the results of the test, HA. However, the contradiction of the test results, HA, applies for Joliet and Muller's findings where they illustrate that that debt leverage is

increased when an expansion into new geographical territories are pursued. In other words, debt leverage can be a result of a pursued company expansion strategy rather than debt leverage being used as an independent lever to grow a company's revenue from existing operations.

Another study to compare results of the test, HA, with is that of Mitani (2014). Mitani (2014) argued that debt leverage can positively affect a company's market share. Assuming market share can be a proxy for company growth, Mitani's (2014) study contradicts most literature and the results of the test, HA.

On the other hand, a correlation matrix offered by Fosu (2013) company growth had a weak correlation with debt leverage. For debt leverage and company growth, Fosu's (2013) correlation matrix is consistent with the correlation matrix illustrated in this research project (see Table 5-4 above) as both the studies show a very weak correlation between debt leverage and company growth. This weak correlation was also illustrated by the test, HA.

On other control variables studied, company size was the only control variable which was a significant predictor of company growth. The negative correlation between company size and company growth suggests that as companies become bigger, they tend to grow slower. This is consistent with the findings of Shyu (2013) where the scholar discovered that company size has a negative impact on performance, especially for group affiliated companies. Assuming job creation as a proxy for company growth, Voulgaris, Agiomirgianakis and Papadogonas (2014) also support this notion as they argue smaller companies take the lead with job creation. Brown et al. (2015) also argued that smaller companies create jobs faster than bigger ones. Brown further added that older companies create jobs slower than younger ones. From the literature and results of this research project, it is evident that as companies grow and get older, company growth is hampered more by size and age factors than it is hampered by debt leverage.

Also, the significance of company size is illustrated by company performance studies. For instance, Dawar (2014), in his study, illustrated that company size is a determining factor in the performance of a company. It is important to note that performance, in Dawar's (2014) study, was measured by return on assets and return on equity. Although Dawar's (2014) study was conducted on Indian companies listed on the Bombay Stock Exchange, it was consistent with Fosu's (2013) finding where it was determined that size is a significant predictor of return on assets and return on equity.

Regarding the Pecking Order theory by Myers and Majluf (1984), it can be inferred that equity financing is a more preferred method in comparison with debt financing as excessive debt does not improve the company growth rate. Although the results about the hypothesis discussed here do not show any correlation of debt leverage and company growth, the vast literature that illustrates that lower debt leverage is a preferred method for company growth of the same existing asset base.

The discussion above gives insight into South African manufacturing industries that debt leverage is not a positive predictor of company growth and, therefore, companies should use prudence to avoid excessive debt leverage which may bankrupt a company. As authors such as Lang, Ofek and Stulz (1996) and Aivazian, Ge and Qiu (2005) conducted their study by segregating their samples according to Tobin's q, the following subsections serve to discuss the results in accordance of Tobin's q greater than one and those lesser than one.

6.2.2. HB: Debt Leverage Predicts Company Growth (Tobin's q <1.0)

For this hypothesis, the null hypothesis was rejected in terms of the short-term debt leverage variable, whereas it was not rejected for the long-term debt leverage variable. From these results, it was concluded that companies, whose market value is lower than its book value, can grow faster if they increase their short-term debt leverage. This contradicts the work of Lang et al. (1996) who found a negative correlation between the rate of investment and debt leverage for companies with a Tobin's lower than one. Lang et al. (1996), however, did not segregate debt leverage into short-term debt leverage and long-term debt leverage in their data analysis. Furthermore, Lang et al.'s (1996) work did not use panel data regression as recent scholars such as Dawar (2014) did. In addition, Aivazian et al. (2005) also support Lang et al.'s (1996) findings that debt leverage worsens company growth for companies with low Tobin's q. From a South African context, Fosu (2013) found that company performance can be positively affected by debt leverage. Fosu (2013) did not segregate the debt leverage into short term and long term. Also, Fosu (2013) did not segregate his sample according to Tobin's q. However, Fosu's (2013) correlation matrix shows no correlation between company growth and debt leverage which is consistent with the regression analysis carried out in this research project.

Huynh and Petrunia (2010), however, argued that debt leverage positively predicts company growth. This argument is consistent with the findings for the hypothesis presented in this section for companies with Tobin's q of lower than one, with respect to short-term debt leverage. Huynh and Petrunia (2010) did, however, discover that debt leverage has minimal impact on company growth as other factors such as age and size have a more significant impact on company growth. Also, they find that younger

companies grow faster than older ones. To explain their findings, they argue that younger companies use more debt to fund future investment projects. It is important to note that Huynh and Petrunia (2010) did not segregate debt leverage into short-term and long-term debt leverage variables.

Another study which the result of the test, HB, can be compared with is that of Cookson (2016). Cookson (2016) studied the relation between debt leverage and investment behaviours of casinos. Cookson (2016) observed that casinos with lower debt leverage expand physical capacity by 30% contrary to those that have higher debt leverage. This study contradicts findings in this research project for both short-term debt and long-term debt. Similarly, Kim's (2016) study is contrary to findings relevant to this hypothesis (HB). Although Kim's (2016) study was focused on market share in relation to debt leverage, the scholar highlights a pertinent point that highly leveraged companies can result in loss of market share. The loss in market share was interpreted, for this research project, as slower growth or negative growth which should imply that debt leverage negatively predicts company growth. By this notion, Kim's (2016) study does not support results found in this research project for both short-term and long-term debt leverage.

Another key study, which studies company performance rather than company growth is that of Dawar (2014). The scholar segregated the short-term and long-term debt leverage variables on their regression analysis. The scholar's study illustrates that company performance is negatively predicted by both short-term and long-term debt leverage. Assuming company performance as a proxy for company growth, Dawar's (2014) findings contradict results of the test, HB, for both short-term and long-term debt leverage.

In terms of the trade-off theory, increasing debt may lead to a point where the risk of bankruptcy outweigh the tax benefits of debt financing (Myers, 1977). For this reason, it was not expected that results presented for this hypothesis imply that short-term debt can be indefinitely increased to grow a company faster. It is possible that the correlation that exists between short-term debt leverage and company growth could be coincidental. The trade-off theory given by Myers (1977) is applicable as perpetual debt levels do not necessarily perpetually increase company growth. Regarding the pecking order theory by Myers and Majluf (1984) which states that debt is a preferred method to equity, the results of this hypothesis is consistent with Myers and Majluf's (1984) argument.

About other mitigating factors, Billett, King and Mauer (2007) find that covenants induce a positive relation between debt leverage and company growth. The fact HB's test results illustrate that short-term debt leverage positively impacts company growth for companies with low Tobin's q suggests, from Billett et al.'s (2007) argument, that a mitigating factor such as covenants could exist in the South African context.

As consistent with the test, HA, company size is a negative predictor of company growth for companies with Tobin's q of less than one. In contrast with Fosu's (2013) study, Fosu determined that company size does negatively correlate with company performance, as measured by return on assets and return on equity. Fosu's (2013) correlation matrix, however, shows a significant correlation between company size and company growth. Applying caveat to the discussion, Fosu's (2013) study shows minimal but negative correlation with company growth and, thus, the fact that correlation is negative is consistent with the notion that bigger companies grow slower than smaller ones.

6.2.3. HC: Debt Leverage Predicts Company Growth (Tobin's q >1.0)

For this hypothesis, the null hypothesis was not rejected. This suggests that debt leverage either has no impact on company growth for companies, whose market value is higher than book value. Contrary to Lang et al.'s (1996) study which shows a positive relation between debt leverage and rate of investment, the test results of HC indicate no correlation. The p-value of 0.1978 for the long-term debt leverage variable shows that there is some negative correlation although very weak. If there is some negative correlation between company growth and long-term debt leverage, then this would prove that an opposite finding in contrast Lang et al. (1996) and Aivazian et al.'s (2005) studies. Assuming company performance as a proxy for company growth, the results would be consistent with those of Dawar (2014). Dawar (2014) illustrated that both short-term and long-term debt leverage negatively predicts company performance.

This weak correlation in this research project's hypothesis can also be analysed through other agency mitigation factors such as covenants. Even though covenants are not investigated in this research project, Billett et al.'s (2007) study shows a negative correlation between debt leverage and company growth when covenants do not exist. The fact that the results show debt leverage does not predict company growth, or it does so minimally, may suggest that there are no covenants present in the sample studied that would mitigate agency costs in order to have positive effects of debt leverage; this is however not conclusive.

Cookson (2016) also found a negative relation of debt leverage to company investment of casino companies as those with lower debt leverage were able to expand physical capacity by 30%. In the Cookson's (2016) study, the impact of Tobin's q was not studied. As detailed in this hypothesis discussed in this section, the weak correlation of debt leverage is consistent with that of Cookson (2016). Similarly, Kim (2016) argues that a high debt leverage can lead to a loss of market share. To a certain extent, the results do support Kim's (2016) argument.

From the international expansion study by Joliet and Muller (2013), debt levels of a company are increased when entering a region where no prior operation had existed. The authors further argue that an increase in revenues in the existing operations do not necessarily imply that more debt had to be employed. This study is consistent with the results of this research project.

Also, an exogenous factor such as creditor rights may not have the expected impact on the sample of this research project. Creditor rights were studied by Cho et al. (2014) where they argued that debt leverage would be relatively lower in countries with strong credit rights. From Cho et al.'s (2014) study, it was discovered that South Africa has strong creditor rights and such low debt leverages were expected. Studies conducted by Aivazian et al. (2005), Kim (2016) and Cookson (2016) indicate that lower debt leverage leads to higher company growth. Comparing these studies with results of the test, HF, it can be concluded that, to a certain extent, the results are consistent with these studies as the long-term debt leverage variable is significant at only a p-value of 0.2.

6.3. JOB CREATION

6.3.1. HD: Debt Leverage Predicts Job Creation

For this hypothesis, the null hypothesis was not rejected. The results imply that there is very little correlation between debt leverage and job creation and, as such, no inference can be made on how debt leverage can predict job creation. The results indicate that debt leverage does not predict job creation.

However, Voulgaris et al., (2014) argued that the modest debt leverage, in a company's capital structure, can grow a company and create jobs. With this in mind, strong credit rights such as those found in South Africa are expected to maintain low levels of debt leverage (Cho et al., 2014). As argued by scholars such as Giroud and Mueller (2016), lower debt leverage has a positive impact on job creation. Findings of these scholars contradict results of this research project. Also, the study by Giroud and Mueller (2016) suggests that companies with higher debt leverage are predisposed to job destruction during times of consumer demand shocks. Giroud and Mueller's (2016) study supports the hypothesis discussed in this section of the research project. Their findings are not consistent with the results of this research project, as the results do not show any correlation between the debt leverage and job creation.

In the test, HD, the only variable which, to a certain extent, predicts job creation is company size. The p-value, in this case, is 0.1164 which suggests that there is some correlation, although very weak, as it does not to comply with a required p-value of 0.05. Furthermore, a negative coefficient, for this company size variable, indicates that bigger

companies create jobs slower than smaller companies. This may suggest that smaller companies may be the most optimal method to creating jobs. This is consistent with the findings of Brown et al. (2015) where the scholars determined that more jobs are more likely to be created by smaller companies as opposed to by bigger companies. On the other hand, Voulgaris et al., (2014) also arrived at the same conclusion that smaller companies lead when it comes to the creation of jobs. The finding in this research project and its consistency with other scholars presented in this research project implies that smaller companies should be the primary investment focus from the job creation point of view.

About other control variables, the research and development variable does not have any correlation with job creation as its p-value is very high (0.9728). This is consistent with Dawar's (2014) correlation matrix which suggests that there is no relation between research and development variable and the company growth; for this argument, company growth is used as a proxy for job creation. It was expected that research and development (R&D) would enhance company growth and also job creation as R&D is expected to create new products which would bring revenue and also create jobs. The fact that jobs can be created as companies grow is shown by a positive correlation coefficient of 0.3786 as illustrated on the correlation matrix (see section 5.2.3 above). Other control variables included in the study such as age, liquidity and tangibility do not significantly affect job creation and were not expected to have much effect. This is also consistent with the correlation matrix in Dawar's (2014) study.

The results of this hypothesis (HD) are congruent to those of company growth hypothesis (HA) as discussed in section 6.2.1 above. The difference between the two hypotheses (HA and HD) is that one tests for company growth (HA) where the other tests for job creation (HD). This congruency is further supported by the correlation matrix (see 5.3.1 above) which shows a high correlation with a coefficient of 0.3786 between company growth and job creation.

6.3.2. HE: Debt Leverage Predicts Job Creation (Tobin's q <1.0)

For this hypothesis, the null hypothesis was not rejected. This means that both the short-term and long-term debt leverage variables do not predict job creation for companies whose market value is less than book value. The impact of Tobin's q was studied to test whether companies with low growth opportunities (Tobin's q lower than one) behave differently from those of high growth opportunities (Tobin's q higher than one). Conducting this research project in this manner was inspired by Lang, Ofek and Stulz (1996). Lang et al.'s (1996) study was focused on the debt leverage and company investment whereas this research project was focused on debt leverage, company growth (in terms of sales) and job creation. This section is specifically dedicated to the discussion on debt leverage and job creation in relation to the low growth companies (Tobin's q of lower than one).

Using company investment as a proxy for job creation, the results of this research project contradict Lang et al.'s (1996) study which details that for companies with a low Tobin's q, debt leverage has a negative relation to company investment. However, results of this research project illustrate no relation between debt leverage and job creation. On the other hand, the descriptive statistics (as shown in section 5.3.2 above) show that there is a weak correlation between job creation and company growth for companies of Tobin's q less than one. This gives insight as to why short-term debt leverage negatively predicts company growth, for these low Tobin's q companies, where the same does not apply to debt leverage and job creation. These results could imply that these companies do not receive the much-required finance from equity. Consequently, the only way to grow is to finance operations using debt as they are perceived by the equity market to be of a lower value. As a result, they expand their operations without employing more people. This is a speculator argument to merely explain differing correlations between the congruent hypotheses: HB and HE.

In comparison with other work that studied job creation with debt leverage, Voulgaris, Agiomirgianakis and Papadogonas (2014) argued that modest debt leverage can create jobs. Voulgaris et al.'s (2014) findings contradict the findings of this research project as no correlation, between debt leverage and job creation, was found for low Tobin's q companies. Voulgaris et al. (2014) also argued that company growth can either create or destroy jobs. This may explain why it is possible to have company growth not correlating with job creation as illustrated by a low correlation coefficient of 0.1049 (see correlation matrix on Table 5-5 above) between job creation and company growth. This correlation is, however, for a sample of companies which had an average Tobin's q of less than one. Also, studies such as those of Giroud and Mueller (2016) contradict with the results of this research study. Giroud and Mueller (2016) argued that companies with higher debt

leverage levels are likely to destroy jobs during times of local consumer demand shocks. This notion is also shared by Agrawal and Matsa (2013) who argue that reducing company debt reduces the risk of a company undergoing financial distress which could result in retrenchments. This point directly relates to the trade-off theory which states that the risks of bankruptcy would, at some level of debt leverage, outweigh the tax benefits of debt financing (Kraus & Litzenberger, 1973).

Since South Africa has a highly regulated labour system as one of the most significant deterrents of conducting business (Schwab & Sala-i-Martín, 2016), it is worth discussing the study of Simintzi, Vig and Volpin (2015). Simintzi et al.'s (2015) study was focused on employee protection legislation. Simintzi et al. (2015) found that employee protection legislation impairs debt leverage. This is because costs of bankruptcy become higher when employee protection legislation is more stringent (Simintzi et al., 2015). With this in mind, South African companies' debt leverage levels are pre-disposed to be lower than what they would optimally be without high employee protection legislation. As a consequence, this may explain the lack of correlation between debt leverage and job creation.

In comparison to developed markets such as the United States and the Netherlands, Akyol and Verwijmeren (2013) found a strong positive correlation between debt leverage and unemployment rates. In comparison with HE's results, the work of Akyol and Verwijmeren (2013) contradicts the results of this research project. Furthermore, employees in such countries have been found to prefer to work for low leveraged companies (Akyol & Verwijmeren, 2013). In Akyol and Verwijmeren's (2013) study, employees' preference for lower debt leverage implies that low debt levered companies would employ the most talented pool of job seekers. Consequently, the growth of these companies is expected to be higher than those of highly levered companies which would attract the least talented employees. The argument may further explain why most studies show higher job creation and company growth when a company adopts lower debt leverage. This type of correlation was not observed from the results of this research project.

For other control variables, no significance was observed in relation to job creation. This is contrary to the congruent hypothesis (HB) where control variables including company age, company size and tangibility had a significant correlation with company growth. For instance, company size, a variable which frequently negatively correlates with job creation or company growth, has little correlation as its p-value of 0.5596 is very high.

6.3.3. HF: Debt Leverage Predicts Job Creation (Tobin's q >1.0)

For this hypothesis, the null hypothesis was not rejected. This suggests that debt leverage does not predict job creation for companies whose market value is higher than book value. The results of the test, HF, contradict Voulgaris et al.'s (2014) findings where they argue that modest debt leverage can help grow companies. It is important to note that Voulgaris et al.'s (2014) argument is not based on Tobin's q as the discussion in this section is about companies of Tobin's q of greater than one.

Another study which contradicts HF test results is that of Giroud and Mueller (2016). Giroud and Mueller (2016) argue that companies with higher debt leverage are predisposed to job destruction during times of shocks of local consumer demand. Similarly, Agrawal and Matsa (2013) support this argument as they reducing debt reduces the risk of a company undergoing financial distress. This financial distress could result in job losses.

The only control variable which is a significant predictor of job creation is the Company size variable. The fact that the coefficient of the company size variable is negative implies that bigger companies create jobs slower than smaller companies for companies with Tobin's q that is larger than one. The significance of company size on job creation is consistent with findings of Voulgaris et al. (2014) as they found that smaller companies take the lead on job creation. Another study to note is that of Brown, Earle and Morgulis (2015) where they argue that more jobs are likely to be created by smaller companies than they are to be created by bigger companies. A noteworthy argument by Kim (2016) is that smaller companies relatively find it more challenging to obtain finance than bigger companies. This brings the discussion to a possible mitigation factor for smaller companies as they may be compelled to rely more on equity than on debt to finance their expansions or projects. This phenomenon may explain the negative correlation between company size and company growth. This mitigating factor is similar to Billett, King and Mauer's (2007) arguments on covenants. These scholars argue that covenants can mitigate the agency costs of debt for high growth companies (those of Tobin's q of greater than one).

The results the job creation test, HF, are not entirely similar to the results of the congruent company growth test, HC. This was not expected as the correlation matrix (see Table 5-6 above), shows that the job creation and company growth (for Tobin's q of greater than one) are highly correlated with a coefficient of 0.5309. As an illustration, both of the results did not reject the null hypothesis at a p-value of 0.05 as both the short-term, and long-term debt leverage variables were not significant predictors of the dependent variables: company growth or job creation. However, for the control variables, the results differ for

the company size and the company age. To demonstrate this, results of the job creation test, HF, indicate that company size is a significant predictor of job creation whereas the congruent test, HC, does not indicate company size as a significant predictor of company growth. In contrast, the test, HC, indicates that company age is a significant predictor of company growth whereas the congruent test, HF, does not indicate that company size is a significant predictor of job creation.

6.4. APPLICATION OF CAPITAL STRUCTURE THEORY

Capital structure theory by Modigliani and Miller (1958) suggests that employment of debt serves firstly the maximisation of profits and secondly the maximisation of market value. Maximisation of profits is inferred to correspond to company growth. It is inferred that the lack of correlation, between the company growth and the debt leverage variables, indicate that this theory does not hold for the South African manufacturing companies. The correlation table (see Table 5-4 above) also indicates a very low correlation between company growth and the debt leverage variables.

About the second point by Modigliani and Miller (1958) which suggests that the employment of debt serves to maximise market value, it is seen from this correlation matrix that there seems to be some correlation between the long-term debt leverage and Tobin's q. This correlation is indicated by a positive correlation of 0.2985. Though the correlation is not very strong, the correlation shown here supports Modigliani and Miller's (1958) theory that debt leverage can increase market value.

6.5. SUMMARY OF DISCUSSION

In this chapter, the discussions of the results in relation to the literature review were covered. Results indicate that there is no correlation between long-term debt leverage and company growth. The only correlation that was found was for short-term debt leverage and company growth for companies with Tobin's q of less than one. For results relating to job creation, no correlation was found between debt leverage and job creation. The hypotheses in this research project are two-tailed hypotheses and, in contrast, most literature does not agree with the finding that debt leverage does not predict company growth and job creation.

From the company growth discussions, findings of scholars such as Cookson (2016) and Kim (2016) are not consistent with the results of this study where it is inferred that debt leverage does not predict company growth. From the general hypotheses (HA), whose null hypothesis states that debt leverage does not predict company growth, both the long-term debt leverage and short-term debt leverage do not predict company growth. Another study which contradicts results of this research project is that of Cookson (2016).

Cookson's study illustrated that casinos with lower debt leverage increased capacity relative to those with higher debt leverage. In the same fashion, Kim's (2016) study contradicted the results of this research project as the scholar illustrated that higher debt leverage in companies could lead to a loss of market share. Moreover, Joliet and Muller's (2013) study was based on debt leverage in relation to new territory, specifically, international expansion. Joliet and Muller's (2013) findings show that debt leverage is likely to increase when a company expands into a new international territory but would remain the same for incremental sales which come from existing assets; the latter is consistent with the findings of this research project. Except for hypothesis HB, the arguments of these scholars' findings are consistent with findings in this research project. The exception for hypothesis HB is that short-term debt shows a positive correlation with company growth; Joliet and Muller (2013) argue that increased debt leverage only occurs only during phases of expansion. A caveat here is that this correlation may be a mere correlation and not causation. Company size is a predictor of job creation or company growth as indicated by tests, HA, HB and HF; the test, HD, showed correlation at a p-value of 0.2. This finding is consistent with studies of Billett et al. (2007) and Shyu (2013).

On the discussions of job creation, scholars such as Giroud and Mueller (2016) and Akyol and Verwijmeren (2013) contradict the findings of this research project. These null hypotheses (HD0, HE0 and HF0) imply that debt leverage does not predict job creation. The hypotheses tested were also two-tailed hypotheses. For more insight, Giroud and Mueller's (2016) study indicated that companies with higher leverage were predisposed to job destruction during times of shocks of local consumer demand. Similarly, Akyol and Verwijmeren (2013) argued that the workforce of the United States and Netherlands prefer to work for companies with low debt leverage or would demand higher salaries from highly debt leveraged companies. Akyol and Verwijmeren's (2013) argument implies that debt leverage negatively predicts job creation and thus contradict with the findings of this research project. The only control variable which predicts job creation growth as observed in the hypothesis, HF, is company size; other hypotheses (HD and HE) do not show company size or any other variable as a predictor for job creation.

In summary, debt leverage does not predict company growth or job creation. Literature mostly argued a negative correlation between debt leverage and company growth and job creation. Also, company size is shown to be the most significant predictor of company growth and job creation.

CHAPTER 7: CONCLUSION

7.1. INTRODUCTION TO CONCLUSION

In the recent decade, unemployment in South Africa as has increased to unprecedented levels (Daily Maverick, 2017) as economic growth has stifled (Solomons, 2017). This research project serves to determine if debt leverage can be used to optimally grow the South African economy, as an emerging market, and to create jobs. Contrary to most literature on capital structure and debt leverage, this research project was not focused on investor interest but broad-based economic interests of South Africa as an emerging economy.

Data analysed in this project was time-series cross-sectional data, and hence panel data regression methodology was used. The data was primarily sourced from the McGregor BFA Research Domain except for the companies' registration years which were obtained manually from the respective company's websites, google.com or mbendi.com. The three panel-data models which were used to analyse the data included a pooled data model, fixed effects model and the random effects model. The choice of which method to use was based on three tests including the Hausmann specification test, the Breusch-Pagan and the Joint significance test between means.

Excluding this introduction, this chapter is structured into four main sections. Firstly, the principal findings followed by the second section, namely the implications for management, then the third section, limitations of research and finally, further research.

7.2. PRINCIPAL FINDINGS

7.2.1. Company Growth

Literature covered during this research project indicated that debt leverage does, indeed, predict company growth. However, this company growth has been measured, by scholars such as Lang et al. (1996), as an increase in investment and not revenue growth. A study by Joliet and Muller (2013) shows that debt leverage does not necessarily change revenue growth, but for new expansions, the debt leverage intermittently increases as debt is employed to finance an expansion. This contradicts Huynh and Petrunia (2010) who argue that debt leverage positively predicts company growth, in terms of revenue growth. Aivazian, Ge and Qiu (2005) illustrates that the relation between debt leverage and company growth can be either positive or negative depending on Tobin's q (less than one or greater than one) of a company.

However, the results, of this research project, indicated that debt leverage is not a predictor of company growth. Some exception was for company growth results of companies with Tobin's q of less than one. For this exception, short-term debt leverage shows a positive prediction of company growth; this implies that companies with a low Tobin's q can grow faster with higher short-term debt leverage. Regarding trade-off theory, increasing debt may lead to a point where the risk of bankruptcy outweigh the tax benefits of debt financing (Myers, 1977). For this reason, it cannot be concluded that a continued increase in short-term debt can perpetually grow a company faster. It is possible that this correlation that exists between short-term debt leverage and company growth is coincidental.

On the other hand, control variables, namely, company age, company size and tangibility do conclusively correlate with company growth under different Tobin's q ranges. For instance, company age correlates with company growth for both high and low Tobin's q ranges. It is concluded, from the results, that the older companies become, the slower they grow. Additionally, it is concluded, from the results, that companies grow slower as their size increase. Tangibility is a negative predictor of company growth, applicable for companies of Tobin's q of less than one.

7.2.2. Job Creation

On job creation, most of the literature argued that debt leverage predicts company growth. Literature covered on job creation is mostly based on the relation of debt leverage and job creation under specific macroeconomic events. For instance, Voulgaris, Agiomirgianakis and Papadogonas (2014) studied job creation and job destruction of Greek manufacturing companies and how it correlates with debt leverage and other factors; the scholars' study was based on the context of an economic crisis. Voulgaris, Agiomirgianakis and Papadogonas (2014) found that modest debt leverage can grow a company and create jobs. Similarly, Giroud and Mueller (2016) studied debt leverage of United States companies and its impact on job losses during the great depression. However, they found that companies with higher debt leverage are predisposed to job destruction during periods of consumer demand shocks. Company size is also illustrated by literature, as a significant determinant of company performance, company growth and also job creation. This is indicated by scholars such as Shyu (2013) as the scholar argued that smaller companies perform better whilst Voulgaris et al. (2014) argued that smaller companies tend to create jobs faster.

The results contradict literature as they indicated that debt leverage is not a predictor of job creation. However, the results indicate that company size predicts job creation for companies with Tobin's q of greater than one. Also, though the correlation is weak,

company size does seem to negatively predict job creation for all companies irrespective of their Tobin's q. It is therefore concluded that debt leverage is not a predictor of job creation. Otherwise, it is concluded that company size predicts job creation for companies whose market value of its total assets is higher than book value; these are high Tobin's q companies.

7.2.3. Other Principal Findings

There is a possibility that covenants do exist. This is because short-term debt leverage can predict company growth for companies with low Tobin's q. This notion is supported by Billett, King and Mauer (2007) who found covenants mitigate agency costs by inducing a positive relation between short-term debt leverage and company growth. However, the weak correlation between long-term debt leverage and company growth of companies of high Tobin's q, suggests covenants do not exist. It is possible that covenants are present for short-term debt finance whereas they do not exist for long-term debt finance in the South African context.

7.3. IMPLICATIONS FOR MANAGEMENT

For the pursuit of company growth and job creation, it is crucial for management to realise that reliance debt should be avoided. This is because most of the literature shows that debt leverage negatively predicts company growth or job creation except for cases where other agency mitigation factors exist. Most tests' results of this research projects do not indicate that debt leverage can predict company growth. However, since increased debt can theoretically increase the risk of bankruptcy, it has to be employed with the utmost caution. Pecking Order theory should then not be followed. It is recommended here that debt should be the last resort of finance. If debt should be employed, it should be for opportunities which would generate exceptional returns with minimal risk. If cash is not available for a required expansion or project, issuing equity should be a preferred method of raising capital in favour of debt financing.

Several panels of results, in this research project, show that company size is a significant predictor of company growth. The phenomenon of smaller companies growing and producing jobs faster than bigger companies has also been illustrated by literature. Expanding an economy and creating jobs may be facilitated by awarding smaller companies opportunities. It is thus recommended that management consider company size in their procurement selection process. Should management prioritise smaller companies for purchase orders, the economy may produce jobs faster. More importantly, the government of South Africa has recognised that small businesses are a crucial

element required to contribute to economic growth (Department of Small Business Development of South Africa, 2016).

7.4. LIMITATIONS OF RESEARCH

The impact of agency costs was not part of the scope of the research as Fosu (2013) has highlighted that groups mostly control South African companies. Also, the research project was limited to the manufacturing, mining and construction sectors which mostly derive their revenue from assets. Moreover, the study was limited to a 26 year period from 1992 to 2017 and included 74 companies. Another limitation includes production flexibilities. Production flexibilities did not form part of the scope of this research project. It is also important to note that each company had its year-end, the effect of this was ignored in this research project.

The control variable related to advertising was not controlled for due to the lack of data from the database which the secondary data was obtained. This variable would have included the of the ratio *'advertising, marketing and distribution'* expenses to the total operating expenses; this variable would have controlled for factors that relate to a specific industry and specific company effects (Dawar, 2014). Advertising was expected to drive sales and contribute to higher rates of company growth.

From the trade-off theory, an optimum debt leverage level could not be determined. This optimum debt leverage was not investigated as the results did not indicate that debt leverage was a predictor of company growth or job creation.

The McGregor Database was used to source the companies and to classify the companies according to the following Standard Industrial Classification (SIC) descriptions which have the manufacturing, mining, construction and related keywords were included in this research project. Also, Companies which did not have SIC codes and where it could not be determined if they were manufacturing related were not included.

7.5. FURTHER RESEARCH

It is recommended that further research be undertaken to understand this subject matter better. A further study can be conducted on other mitigating factors which can alter the relationship between debt leverage and company growth, job creation or performance. These factors could include endogenous factors such as covenants or other exogenous factors such as tax systems. The impact of production flexibilities on the relationship between debt leverage and company growth, job creation or performance can be studied in the context of emerging economies such as South Africa.

Since other scholars and this research project has shown that company size is a significant predictor of job creation and company growth, further studies on company sizes can be conducted. These can include a study on how smaller companies access finance through debt, private equity, angel investors or venture capital. Another recommended study could cover how South African employed job seekers determine the risk of being retrenched at a new employer.

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APPENDIX 1 COMPANIES IN THE RESEARCH PROJECT

The following table shows the companies which were included in this research project.

Company		
AECI LTD	BUILDMAX LTD	MURRAY AND ROBERTS HOLDINGS LTD
AFGEM LIMITED	CAFCA LTD	NAMPAK LTD
AFGRI LIMITED	CERAMIC INDUSTRIES LIMITED	NORTHAM PLATINUM LTD
AFRICAN OXYGEN LTD	CIPLA MEDPRO SA LTD	OMNIA HOLDINGS LTD
AFRICAN RAINBOW MINERALS LTD	CONCOR LIMITED	PALABORA MINING COMPANY LIMITED
AFRIMAT LTD	DENEL SOC LTD	PALS HOLDING LIMITED
AG INDUSTRIES LIMITED	DORBYL LIMITED	PPC LTD
ALLIED ELECTRONICS CORP A	ESKOM HOLDINGS SOC LTD	REMGRO LTD
AMALGAMATED APPLIANCE HOLDINGS LD	EUREKA INDUSTRIAL LIMITED	REUNERT LTD
AMALGAMATED ELECTRONIC CORPORATION LIMITED	EVRAZ HIGHVELD STEEL AND VANADIUM LTD	SABMILLER PLC
ANGLO AMERICAN PLATINUM LTD	EXXARO RESOURCES LTD	SACOIL HOLDINGS LTD
ANGLO AMERICAN PLC	FOSKOR (PTY) LTD	SALLIES LIMITED
ANGLOGOLD ASHANTI LTD	GOLD FIELDS LTD	SAPPI LTD
AQUARIUS PLATINUM LTD	GROUP FIVE LTD	SASOL LTD
ARCELORMITTAL SA LTD	HARMONY GOLD MINING COMPANY LTD	SENWES LTD
ASPEN PHARMACARE HOLDINGS LTD	HOWDEN AFRICA HOLDINGS LTD	SET POINT GROUP LIMITED
ASSMANG LIMITED	HUDACO INDUSTRIES LTD	SIMMER AND JACK MINES LIMITED
ASSORE LTD	HWANGE COLLIERY COMPANY LTD	STEINHOFF INTERNATIONAL HOLDINGS N.V.
ASTRAPAK LTD	IMPALA PLATINUM HOLDINGS LTD	TIGER WHEELS LIMITED
AVENG LTD	INVICTA HOLDINGS LTD	TONGAAT HULETT LTD
AVI LTD	ITALTILE LTD	TRANS HEX GROUP LTD
BARLOWORLD LTD	KUMBA IRON ORE LTD	VENTER LEISURE AND COMM TRAILERS LD
BASIL READ HOLDINGS LTD	MASONITE (AFRICA) LTD	WESCOAL HOLDINGS LTD
BELL EQUIPMENT LTD	MERAFE RESOURCES LTD	WILSON BAYLY HOLMES-OVCON LTD
BHP BILLITON PLC	METOREX LIMITED	

APPENDIX 2 ETHICAL CLEARANCE ACCEPTANCE LETTER

As per attached

Gordon Institute of Business Science
University of Pretoria

20 July 2017

Tebogo Mabusela

Dear Tebogo,

Please be advised that your application for Ethical Clearance has been approved.

You are therefore allowed to continue collecting your data.

We wish you everything of the best for the rest of the project.

Kind Regards

GIBS MBA Research Ethical Clearance Committee

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