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DETERMINANTS OF CAPITAL STRUCTURE OF START-UP FIRMS IN SOUTH AFRICA

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Dissertation

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ABSTRACT

The capital structure of the firm is determined by several factors. An optimal capital structure leads the firm to achieve a better performance, ensures the sustainability in its operation and its viability. The objective of this study is to find out the relationship between capital structure determinants and leverage level of starts-up firms in South Africa. Cross-sectional OLS multiple regression analysis has been conducted on financial information contained in the pre-listing statement of firms to study the factors that affect the financial decisions of the non-financial starts-up companies; and to determine which capital structure determinant(s), among the many proposed in the literature, are relevant for them in the South Africa context.

The final sample consists of 32 non-financial start-up companies. The dependent variable (leverage level of the companies), is measured by the short-term debt ratio, long-term debt ratio and total debt ratio. Independent variables (capital structure determinants) are measured by tangibility, profitability, firm size, firm risk, growth opportunity and age of the firm. We find that firm risk and firm growth opportunity have significant influence on the capital structure chosen by start-up firms in the South Africa context.

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LIST OF ACRONYMES

UNIDO: United Nations Industrial Development Organisation

SME: Small and Medium Enterprise

IPO: Initial Public Offering

PPE: Property, Plant and Equipment

JSE: Johannesburg Stock Exchange

EBIT: Earnings Before Interest and Tax

CHAPTER1

INTRODUCTION

1.1. BACKGROUND

1.1.1. Context

In the developing or emerging countries where the rate of unemployment is the biggest problem that governments have to face, encouraging the spirit of entrepreneurship is presented to be one of the best ways to reduce it. Thus, the governments of these countries throughout the world focus on the development of start-up firm to promote the economic growth, and reduce the unemployment and in turn the degree of poverty. According to the United Nations Industrial Development Organisation (UNIDO,1999), small start-up firms represent over 90% of private business in the African continent and contribute to more than 50% of employment and of GDP in most African countries. The Ntsika Enterprise Promotion Agency (2002) published that, the small and medium enterprises contribute 56% of private employment and 36% of the gross domestic product in South Africa. The average rate of unemployment in South Africa is 25.49%. This unemployment rate was 25.20% in the first quarter of 2013, with an increase of 0.30% from the last quarter of 2012 (Statistic South Africa, 2013). According to Maas and Herrington (2006), new SMEs (start-ups) are seen as a significant component of the solution to South Africa's development problems which include poverty, income inequality and unemployment. To grow and continue to play an increasing role in creating employment as well as reducing poverty, start-ups should be able to finance their activities.

However, the issue of finance has been viewed as the immediate reason why most start-ups fail to start or to grow. To underpin this statement, Levy (1993) found that there is limited access to financial resources available to smaller enterprises compared to larger organizations. The financing choices are the most important decisions for the

growth and survival of any organisation. Capital structure (financing decisions) can be defined as the proportion of debt and equity used by a firm to finance its operations. The studies on the capital structure of young firms are few. Those that have been conducted present a divergence of opinions on whether the young enterprise should rely more on debt or on equity. For example, Hutchinson (1995) and Cressy and Olofsson (1997 a) sustain that young, small or start-up firms tend to rely more on debt finance while others, such as Petersen and Rajan(1994), Berger and Udell (1998) have a different point of view, these kinds of firm depend more on equity especially internal equity.

1.1.2. Purpose of the study

The main motivation of this study is to examine the determinants of capital structure for start-up firms in Africa and especially in South Africa. This analysis will identify the factors that can affect the capital structure decision of start-up companies; explore the different ways they can finance their activities and the relationship between determinants of the choice of the capital structure and the debt capacity of these firms.

1.2. PROBLEM STATEMENT

One of the tough challenges that any firm can face is the choice of its capital structure. This choice is influenced by a number of factors or determinants. The determinants of capital structure have been debated for many years and still represent one of the main issues in corporate finance (Titman and Wessels, 1988; Abor, 2008; Nofsinger and Weicheng, 2009). Most of the studies in this area have been conducted on large firms and in developed countries. The increasing importance of start-up firms in most of African countries economy, and the relatively recent literature on the capital structure of these engines of economic growth show the need for this study. However, not much has been done to determine which capital structure is most appropriate for this type of companies, and what factors can influence their financing decisions considering the specificities of the environment where they operate. This lack of information about the capital structure of start-up firms lead to their failure. The high rate of failure of firms reduces the economic growth of the country by increasing the unemployment.

1.3. OBJECTIVES OF THE STUDY

This study seeks to examine capital structure of start-up firms in developing countries with a focus on South Africa. Precisely, the overall dissertation seeks to:

i. Examine the characteristic of start-up firms in developing countries and in South Africa specifically;
ii. Examine the possible sources of financing of start-up companies' activities;
iii. Identify the determinants of the financing choices of start-up firms;
iv. Analyse the main determinants of capital structure of start-up firms in the South African economy;
v. Explore the relationship between the capital structure and the main factors of start-up companies in South Africa;

1.4. OVERVIEW OF METHODOLOGY

Data and information used for this dissertation will be from the financial statements of the accounting year at the point of entering the market (going IPO) of young and small firms listed on the JSE. Information about South African economy will be accessed through the Bureau of Economic Research and the Statistic South Africa (Stat SA). The sample will be constituted by true new business start-ups, (i.e. those that are not subsidiaries of existing firms).

This study will employ a cross-sectional data analysis, which permits to study simultaneously the dependant variables. The dependent variables are the different components of the capital structure and the independent variables will be the main determinants of capital structure that influence these firms' financing decisions in South Africa.

1.5. SIGNIFICANCE OF THE STUDY

This study will attempt to assist entrepreneurs and manager of start-up companies in the process of formulating their financing decisions. The study will also contribute to the improvement of the managerial capacities of these firms by exploring the different financing sources available for them to run their activities and the main factors they should consider when deciding on the capital structure of their company. In addition to these reasons, this study seeks to add to existing academic knowledge in that it will serve as a source of reference for future research in this area.

1.6. OUTLINE OF THE STUDY

This research is organised into five chapters:

- Chapter one includes the general introduction, the purpose of the study, problem statement, the objectives and the significance of the study.
- Chapter two provides a review of literature on capital structure. It also presents the different sources of financing available to start-up firms and the different factors that influence the financing decisions of small or start-up companies.
- The third chapter presents the research methodology which discusses data description and research model.
- The fourth chapter examines the effect of the factors specific to South African environment on the capital structure of start-up firms.
- The last chapter, chapter five, summarises our study, suggest some policy implications and practical guidelines. Points out issues needing further research

CHAPTER 2

LITERATURE REVIEW

2.1. INTRODUCTION

The overriding goal of most companies is to create value for shareholders and maximize the overall value of the firm (Brigham & Daves, 2004). The ability of companies to pursue this goal is related to the issue of capital structure. Capital structure refers to the way a corporation finances itself through some combination of equity, debt or hybrid securities (Emery, Finnerty and Stowe, 2004). It is also defined as a specific mix of debt and equity that a firm uses to finance its operations (Abor J., 2005). Since the pioneering works of Modigliani and Miller (1958, 1963), Capital structure has been one of the most controversial issues in the theory of finance and even now there is still no universal theory of the debt-equity choice, and there seems no reason to expect one (Myers, 2001).

Any organization that expects to be viable in the long run needs a solid foundation which has roots in its capital structure. Kaplan, Sensoy and Stromberg (2009) found that the firm's initial projects form the foundation for its ongoing and subsequent operations for years to come. Financing decision is one of the most important decisions a firm can make because of its effect on the firm's financial performance, which in turn determines the viability of the business. Many studies in corporate finance have been conducted on the effect of capital structure on the performance of companies; and it has been found that a change in the capital structure of a firm has a negative effect on its performance (Abor, 2005; Zertun &Tian, 2007; Arbabiyan, Ali-Akbar and Safari, 2009; Saedi & Mahmoodi, 2011).

Most of the empirical studies that have been conducted on the Debt-equity ratio of firms and on the factors that affect the financial decisions are based mainly on data from developed countries (Bradley, Jarrel and Kim, 1984; Kim and Sorensen, 1986;

Titman and Wessels, 1988; Rajan and Zingales, 1995; Song, 2005). Studies on capital structure determinants have found that corporate financial leverage is closely related to firms' characteristics (Titman& Wessels, 1988; Harris and Raviv, 1991). Little, however, is known about the financing decisions of start-up firms at the point of entering the market in developing countries, especially on start-up or small firms which are significantly different from large firms.

Petersen & Rajan (1994, 1995) and Berger & Udell (1995) have identified four significant differences between the capital structure of SMEs and that of large public companies. According to them, one major difference is the fact that, whereas large public companies are able to access various resources for debt financing, SMEs tend to use short-term debt financing from commercial lenders, especially institutional lenders and, in essence, convert them to long-term debt financing through renewing these short-term lines of credit. The SMEs or start-ups appear to have more severe information asymmetry problems compared to large, publicly listed firms, and as such the traditional solutions to asymmetric information problems are not as effective as in public firms. In SMEs, governance structure and type of business have a significant influence on capital structure, especially access to debt financing due to the private information generated and the use of debt in SMEs' capital structure (Stiglitz &Weiss, 1981).

Theoretical research and many empirical investigations have focused on large established firms, which can tap an array of financial sources, such as equity or commercial paper. The situation is quite different for small firms. Singh & Hamid (1992) and Singh (1995) used data on the largest companies in selected developing countries. They found that firms in developing countries made significantly more use of external finance to finance their growth than is typically the case in the industrialized countries. Not much has been done on capital structure of new firms (start-ups) that do not have any prior financial and operating history, and hence no reputational capital. These distinctive characteristics are likely to affect the cost and availability of credit, as well as the financing preferences of entrepreneurs. Robb,

Fairlie and Robinson (2009) found that newly founded firms rely heavily on external debt financing such as those provided by banks and credit cards. From the standpoint of the owner-founder, internal finance is preferred, followed by external debt such as bank financing, and only lastly would the founder use expensive external equity where s/he has to give up a large ownership stake and/or important company secret (Berger and Udell, 1995; Scholtens, 1999; Huyghebaert and Gucht, 2007).

2.2. CAPITAL STRUCTURE THEORIES

To understand how firms determine their capital structure, many theories have been developed over the years. Andree & Kallberg (2008) point out that the genesis of the modern capital structure theory lies in the work of Modigliani and Miller (1958) in their famous proposition I (often referred to as the "irrelevance theorem"). This theorem suggests that as an implication of equilibrium in perfect capital markets, the choice of capital structure does not affect a firm's market value. Based on Modigliani and Miller's value in variance theory, we would not expect the capital structure to vary from firm to firm, or over the life stages of a single firm. But the theory was developed under a 'deliberately artificial set of conditions' (Barclay, Smith & Watts, 1995:6) of no information costs, no personal or corporate taxes, no contracting or transaction costs, and a fixed investment policy. Unravelling Modigliani and Miller's assumptions introduce us to the other major capital structure theories.

According to Sogorb Mira (2002) the most relevant capital structure theories that explain the capital structure of SMEs are those related to static trade-off, adverse selection and moral hazard (agency theory) and the pecking order theory.

2.2.1. Trade-off theory

The trade-off theory suggests that the firm will use debt up to the point where the marginal value of the tax shields of additional debt is just offset by the increase in the present value of potential costs of financial distress (Myers 2001). This theory assumes that there are benefits to leverage within a capital structure until the optimal

capital structure is reached. Trade-off theory agrees with MM theory[1] that capital structure has nothing to do with the capital structure in a perfect capital market. The term trade-off theory is used to describe two different types of theories, namely: the Static trade-off theory and the dynamic trade-off theory. The two components differ in the way they recognise the role of time in capital structure decisions.

2.2.1.1. Static trade-off theory

The static trade-off theory affirms that firms have optimal capital structures, which they determine by trading off the costs against the benefits of the use of debt and equity. This theory claimed that the existence of corporate tax and bankruptcy risk due to capital market imperfections affect the capital structure and thus the value of the company. Consequently, the optimal capital structure exists in the consideration of trade-off between the tax and the possibility of bankruptcy (Kraus & Litzenberger, 1973). The firm substitutes debt for equity or equity for debt until the point where the market value of the firm is maximized. Optimal capital structure is achieved when the tax savings are more than the cost of financial difficulties. Static trade-off theory thus suggests that the proportion of debt in a firm's capital structure should follow a low-high low pattern over the firm's life stages.

2.2.1.2. Dynamic trade-off theory

The main difference between the static and dynamic trade-off models is that dynamic tradeoff models emphasize the importance of time in capital structure decisions. The static tradeoff model provides the solution of the optimal capital structure for one period and, hence, suggests that firms should have the optimal capital structure in all periods. In the dynamic trade-off models, what is the optimal capital structure choice in the current period depends on what is expected to be the optimal capital structure in the next period and so on (Krasauskaite, 2011).

2.2.2. Pecking order theory

[1] Modigliani nd Miller (1963) discuss the advantages of tax through debt financing

The pecking order theory is a preference order theory, which describes how firms choose to obtain new financing for their future activities and growth. Firm determines the source of capital according to the sequence of hierarchy. Myers & Majluf (1984), states that capital structure is driven by firm's desire to finance new investments, first internally, then with low-risk debt, and finally if all fails, with equity. The pecking order theory does not indicate the target of optimal capital structure, however, will show the preferences of financing. This theory is basically concerned about how information asymmetry affects firm's investment and financing decision. The information asymmetry means that management usually has better information about the firm than outside investors. When information asymmetries are high, a higher risk is perceived by outside investors who tend to demand a premium, which results in a high cost of capital.

According to Nofsinger &Wang (2011), the pecking order theory of finance is also associated with entrepreneurial ventures, as information asymmetry issues complicate access to start-up capital. This theory is especially appropriate for new, small and medium sized firms. These firms' financing decisions follow a hierarchy, with a preference for internal over external finance, and for debt over equity. Thus, according to the pecking order theory, many SMEs would tend to borrow more and more in case their investment needs are typically well in excess of internally generated cash flows.

2.2.3. Agency cost theory

According to the agency cost theory, firms use more debt in their capital structure when investors seek to pressure management to use funds efficiently. The optimal capital structure is determined by agency cost, which results from conflict of interest among different beneficiaries (Jensen & Mackling, 1976). According to the same author, there are unavoidable agency costs in corporate finance, which arise due to two types of conflicts: a conflict between firm's management and its shareholders and a conflict between shareholders and debt holders. In the case of startup firms, there are actually no (or very few) agency costs of equity, because managers are, most likely,

also the owners of SME. Agency conflicts between shareholders and lenders on the other hand may be particularly severe (Ang, 1992).

According to Stiglitz & Weiss (1981), agency problems such as asymmetric information and moral hazards can impact on the availability of credit and hence the capital structure of new SMEs. In effect, the value of the entrepreneur's project, which is often innovative in nature, is also difficult to judge, even for experienced creditors. Therefore, the information asymmetry between creditors and start-up firms is likely to be large. In terms of agency cost theory, new SMEs are expected to have the least debt and thus depend on internal equity and that debt levels will gradually increase as the firm develops and becomes established.

Jensen (2006) also argued that debt is less effective in reducing agency costs in a rapidly growing organisation with "large and highly profitable investment projects, but no free cash flow". The firm with the lowest agency costs is, by definition, the one that is run by its owner (Ang, Cole & Lin, 2000) and therefore one would expect start-up firms that are run by the entrepreneur to have the least debt.

2.3. DETERMINANTS OF CAPITAL STRUCTURE

Based on the three most accepted theoretical models of capital structure – the static trade-off theory, the agency theory and the pecking-order theory, researchers have identified several firms-specific factors that affect the capital structure or financing decision of those firms. The determinants of capital structure have been debated for many years and still represent one of the main unsolved issues in the corporate finance literature. Many theoretical studies and much empirical research have addressed these issues, but there is not yet a fully supported and unanimously accepted theory (Morri &Beretta, 2008). Among the firm-specific factors or characteristics are age of the firm, size of the firm, asset structure, profitability, growth and firm risk.

2.3.1. Age of the firm

Looking at the two main capital structure theories, the relationship between Age and leverage is seen differently. The trade-off theory predicts that older firms not only face less bankruptcy problems and lower agency costs, but that they are also more established, have a better reputation, credit history and a greater tendency to choose safe investment projects (López and Sogorb 2008; Frank and Goyal 2009). By contrast, younger firms will have a greater tendency to choose riskier projects. There is a direct relationship between Age and the level of debt (Boot, 2000; Bougheas, Mizen and Yalcin. 2006).

According to the pecking order theory, more mature companies tend to have higher cash flow generated internally over the years, so a lower debt level is expected. On the contrary, younger firms cannot retain earnings as easily as older firms can. This theory suggests an inverse relationship between Age and leverage. From the life cycle perspective, over time, the firm establishes itself as a continuing business and it therefore increases its capacity to take on more debt.

2.3.2. Size of the firm

Firm size has been one of the most common variables used in explaining a company's level of debt. It is widely accepted that size is a proxy for financial robustness considerations. Titman & Wessels (1988) state that large firms, which are more diverse, have more stable cash flows and better established operating and credit histories to sustain more debt compared to small firms. These factors provide large firms with greater access to alternative sources of finance in times of financial distress. Singer (1985) denotes that larger firms tend to be more diversified and go bankrupt less often than smaller ones. Furthermore, information costs are lower for larger firms because of better quality (accuracy and transparency) of financial information. Psillaki and Daskalakis (2009) find a positive relationship between size and leverage for Greek, French, Italian and Portuguese SMEs. Ojah & Manrique (2003) also find a positive relationship between size and financial leverage for Spanish firms.

2.3.3. Asset structure

Collateral can be defined as assets that are pledged by a borrower to a lender as security for the payment of debt (Gitman, 2003). Barbosa & Moraes (2004) argue that firms that invest heavily in tangible assets tend to have higher financial leverage since they can borrow at lower interest rates if their debt is secured with such assets. The existence of asymmetric information and agency costs may induce lenders to require guarantees materialized in collateral (Myers 1977, Scott 1977, Harris and Raviv 1990). The type of assets that a firm possesses can be considered as an ambiguous factor in the determination of the debt-equity ratio. According to Acs & Isberg (1996), capital structure choice is conditioned by the firm's asset specificity, and by implication, large and small firms respond differently. Hall, Hutchinson and Michaelas (2004) and Sogorb-Mira (2005) find a negative relationship between the short term debt and the asset structure and a positive relationship between long-term debt and asset structure. Thus a negative relationship between asset structure and leverage would imply that firms use more short-term debt in their capital structures than long-term debt; this is the case for start-up (small) firms that used more short-term debt for the financing of their activities.

2.3.4. Profitability

There exist two opposite views relating to the relationship between profitability and leverage. Pecking order theory assumes that firm first uses its accumulated earnings and then goes for external financing. Therefore, most profitable firms use internal financing (Myers, 1984), results in reducing the firm leverage level. As a result, this theory assumes a negative relationship between leverage and profitability.

In the other hand, according to the tradeoff theory, firms are expected to have stable cash flows, and are having more debt serving capacity. The increase in debt and stable cash flows provides more benefits as interest payments are tax deductible, results in reduction in cost of capital. Jenson (1986) argued that firms with free cash flows and expected stable cash flows should get benefit of leverage. Increase the level of

leverage provides a reduction in tax payments and prevents the blockage of free cash flow, resulting in an increase in liquidity for the firm. Hence Trade off theory assumes a positive relationship between leverage and profitability.

2.3.5. Growth

According to Myers (1977), firms with high future growth opportunities should use more equity financing, because a higher leveraged company is more likely to pass up profitable investment opportunities. According to the same author growth opportunities can produce moral hazard effects and can push firms to take more risk. This may explain why firms with important growth opportunities will be considered as risky and face difficulties in raising debt capital on favorable terms. Michaelas, Chittenden and Poutziouris (1999) on the other hand, argue that growth will push firms into seeking external financing, as firms with high growth opportunities are more likely to exhaust internal funds and require additional capital. Kunt (2006) found that small firms face larger growth constraints and have less access to formal sources of external finance, consequently growth is positively related to debt.

2.3.6. Firms risk

Business risk is a proxy for the probability of financial distress Leverage increases the volatility of the net profit and more risky firms can lower the volatility of the net profit by reducing the level of debt. Firms risk is particularly important within the SMEs context, because it is directly associated with the SMEs death rate, which is much higher when compared to large business (Daskalakis & Psillaki, 2007). Most of the studies conducted on the firm risk fund that business risk is negatively related to leverage.

In the case of new firm, other factors as: Managerial competencies, Business information, Networking, location can affect the financial decision of these firms and determine their viability.

2.3.7. Managerial competencies

They are sets of knowledge, skills, behaviors and attitudes that contribute to personal effectiveness (Hellriegel, Jackson, Slocum, Staude, Amos, Klopper, Louw and Oosthuizen, 2008). Lyles, Saxton and Watson (2004) find that managerial competencies as measured by the education of the founder, managerial experience, entrepreneurial experience, start-up experience and functional area experience positively impact on new venture performance. Herrington & Wood (2003) point out that lack of education and training has reduced management capacity in SMEs in South Africa. It is also one of the reasons for their high failure rates.

2.3.8. Business information

Financial information is one of the primary measures of the capacity of a business to effect repayment of credit (Pretorius & Shaw, 2004). In the new firm case, the business plan is the main source of financial and business information. According to Kitindi, Magembe and Sethibe (2007) creditors, banks and other lenders use financial and business information provided by firms to analyse their present performance and predict future performance. This information is used as an indicator of borrower's future prospects and ability to service a loan.

2.3.9. Networking

Coulthard & Loos (2007) describe networking in a small firm context as an activity in which entrepreneurially oriented SME owners build and manage personal relationships with particular individuals in their surroundings. Shane & Cable (2002) argue that networking can be used to reduce information asymmetry in creditor/debtor relationships. Owualah (2002) find that long-standing relationship between a bank and new SME owner does convey any advantage in the case of bank loans. In addition, networks and relationships increase a firm's legitimacy, which in turn positively influences the firm's access to external financing.

2.3.10. Location

According to Gilbert (2008), the geographical area where the firm is launched has implications for its access to markets and resources. Firms located in metropolitan areas may therefore have higher chance of success than those located in rural areas. Gilbert (2008) and the South African Presidency (2008) points out that the crime rate is significantly higher in the rural areas compared to urban areas in South Africa. New SMEs that are insured are also significantly more likely to be successful in their credit application.

2.4. FINANCING SOURCES FOR START-UPS

To finance their investments, established firms raise both debt and equity funds. Within the broad categories of debt and equity, there are a variety of instruments and vehicles that firms can use. New firms (start-ups) on the contrary have more difficulties raising their capital due to the lack of prior financial or operating history and hence, lack of reputation or track-record (Cassar, 2004; Huyghebaert and Van de Gucht, 2007). According to Korosteleva & Mickiewicz (2011), one of the common problems for start-ups is raising sufficient capital to launch and operate successfully and, thus, it is one of the major constraints for entrepreneurship. To finance their activities at the very early stages, entrepreneurs use their own personal savings and raise funds from friends and family (Frid & Alexander, 2010; Lerner, 2010).

2.4.1. Bank loans

Bank loans are also a financing source for start-ups, they are usually guaranteed by the entrepreneurs' personal assets, and trade creditors, have also been shown to be important sources of finance on new firm. Banking finance is important for start-up firms since they rarely obtain long term debt or equity, as they must rely on the bank credit as a major source of finance, since they obtain much of the external capital from the entrepreneur's own funds, and informal investors like family members, friends and

colleagues (Walker, 1989). Bank plays an important role by solving the problem of lack of information for the start-up firms, by setting terms of the loan contract to improve the incentives of the start-up firms. Robb & Robinson (2010) find that owner-backed bank loans and business credit cards are the primary sources of financing for start-up firms during their first year. Over time, retained profits and short-term financing become the main sources of financing for them (Lucey & Bhaird, 2006).

2.4.2. Trade Credit and Leasing

Start-ups have also the possibility to finance their activities via trade credit and leasing. Trade credit finances a portion of enterprise's working capital without demanding collateral. It is a financing source largely based on the relationship and measured by the account payable at the end of the prior year. Trade credit helps start-ups in various ways, by providing a support during the credit crunches, contractions of monetary policy or may be other shocks or economic recession that may lead the financial institutions less willing to provide finance to the start-up firms.

Leasing is another source of financing (asset-backed finance) for startup firm. It permits new firms to possess and use the asset, and pay monthly. Lease finance is an important source of capital for small firms, especially because of limited sources of borrowing. This form of financing helps to address the high interest rate and collateral required for bank lending; also to address the lack of collateral that start-ups faced. Leasing finance is usually available during the second stage (growth stage) of the firm lifecycle, where the firm tries to expand its business activities and seek various financing options (Aurelian, 2008).

2.4.3. Bootstrap Finance

Another source of financing for new firms is bootstrap finance, which is a set of techniques used by entrepreneurs to gain or supplement financial resources needed for operations and as a resource acquisition method separate from formally-obtained

equity or debt (Ebben & Johnson, 2004; Winborg & Landstrom, 2001). It involves the use of personal savings, credit-card debt (Cole, Lahm, Little & Seipel 2005), loans from friends and family and other nontraditional forms of capital. Bootstrap financing is probably one of the best and most inexpensive routes an entrepreneur can explore when raising capital. It utilizes unused opportunities that can be found within the company by simply managing the business finances better. Bootstrap financing is a way to pull the business up without the help of others. It has been especially important for new firms when start-up costs are high, revenues are low and capital is difficult to obtain because of perceived high risk (Starr & MacMillan, 1990).

2.4.4. Factoring

An important source of financing for SMEs overlooked by Berger and Udell (1998) is factoring. Under factoring, receivables are purchased by the factor rather than used as collateral on a loan. In simpler words, the firm is able to sell its receivables to a factor. The effect of this is that the firms can obtain part of their financial resources immediately than when they were previously tied up in receivables. Factoring can be described as a form of asset-based finance where the credit extended is based on the value of the payments owed by the borrower's customers (Bakker, Klapper and Udell 2004). According to the same author, factoring is useful in developing countries, especially with weak lending laws. Since factoring is dependent on the quality of the borrower's accounts, Bakker et al (2004) considers that factoring may be especially attractive to high-risk SMEs.

This chapter has discussed and presented an integrated picture on existing capital structure theories and determinants. The study adds to the wide empirical literature on factors influencing capital structure decisions in developing countries by introducing the influence of firm-level on capital structure of start-ups firm at the point of entering the market, especially in South Africa economy environment. The next chapter of this paper discusses the Data and Methodology where the data and different variables are

described, and the econometric model to be used for the analysis of the data is presented.

CHAPTER 3

DATA AND METHODOLOGY

The aim of this paper is to investigate the effect of firm characteristics on the capital structure of South African start-up firms in their earliest stage. In other word, this paper intends to identify the determinants of South Africa start-up firms‟ capital structure.

Due to the unavailability of the data from the early stage of startup, our test will be conducted on financial information of latest stage of startup. In the other word, we will use the financial information of startup firms at the point of entering the market, i.e. just before going IPO.

This chapter focuses on the description of the data used for the study, the definition of the proxies for the variables and the presentation of the model that are being used to analyse the data.

3.1. DATA DESCRIPTION

The data set for this study is constructed by merging companies' balance sheet and income statement information of non-financial start-up firms listed on the JSE, obtained from BLOOMBERG and pre-listing statement of the startup firm. The companies included in the sample are those that went IPO between 2002 and 2014. For inclusion in the sample three years data content in the pre-listing statement or three year data before the first public offering is used, resulting in a cross sectional database. The data were averaged over the three years to smooth the leverage and explanatory variables.

Due to the inaccessibility of financial information of some start up before the date of their listing, those start-ups have been excluded from the sample. The selected sample

included in total, 32 companies belonging to different industries. Financial sector firms include banks, insurance and investment trust companies were excluded on the basis of the fact that the nature of their capital structure is different compared to non-financial firms.

3.2. METHODOLOGY

In order to test the influence of firm's characteristics on its capital structure, a cross-sectional data methodology will be used. Financial ratios were used as measurement instruments to define capital structure (dependent variable), and firm characteristics. This section provides information about the description and measurement of the variables, and the presentation of the econometric model to be used in this study.

3.2.1. Description of the variables

3.2.1.1. Dependent variable

One of main factors subject to intense debate in capital structure studies is whether to use the market value or the book value of debt and equity as the correct measure of leverage [Titman and Wessels (1988), Rajan and Zingales (1995)]. For this paper, the dependent variable was capital structure and it was defined as the ratio of debt to total asset. The book value leverage was used as dependent variable, due to the fact that the firms did not have a market value. Bevan and Danbolt (2002) point out that capital structure studies examining the determinants of leverage based on total debt only, may disguise the significant differences between long-term and short-term debt. Therefore, in line with Bevan and Danbolt (2002) and Michaelas (1998) for this study, we decomposed leverage measures in short-term debt, long-term debt and the combination of both due to the different roles they play in financing decisions and believed to obtain different empirical results. The three measures of capital structure used are as follows:

Total Debt Ratio = Total Debt (Short-term + Long-term) /Total Assets

Long-time Debt Ratio = Long-term Debt / Total Assets

Short-term Debt Ratio = Short-term Debt / Total Assets

3.2.1.2. Independent variables

The literature suggests a number of factors, which are likely to have an impact on a company's capital structure decision. The set of explanatory variables used in this paper to explain variations in leverage, consists of those that have been documented in the literature review to affect firm leverage. This study investigates the influence of six firm level characteristics (Explanatory variables) - Size, profitability, growth opportunities, asset structure, age and firm risk - on the capital structure decisions. The other characteristics specific to start-up firms (Managerial competencies, Business information, Networking, Location) have not been considered due to the lack of information.

Based on the financial data available for every company and the determinants of capital structure discussed before, the following six financial indicators were estimated as the independent variables.

- **Asset structure (Tangibility)**:

Most of the capital structure theories argued that the type of assets owned by the company affects its capital structure choice (Titman and Wessels (1988), Rajan and Zingales (1995). The asset structure of a firm refers to the composition of a firm's assets. It is measured as the ratio of the fixed assets to total assets of the firm.

- **Size**:

A number of indicators such as average value of total assets (Chung, 1993), total assets at book value (Scott and Martin, 1975), logarithm of sales revenue (Titman and Wessels, 1988; Rajan and Zingales, 1995); Graham, 2000; Ozkan, 2001; Gaud et al., 2005), natural logarithm of total assets (Padron, Apolinaro, Santana, Conception, Martel and Sales, 2005), the market value of the firm (Graham, 2000) were used in the literature to measure size. In this study, we measure firm size (SIZE) as the natural

logarithm of sales revenue. This measure is the most common proxy for size. The use of the natural logarithm is preferred so as to smooth the differences that may arise because of large variation in size among firms.

- **Profitability**

Profitability refers to the ability of a firm to generate earnings compared to its assets. Various proxies were used as indicators of profitability to measure profitability. We have the return on total assets, which is calculated as the ratio of EBIT to total assets by (Rajan and Zingales, 1995; Ozkan, 2001; Bauer, 2004; Gaud et al., 2005; Chen & Shiu, 2007), the ratios of operating income over sales and operating Income over total assets used by Titman and Wessels (1988), the return on assets – ROA by Wiwattanakantang (1999), In this study, we used the ratio of EBIT to total assets as a proxy for profitability [PROF].

- **Age**

Age of firm is measured in years from the establishment year until the year of the collection of the financial information. Age is positively related to survival, to the generation and accumulation of profits and to internal sources of financing. It negatively affects the probability of bankruptcy.

- **Growth opportunity**

Rajan and Zingales (1995) argue that firms expecting high future growth should use a greater amount of equity finance, suggesting a negative relationship between expected growth and leverage. Several indicators were considered appropriate proxy for growth opportunity of firms. Among those indicators , we have : the firm's annual growth rate in total assets (Titman and Wessels, 1988; Chen, 2003), ratio of capital expenditures over total assets (Titman and Wessels, 1988; Almazan and Molina, 2005), the ratio of advertising expenses to sales (Graham, 2000), research and development expenses to sales (Graham, 2000), the ratio of market value of assets to book value of assets (Myers, 1977; Rajan and Zingales, 1995; Wiwattanakantang, 1999; Ozkan, 2001, Gaud et al., 2005) were considered appropriate to measure growth

opportunities. For this paper, the ratio of intangible assets to total assets has been used as proxy.

- **Firm risk**

It has been argued in the literature that the greater the volatility of earnings, the higher the probability of bankruptcy arising from default on payment of interest. According to Ward (1993), business risk refers to the effects of uncertainties in the environment on the earning ability of a firm; therefore, it is more concerned with the operating activities of a firm. Different ratios or measures have been used in the literature as a proxy for firm risk. Chen and Strange (2005) use the standard deviation of the return on equity. The return on equity, however, focuses more on the method of financing than on business operations. Baral (2004) uses the coefficient of variation in EBIT to calculate the business risk of a firm. A similar calculation is the standard deviation of the return on assets (Booth, Aivazian, Kunt and Maksimovic, 2001; Bauer, 2004). In this study, the return on assets ratio was used with extraordinary items, such as profit on the sale of PPE excluded.

***Table1**: Summary of Variables indicators*

VARIABLES	INDICATORS
DEPENDANT VARIABLES	
Short- term debt (STDR)	Short-term Debt (STD) / Total Assets
Long- term debt (LTDR)	Long term debt (LTD) /Total Assets
Total debt (TDR)	Total debt (TD) / Total Assets
INDEPENDENT VARIABLES	
Asset structure or tangibility (TANG)	Fixed asset / Total Assets
Profitability (PROF)	EBIT[2] / Total Assets
Size (SIZE)	Natural logarithm of sales revenue
Age	Number of years from the date of incorporation until the date of listings.
Firm risk (RISK)	(Net Income – Extraordinary items)/ Total Assets
Firm growth (GROWTH)	Intangible Asset / Total Assets

3.2.2. Models

The study examines the determinants of capital structure of start-up firms in South Africa. To achieve that objective, quantitative rather than qualitative method will be used. In this study, three Linear multiple regression models are used to analyse the relationship between the different variables. The reason of choosing such model is that, regression analysis is able to examine the associative relationship between dependent variables and one or more independent variables. It identifies the relative importance of independent variables, predicts the values of the dependent variable and determines the structure or form of the relationship. To apply the regression analysis, we assume that there are linear relationship between leverage and the six firm's

[2] EBIT is defined as Earnings before interest and tax

internal factors, the error term is constant, independent and under a normal distribution.

The study uses three different measures of capital structure, based on book value. Which are, long – term debt ratio (LTDR), short – term debt ratio (STDR) and total debt ratio (TDR). The independent variables used in this study include, Asset structure (tangibility: TANG), profitability (PROF), firm size (SIZE), firm Age (Age), Firm risk (RISK) and firm Growth opportunity (G). The three multiple regression models used to estimate the determinants of capital structure in start-up firms are as follows:

Model A

$STDR_i = \alpha + \beta 1 TANG_i + \beta 2 PROF_i + \beta 3 SIZE_i + \beta 4\ AGE_i + \beta 5\ RISK_i + \beta 6\ G_i + \varepsilon_i$

Model B

$LTDR_i = \alpha + \beta 1 TANG_i + \beta 2 PROF_i + \beta 3 SIZE_i + \beta 4\ AGE_i + \beta 5\ RISK_i + \beta 6\ G_i + \varepsilon_i$

Model C

$TDR_i = \alpha + \beta 1 TANG_i + \beta 2 PROF_i + \beta 3 SIZE_i + \beta 4\ AGE_i + \beta 5\ RISK_i + \beta 6\ G_i + \varepsilon_i$

Where: α is a constant,

$\beta 1, \beta 2, \beta 3, \beta 4, \beta 5, \beta 6$ are coefficients of variables,

ε is a residual term.

CHAPTER 4

ANALYSIS AND INTEPRETATION OF RESULTS

Chapter three presented issues of research methodology including data description, the variables' description and data analysis methods that were used for this study. The objective of this chapter is to present and interpret the empirical findings of this research.

4.1. DESCRIPTIVE STATISTICS OF CAPITAL STRUCTURE AND THE DETERMINANT FACTORS

This section describes the characteristics of the data used for this study. ***Table2*** below contains Mean, Median, Standard Deviation and Max and Min for each variable. These items summarise how the different variables are distributed.

Table 2*: Descriptive statistics*

Variable	Mean	Std. Dev.	Median	Minimum	Maximum
TDR	0.621991	0.389766	0.649021	-0.963889	1.61163
LTDR	0.217285	0.276044	0.207249	-0.700501	1.19653
STDR	0.411053	0.240537	0.431353	-0.263389	1.28204
TANG	0.312897	0.254458	0.294095	0.0129482	0.824159
PROF	0.312986	0.902337	0.163177	-0.277609	5.21805
RISK	0.259812	0.891110	0.0986401	-0.0449606	5.12767
G	0.159650	0.170386	0.106525	0.00000	0.660860
SIZE	4.21950	2.41258	3.74078	0.595317	8.81250
AGE	17.0625	17.3409	10.0000	3.00000	70.0000

The table above shows the descriptive statistics for the dependent and independent variables from the companies in the sample. The descriptive statistics show how these companies characterized or vary in term of size, profitability, asset tangibility, firm risk, age and growth opportunities. The average value of leverage is 0.622 (62.2%). If we decomposed it into long term and short term, the average value of long term debt is 0.217 (21.7%) and short term debt 0.411 (41.1%). This result implies that starts up finance 62.2% of their activities via debt with 21.7% via long term debt and 41.1% via short term debt. The capital structure of starts up firm is dominated by short term debt.

4.2. MULTICOLLINEARITY BETWEEN INDEPENDENT VARIABLES

An implicit assumption that is made when using the OLS estimation method is that the explanatory variables are not correlated with one another. The problem of multicollinearity occurs when there is a strong relationship between two or more explanatory variables. In general, independent variables having collinearity at 0.70 or greater should not include in regression analysis. To evaluate the possible degree of collinearity among variable, the correlation matrix of independent variables for each year has been examined and presented in ***Table3*** below.

***Table 3**: correlation matrix of variables*

	TDR	LTDR	STDR	TANG	PROF	RISK	G	SIZE	AGE
TDR	1								
LTDR	0.783	1							
STDR	0.701	0.115	1						
TANG	0.087	0.105	0.018	1					
PROF	0.349	0.638	-0.168	-0.003	1				
RISK	0.359	0.641	-0.158	-0.010	0.997	1			
G	-0.075	0.199	-0.368	-0.335	0.191	0.184	1		
SIZE	-0.002	-0.034	0.0126	0.155	-0.263	-0.279	-0.321	1	
AGE	0.049	-0.068	0.142	-0.016	-0.155	-0.146	-0.199	0.049	1

As shown in ***table 3*** above, the correlation coefficients are not sufficiently large (<0.7) to cause collinearity problems in the regression, except the collinearity coefficient between profitability and risk (0.997). Due to the large correlation coefficient between profitability and risk, multicollinearity is an issue of concern for this regression model. Therefore, this model is not valid for regression analysis unless one of the two variables is removed from the model.

The results in the table above show that: tangibility, profitability, risk and age variables are positively related to total debt ratio, while it is negatively related to growth and size. Tangibility, profitability, risk and Growth variables are positively correlated to long term debt ratio; while size and age variables are negatively related to long-term debt ratio. This means that profitable and growing starts up firms with high level of tangibility and firm risk tend to use more long term debt than short term debt to finance their activities. Old and large start- ups firm tend to rely less on long term debt.

The result in table 3 also show that tangibility, size and age are positively related to short-term debt and profitability, risk and growth variables are negatively correlated to short term debt ratio. This implies that large, old start-up with high level of tangibility tend to use more short term debt rather than long term debt, while

profitable and growing start-up firms with high level of firm risk rely less on short term debt to finance their activities.

4.3. REGRESSIONS MODELS RESULTS.

This section aims to analyse the result of the regression model. The multiple regression analysis on the cross sectional data is carried out in order to investigate the simultaneous impacts of all the independent variables having on the dependent variable.

The strengths of the influence that each of the indicators of independent variable has on the dependent variable (leverage level) is determined by the use of multi regression coefficients of the predictor variables.

When testing for multicollinearity between variables above, we find that there was a very strong correlation (0.997) between profitability and risk. For our model to continue being a good model we have to correct the collinearity problem present in the model by removing one of those two variables. To determine which one of the two variables has to be removed from the model, we will compare the p. Values of the two variables in the regression of the full model. The variable with the highest p-value will be the one to be removed from the model.

4.3.1. Effect of capital structure determinants on Short-term debt ratio (Model A)

The comparison between the p. value of profitability and risk shows that RISK has a higher p value (0.7960) than Profitability (0.7623) as shown in Table 4 below. Therefore, according to the rule stated above, the variable risk will be taken out of the model.

***Table 4**: Effect of capital structure determinant on Short-term debt ratio*

	Coefficient	Std. Error	t-Statistic	p-value
Const	0.592516	0.146714	4.038574	0.0004
TANG	-0.087609	0.184770	-0.474152	0.6395
PROF	-0.215626	0.705077	-0.305819	0.7623
RISK	0.186946	0.715357	0.261332	0.7960
G	-0.572613	0.297965	-1.921745	0.0661*
SIZE	-0.012667	0.020486	-0.618328	0.5420
AGE	0.000570	0.002607	0.218847	0.8285

Our modified model contents five explanatory variables: tangibility, profitability, growth, size and age; and the dependent variable short-term debt ratio. The results are given in table 5 below.

***Table 5**: Effect of capital structure determinant on Short-term debt ratio (Modified model)*

	Coefficient	Std. Error	t-Statistic	Prob.
Const	0.593137	0.144042	4.117798	0.0003***
TANG	-0.093730	0.179966	-0.520822	0.6069
PROF	-0.031849	0.050048	-0.636368	0.5301
G	-0.587257	0.287357	-2.043648	0.0512*
SIZE	-0.014175	0.019302	-0.734392	0.4693
AGE	0.000632	0.002549	0.247790	0.8062
R-squared		0.176098		
Adjusted R-squared		0.017655		
F-statistic		1.111431		

Note:

***: Significance at 1%

**: Significance at 5%

*: Significance at10%

Coefficient of determination – R^2 is the measure of proportion of the variance of dependent variables about its mean that is explained by the independents or predictor variables.

The square of the linear regression R for the short term debt ratio is 0.1761 which indicates that 17.61% of the variation in short – term debt is explained by the five indicators of capital structure determinants collectively. Remaining 82.39% variation in the short - term debt is attributed to other variables.

The results of regression model indicate that the variable GROWTH with the negative coefficient value –0.5873 is statistically significant at 10% level. Therefore, start-up companies tend to pay more attention to their growth opportunity to determine the level of short term debt.

4.3.2. Effect of capital structure determinants on long –term debt ratio (Model B)

Table 6 below shows the result of the regression on the full model. As it can be seen the p. value of the variable profitability (0.5027) is higher the p value of variable risk (0.3284); so variable profitability will be taken out of the model.

***Table 6**: Effect of capital structure determinant on long –term debt ratio*

	Coefficient	Std. Error	t-Statistic	Prob.
Const	-0.050974	0.133408	-0.382090	0.7056
TANG	0.179020	0.168013	1.065512	0.2968
PROF	-0.436061	0.641131	-0.680144	0.5027
RISK	0.648459	0.650479	0.996894	0.3284
G	0.365158	0.270942	1.347737	0.1898
SIZE	0.025479	0.018628	1.367740	0.1836
AGE	0.000846	0.002370	0.357102	0.7240

The final model contents five explanatory variables: tangibility, risk, growth, size and age.

Table 7: Effect of capital structure determinant on long –term debt ratio (Modified model)

	Coefficient	Std. Error	t-Statistic	Prob.
Const	-0.050892	0.132022	-0.385484	0.7030
TANG	0.164008	0.164826	0.995032	0.3289
RISK	0.207197	0.046534	4.452608	0.0001***
G	0.329206	0.262975	1.251855	0.2218
SIZE	0.022116	0.017774	1.244317	0.2245
AGE	0.001005	0.002334	0.430595	0.6703
R-squared		0.474610		
Adjusted R-squared		0.373574		
F-statistic		4.697417		

According to the regression analysis in the table above, R-Squared is 0.4746**.** That means 47.46 % of variations in long term debt ratio are explained by the five explanatory variables.

The variable RISK with the positive coefficient 0.2072 is statistically significant at 1%. This implies that the variable risk is the most influential factor to be considered by starts ups firms when making long term financial decision.

4.3.3. Effect of capital structure determinants on Total debt ratio (Model C)

The result of the regression of the full model content in table 8 below show that variable profitability has a higher p value (0.5255) than variable risk **(**0.4334). Therefore, variable profitability will be removed from the model.

***Table 8**: Effect of capital structure determinant on total debt ratio*

	Coefficient	Std. Error	t-Statistic	Prob.
Const	0.504618	0.238108	2.119285	0.0442
TANG	0.102003	0.299871	0.340156	0.7366
PROF	-0.736805	1.144296	-0.643893	0.5255
RISK	0.924358	1.160980	0.796187	0.4334
G	-0.152901	0.483579	-0.316186	0.7545
SIZE	0.016910	0.033248	0.508599	0.6155
AGE	0.001698	0.004231	0.401265	0.6916

The removal of the variable profitability leads to a modified model with five independent variables such as tangibility, risk, growth, size and age. The results of the regression of the new model are resumed in table 9 below:

***Table 9**: Effect of capital structure determinant on total debt ratio (Modified model)*

	Coefficient	**Std. Error**	**t-Statistic**	**Prob.**
Const	0.504756	0.235412	2.144139	0.0415**
TANG	0.076637	0.293906	0.260754	0.7963
RISK	0.178766	0.082976	2.154441	0.0406**
G	-0.213648	0.468917	-0.455620	0.6524
SIZE	0.011228	0.031693	0.354284	0.7260
AGE	0.001966	0.004162	0.472262	0.6407
R-squared		0.162096		
Adjusted R-squared		0.000960		
F-statistic		0.000960		

The regression model of the total debt ratio indicates that there is a weak linear relationship between the total debt ratio and the explanatory variables; the value of the R^2 is 0.1621**.** This implies that only 16.21% of variations in the total debt ratio are explained by the five explanatory variables.

The variable risk, with a positive coefficient value of 0. 179, is statistically significant at 5%. This means that firm risk is the most important variable to consider when determining the level of total debt ratio of starts up firm in South Africa.

4.4. SUMMARY OF FINDINGS

***Table 10**: Summary of effect of capital structure determinant on start-up firms' short term debt ratio, long term debt ratio and total debt ratio*

	Short-term debt ratio Model A		**Long-term debt ratio: MODEL B**		**Total debt ratio Model C**	
	β	P value	B	P value	β	P value
Const	0.593137	0.0003***	-0.050892	0.7030	0.504756	0.0415**
TANG	-0.093730	0.6069	0.164008	0.3289	0.076637	0.7963
PROF	-0.031849	0.5301				
RISK			0.207197	0.0001***	0.178766	0.0406**
G	-0.587257	0.0512*	0.329206	0.2218	-0.213648	0.6524
SIZE	-0.014175	0.4693	0.022116	0.2245	0.011228	0.7260
AGE	0.000632	0.8062	0.001005	0.6703	0.001966	0.6407

According to the above table, in model A, only the growth has a statistically significant impact on short – term debt (at 10% level).The coefficient of the Growth variable is negative, which indicates that a decrease of this variable translate to an increase in short- term debt level. Among the predictor variables, higher value of beta of the Age indicates that this variable is more important predictor variable accounting for unique variance in the short- term debt level.

In model B, risk shows a statistically negative significant impact on long-term debt (at 1% level). Further higher value of the beta of the growth indicates that this variable is more important predictor for the long-term debt level than other variables.

In model C, risk is the only explanatory variable that has a statistically significant impact on the total debt level of start-up firms in South Africa. Therefore, firm risk should be considered in priority by start-up firms when determining their total debt level.

This chapter has tabled the computations of the nine ratios which had been determined in highlighting the dependent variable (short-term ratio, long-term debt ratio and total debt ratio) and independent variables (tangibility, profitability, risk, growth, size and age). These ratios have been analysed and interpreted. In the next chapter, the conclusion of our study and limitations, and recommendations on the way forward will be presented. This is then followed by the list of sources used in informing the study and the subsequent appendices.

CONCLUSION

Capital structure determinants is one of the primary subjects of research in corporate finance. This paper has attempted to find the most relevant determinants of capital structure of non-financial start-up companies in South Africa. Through this study, we analyzed a sample of 32 South African's start-up firms listed on the JSE by using a cross sectional regression model to measure the determinants of capital structure of the firms. We have selected six independent variables (tangibility, profitability, firm risk, growth opportunity, firm size and age) with the purpose to determine the one more important for start-up firms in the South African context. Three different leverage measures based on book values have been applied: total debt ratio, long-term debt ratio, and short-term debt ratio; to see the effect of explanatory variables on leverage.

The results of the analysis suggest that, in model A, only one firm's characteristic, the variable growth has a statistically significant impact on short term debt. It has been found a negative relationship between short-term debt ratio and growth, suggesting that, start-up firms with a high growth opportunity tend to use less short term debt. In model B and model C, only the variable risk (firm's risk) has a statistically significant impact on the long-term debt level and total debt level respectively. Both the long-term debt and total debt have a positive relationship with firm risk. It can then be concluded that growth opportunity and firm risk are the firm's most important characteristic determining the capital structure of start-up companies in the South African context.

The empirical evidences provide that there exist significant differences in the determinants of these three leverage measures. While all three forms of debt ratio are significantly related to tangibility, profitability, size, and income variability, non-debt tax shield is only related to the short and long-term forms of debt. Uniqueness and

growth are not related to any of the three debt measures.

LIMITATIONS

- ✓ This research used South African non-financial start-up firms' data; therefore the results of this study could not be generalized in the South Africa's financial sector (banks, investment, insurance etc.) or in any other country non-financial firms.
- ✓ This study has not taken into account the entire non-financial start-up firm that went IPO between 2002 and 2014 due to the unavailability of all the financial information needed for the purpose of this paper.
- ✓ The capital structure determinants specific to start-ups have not been included in the analysis due to the lack of information about those variable.

FUTURES RESEARCH

- ✓ A comparative future studies can be conducted by using the data from the financial start-up and non-financial start-ups to figure out the differences in the determinants of capital structure of those two sectors of South Africa's economy or other developing country non-financial data.
- ✓ A comparative future research can also be conducted on the determinants of capital structure of South Africa's start-up firms over their life stages; or before and after the IPO.

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ANNEXES

Annex 1: DATA

TDR	LTDR	STDR	TANG	PROF	RISK	G	SIZE	AGE
0.617096776	0.133869002	0.483227773	0.139482045	0.145499137	0.098280821	0.054003701	3.539473652	54
0.600280669	0.193242381	0.407038288	0.612481679	0.26391963	0.177161686	0.02340393	8.428366795	8
0.678637571	0.533667165	0.144970405	0.04908088	0.163454397	0.069029762	0.660859667	6.010310268	4
-0.963889464	-0.700500628	-0.263388836	0.357898941	0.080470671	-0.008738579	0.209042805	3.771537523	5
0.921308365	0.473091699	0.448216666	0.129326465	0.078053516	0.018724358	0.219379699	6.568226933	10
0.462167267	0.110938416	0.35122885	0.374429388	0.138084253	0.091708682	0.119881319	6.993052144	10
0.537890765	0.27728909	0.260601675	0.697717752	0.051848332	0.025328425	0.003557492	6.627322657	70
0.709168445	0.435311341	0.273857104	0.734573679	0.094792115	0.028237617	0.009097775	4.487810278	10
0.655191877	0.121436026	0.533755851	0.566543009	0.368295767	0.223634714	0.099125653	4.609733418	13
0.628746995	0.004659947	0.624087049	0.023139133	0.425665353	0.297209304	0.00975496	4.479217798	19
0.621210145	0.080324064	0.540886081	0.168803189	0.089551981	0.169774049	0.196346564	1.882897714	24
0.268609659	0.052474771	0.216134888	0.525133965	0.181953495	0.113849446	0.302376404	3.135298164	6
0.748734111	0.289480818	0.459253293	0.497155379	0.156583831	0.088076525	0	8.176826017	10
0.293792986	0.054470117	0.23932287	0.020218752	0.204940315	0.148243938	0.594513521	1.142110155	6
0.757576365	0.144176808	0.613399557	0.022542135	0.182489943	0.122845818	0	2.28721721	28
0.750599563	0.221256482	0.529343081	0.012948168	0.095004005	0.047092762	0.313252089	2.142434104	69
0.651684712	0.236200298	0.415484414	0.482633861	0.070865589	0.082903108	0.181842034	3.710026237	15
0.582911626	0.13759187	0.445319756	0.295703878	0.22251914	0.17239719	0.056357081	2.045150862	11
0.641554066	0.097423777	0.544130289	0.135057792	-0.277609362	-0.044960641	0.085491629	1.942370893	19
0.841711913	0.401411913	0.4403	0.067329595	0.027459683	-0.003538104	0.128916401	8.338007549	4
1.363394628	1.196525404	0.166869224	0.292485278	5.218053819	5.127667284	0.344743974	0.595317422	4
0.646356908	0.223951495	0.422405413	0.334728285	0.229017231	0.156499893	0.010070047	8.812498198	31

0.678188412	0.375997961	0.302190451	0.603144	0.194647116	0.097560395	0.40845609	3.860149376	25
0.675136708	0.230724271	0.444412436	0.101376266	0.162898934	0.087009152	0.261430875	2.391659194	4
1.611625449	0.329583585	1.282041864	0.805712146	0.19537474	0.165531396	0	4.019593158	9
0.435786952	0.076460922	0.35932603	0.068287761	0.222620392	0.153718886	0.061077474	5.289795117	10
0.656165056	0.287552823	0.368612233	0.82415939	0.188191444	0.098999328	0.066682769	2.290505495	17
0.774288601	0.157279986	0.617008616	0.181774854	0.194328136	0.12554283	0.22217922	1.611462331	10
0.732950873	0.221603888	0.511346984	0.031082278	0.149248745	0.03835277	0.300011691	3.221042905	7
0.521615814	0.023904637	0.497711177	0.157141881	0.133113281	0.078885967	0.00020491	8.050269766	24
0.475555739	0.376650924	0.098904815	0.403795326	0.142650549	0.125497468	0.113925175	2.374821216	3
0.327662282	0.155054954	0.375697347	0.296825775	0.221571447	0.14146568	0.052803436	2.189446746	7

Annex 2: SUMMARY STATISTICS

	TDR	LTDR	STDR	TANG	PROF	RISK	G	SIZE	AGE
Mean	0.621991	0.217285	0.411053	0.312897	0.312986	0.259812	0.159650	4.219498	17.06250
Median	0.649021	0.207249	0.431353	0.294095	0.163177	0.098640	0.106525	3.740782	10.00000
Maximum	1.611625	1.196525	1.282042	0.824159	5.218054	5.127667	0.660860	8.812498	70.00000
Minimum	-0.963889	-0.700501	-0.263389	0.012948	-0.277609	-0.044961	0.000000	0.595317	3.000000
Std. Dev.	0.389766	0.276044	0.240537	0.254458	0.902337	0.891110	0.170386	2.412576	17.34087
Skewness	-1.484391	0.318791	0.722910	0.533426	5.248108	5.333756	1.338914	0.556695	2.024908
Kurtosis	11.01703	9.487714	8.062853	2.053626	29.08366	29.65405	4.386222	2.082097	6.373236
Jarque-Bera	97.44856	56.66259	36.96384	2.711728	1054.037	1098.979	12.12316	2.776244	37.03965
Probability	0.000000	0.000000	0.000000	0.257725	0.000000	0.000000	0.002331	0.249544	0.000000
Sum	19.90371	6.953106	13.15370	10.01271	10.01556	8.313992	5.108788	135.0240	546.0000
Sum Sq. Dev.	4.709452	2.362216	1.793604	2.007217	25.24059	24.61641	0.899973	180.4363	9321.875
Observations	32	32	32	32	32	32	32	32	32

Annex 3: CORRELATION MATRIX

	TDR	LTDR	STDR	TANG	PROF	RISK	G	SIZE	AGE
TDR	1.000000	0.783082	0.701155	0.086509	0.349781	0.358750	-0.075127	-0.002180	0.048919
LTDR	0.783082	1.000000	0.115149	0.105212	0.638159	0.641376	0.199709	-0.034006	-0.068026
STDR	0.701155	0.115149	1.000000	0.017716	-0.168335	-0.158352	-0.368005	0.012575	0.141532
TANG	0.086509	0.105212	0.017716	1.000000	-0.002510	-0.010323	-0.335053	0.155319	-0.015917
PROF	0.349781	0.638159	-0.168335	-0.002510	1.000000	0.997353	0.190949	-0.263055	-0.155379
RISK	0.358750	0.641376	-0.158352	-0.010323	0.997353	1.000000	0.184127	-0.279914	-0.146243
G	-0.075127	0.199709	-0.368005	-0.335053	0.190949	0.184127	1.000000	-0.328079	-0.199179
SIZE	-0.002180	-0.034006	0.012575	0.155319	-0.263055	-0.279914	-0.328079	1.000000	0.049281
AGE	0.048919	-0.068026	0.141532	-0.015917	-0.155379	-0.146243	-0.199179	0.049281	1.000000

Annex 4: REGRESSION ON THE FULL MODELS

Dependent Variable: STDR

Method: Least Squares

Date: 03/26/14 Time: 09:05

Sample: 1 32

Included observations: 32

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.592516	0.146714	4.038574	0.0004
TANG	-0.087609	0.184770	-0.474152	0.6395
PROF	-0.215626	0.705077	-0.305819	0.7623
RISK	0.186946	0.715357	0.261332	0.7960
G	-0.572613	0.297965	-1.921745	0.0661
SIZE	-0.012667	0.020486	-0.618328	0.5420
AGE	0.000570	0.002607	0.218847	0.8285

R-squared	0.178343	Mean dependent var	0.411053
Adjusted R-squared	-0.018855	S.D. dependent var	0.240537
S.E. of regression	0.242794	Akaike info criterion	0.197437
Sum squared resid	1.473728	Schwarz criterion	0.518066
Log likelihood	3.841015	Hannan-Quinn criter.	0.303716
F-statistic	0.904385	Durbin-Watson stat	2.003981
Prob(F-statistic)	0.507501		

Dependent Variable: LTDR

Method: Least Squares

Date: 03/26/14 Time: 09:07

Sample: 1 32

Included observations: 32

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.050974	0.133408	-0.382090	0.7056
TANG	0.179020	0.168013	1.065512	0.2968
PROF	-0.436061	0.641131	-0.680144	0.5027
RISK	0.648459	0.650479	0.996894	0.3284
G	0.365158	0.270942	1.347737	0.1898
SIZE	0.025479	0.018628	1.367740	0.1836
AGE	0.000846	0.002370	0.357102	0.7240

R-squared	0.484155	Mean dependent var	0.217285
Adjusted R-squared	0.360353	S.D. dependent var	0.276044
S.E. of regression	0.220775	Akaike info criterion	0.007291
Sum squared resid	1.218536	Schwarz criterion	0.327921
Log likelihood	6.883338	Hannan-Quinn criter.	0.113571
F-statistic	3.910703	Durbin-Watson stat	2.826100
Prob(F-statistic)	0.006841		

Dependent Variable: TDR

Method: Least Squares

Date: 03/26/14 Time: 09:10

Sample: 1 32

Included observations: 32

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.504618	0.238108	2.119285	0.0442
TANG	0.102003	0.299871	0.340156	0.7366
PROF	-0.736805	1.144296	-0.643893	0.5255
RISK	0.924358	1.160980	0.796187	0.4334
G	-0.152901	0.483579	-0.316186	0.7545
SIZE	0.016910	0.033248	0.508599	0.6155
AGE	0.001698	0.004231	0.401265	0.6916

R-squared	0.175765	Mean dependent var	0.621991
Adjusted R-squared	-0.022052	S.D. dependent var	0.389766
S.E. of regression	0.394040	Akaike info criterion	1.165913
Sum squared resid	3.881697	Schwarz criterion	1.486543
Log likelihood	-11.65462	Hannan-Quinn criter.	1.272193
F-statistic	0.888524	Durbin-Watson stat	2.395731
Prob(F-statistic)	0.518016		

Annex5: REGRESSION ON THE MODIFIED MODELS

Dependent Variable: STDR

Method: Least Squares

Date: 03/26/14 Time: 09:46

Sample: 1 32

Included observations: 32

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.593137	0.144042	4.117798	0.0003
TANG	-0.093730	0.179966	-0.520822	0.6069
PROF	-0.031849	0.050048	-0.636368	0.5301
G	-0.587257	0.287357	-2.043648	0.0512
SIZE	-0.014175	0.019302	-0.734392	0.4693
AGE	0.000632	0.002549	0.247790	0.8062

R-squared	0.176098	Mean dependent var	0.411053
Adjusted R-squared	0.017655	S.D. dependent var	0.240537
S.E. of regression	0.238404	Akaike info criterion	0.137665
Sum squared resid	1.477754	Schwarz criterion	0.412490
Log likelihood	3.797366	Hannan-Quinn criter.	0.228761
F-statistic	1.111431	Durbin-Watson stat	2.027634
Prob(F-statistic)	0.378544		

Dependent Variable: LTDR

Method: Least Squares

Date: 03/26/14 Time: 10:02

Sample: 1 32

Included observations: 32

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.050892	0.132022	-0.385484	0.7030
TANG	0.164008	0.164826	0.995032	0.3289
RISK	0.207197	0.046534	4.452608	0.0001
G	0.329206	0.262975	1.251855	0.2218
SIZE	0.022116	0.017774	1.244317	0.2245
AGE	0.001005	0.002334	0.430595	0.6703

R-squared	0.474610	Mean dependent var	0.217285
Adjusted R-squared	0.373574	S.D. dependent var	0.276044
S.E. of regression	0.218481	Akaike info criterion	-0.036874
Sum squared resid	1.241084	Schwarz criterion	0.237952
Log likelihood	6.589983	Hannan-Quinn criter.	0.054223
F-statistic	4.697417	Durbin-Watson stat	2.813931
Prob(F-statistic)	0.003451		

Dependent Variable: TDR

Method: Least Squares

Date: 03/26/14 Time: 10:22

Sample: 1 32

Included observations: 32

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.504756	0.235412	2.144139	0.0415
TANG	0.076637	0.293906	0.260754	0.7963
RISK	0.178766	0.082976	2.154441	0.0406
G	-0.213648	0.468917	-0.455620	0.6524
SIZE	0.011228	0.031693	0.354284	0.7260
AGE	0.001966	0.004162	0.472262	0.6407

R-squared	0.162096	Mean dependent var	0.621991
Adjusted R-squared	0.000960	S.D. dependent var	0.389766
S.E. of regression	0.389579	Akaike info criterion	1.119861
Sum squared resid	3.946070	Schwarz criterion	1.394687
Log likelihood	-11.91778	Hannan-Quinn criter.	1.210958
F-statistic	1.005958	Durbin-Watson stat	2.424020
Prob(F-statistic)	0.433973		