

The role of access to finance in the growth of firms in South Africa

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ABSTRACT

SMEs can play a significant role in the economy as drivers of economic growth and job creation. Many SMEs are, however constrained by their limited access to finance. This study examines the source of finance of firms in South Africa and estimates the importance of finance as a predictor of output per worker. Using the 2007 World Bank Enterprise Survey, the study focuses on the firm's access to finance, or sources of finance, as a predictor of the productivity of South African firms. Other factors that are taken into account include sources of finance such as the overdraft of the firm, collateral available and the type of financial institution used to acquire financing. These covariates all play an integral role in whether or not the firm will receive the financing, the amount granted and the repayment terms.

Empirical analysis is done with a Cobb-Douglas production function regression to determine how output per worker is influenced by various factors. The results show that output per worker improves as additional finance variables are added to the regression model. Using an access to finance dummy as the dependent variable, a logistic regression model is used to calculate the probability of access to finance as a constraint based on the independent variables. The results of the logistic regression show that the probability of firms' experiencing access to finance as a constraint is decreased by variables such as fixed assets and increase with negative factors such as existing debt and collateral. These results are expected based on previous research on the topic and confirms that access and finance sources are determinants for firm growth. Recommendations include more extensive research on the topic, with panel data over a longer period and specific to a country. Policy recommendations include amended evaluation techniques, adapted to the individual firm's requirements and strengths.

Keywords: access to finance, sources of finance, small and medium enterprises, South Africa, firm growth

OPSOMMING

KMO's kan 'n beduidende rol in die ekonomie as drywers van ekonomiese groei en werkskepping speel. Baie KMO's word egter deur hul beperkte toegang tot finansiering beperk. Hierdie studie ondersoek die bron van finansiering van ondernemings in Suid-Afrika en beraam die belangrikheid van finansiering as voorspeller vir uitset per werker. Deur gebruik te maak van die World Bank Enterprise-opname fokus die studie op die ondernemings se toegang tot finansiering, of bronne van finansiering, as voorspeller van die produktiwiteit van Suid-Afrikaanse ondernemings. Ander faktore wat in ag geneem word, sluit bronne van finansiering soos die oortrokke fasiliteit van die onderneming, beskikbare kollateraal en die tipe finansiële instelling gebruik, in. Hierdie kovariante speel almal 'n integrale rol in of die onderneming die finansiering gaan ontvang al dan nie, die bedrag toegestaan en die terugbetalingsbepalings.

'n Empiriese analise is gedoen met 'n Cobb-Douglas-produksiefunksie-regressie om te bepaal hoe uitset per werker deur verskeie faktore beïnvloed word. Die resultate toon dat uitset per werker verbeter soos addisionele finansieringsveranderlikes tot die regressiemodel bygevoeg word. Deur gebruik te maak van 'n toegang-tot-finansieringsfiguurmodel as die afhanklike veranderlike, word 'n logistieke regressiemodel gebruik om die waarskynlikheid van toegang tot finansiering as 'n beperking, gebaseer op die onafhanklike veranderlikes, te bereken. Die resultate van die logistieke regressie toon dat die waarskynlikheid van firmas om toegang tot finansiering as beperking te ervaar, afneem deur veranderlikes soos vaste bates en toeneem met negatiewe faktore soos bestaande skuld en kollateraal. Hierdie resultate word verwag, met inagneming van vorige navorsing oor die onderwerp, en bevestig dat toegang en finansieringsbronne bepalers van ondernemingsgroei is. Aanbevelings sluit in dat meer breedvoerige navorsing oor die onderwerp gedoen moet word, met paneeldata oor 'n langer tydperk en spesifiek tot 'n land. Beleidsaanbevelings sluit gewysigde evaluasietegnieke, aangepas tot die individuele onderneming se vereistes en sterkpunte, in.

Sleutelwoorde: toegang tot finansiering, bronne van finansiering, klein en mediumgrootte ondernemings, Suid-Afrika, ondernemingsgroei

Chapter 1 – Introduction

1.1 BACKGROUND

Small and medium enterprises (SMEs) are an important part of a country's economy. Small firms provide employment and stimulate long-term economic growth. In order to make a substantial contribution to economic growth and development, firms need to grow and expand. Many firms need financing and investment in order to grow. Many countries face challenges in obtaining sufficient financial sources and firms face obstacles in accessing additional finance (Wattanapruittipaisan, 2002; Beck & Demirgüç-Kunt, 2006; Nichter & Goldmark, 2009).

As a developing country, South Africa has many growth objectives, such as poverty reduction, and turns to the private sector in the hope of attaining them. Small and medium enterprises (SMEs) contribute to approximately half of the gross domestic product (GDP) in South Africa and provide employment for more than 60% of the working population (Falkena *et al.*, 2001). SMEs in South Africa need to grow in order to provide additional job opportunities and promote economic growth. SME grow this often explained in terms of factors such as firm size, age and financial position. Along with this are factors that can deter or prevent firm growth, which can include access to finance (Nichter & Goldmark, 2009; Beck & Demirgüç-Kunt, 2006).

There are four barriers to small firm growth. First, is the perception that small firms do not have the necessary technology and are not innovative enough to compete in the international market. Innovation and skills are important parts of firm growth and eventually economic growth. Innovation can increase output per worker and serves as an input to new goods and services (Hölzl & Janger, 2011). Innovation may be hampered by a lack of sufficient finance, if firms lag behind in their use of technology or by low market demand for the particular goods or services. New technology firms hope to attract venture capital investors for funding. Education, experience and the management of skills can help firms to overcome some of the barriers preventing innovation at firm level (UNEP FI, 2007; Hölzl & Janger, 2011).

Secondly, there may be institutional barriers to firm growth. Policy and regulation barriers are obstacles, as many African countries do not follow a standardised set of rules and regulations regarding SMEs. This makes it difficult for entrepreneurs to register and develop new companies (UNEP FI, 2007). Developing countries often have weaker legal systems and this will affect firms' access to finance. Financial institutions will not provide funding to firms if they do not have recourse to an efficient legal system to deal with non-payment and defaults (Cassimon & Engelen, 2002). Legal systems are also in place to protect intellectual property rights and security on patents. If these systems are inadequate, firm growth can stagnate. The legal system will therefore affect financial resources, financial institutions and access to these sources (Cassimon & Engelen, 2002; UNEP FI, 2007).

The third barrier deals with firm-specific characteristics, skills and management. With lower literacy rates and a lack of new technology, the training of employees is limiting growth rates in many African countries (UNEP FI, 2007). Human and social capital can affect firm growth as it represents the knowledge and skills of the workers. Lower quality human capital means that workers are less productive and often lack the necessary skills and experience, and this lowers the total output of a firm (MacPherson & Holt, 2007). Management is important as it determines the growth strategies implemented by the firm. Growth strategies will indicate target markets, investments and finance decisions. Weaker market demands or changes in consumer tastes and preferences will directly affect sales. Skills and management play a role in access to finance and loan applications. With poor management, firms pose a higher risk of non-repayment to financial institutions; therefore, SMEs struggle to get loans (McCormick, Kinyanjui & Ongile, 1997).

The final barrier to firm growth is financial sources available and access to these sources. As the preceding discussion of barriers above shows, these financial barriers are intertwined with other determinants of firm growth. Firstly, economic stability is important for the functioning of the financial sector and African countries often lack the macroeconomic stability needed for the expansion of banking. High and unstable inflation and interest rates, in turn, affect firms' need and access to finance (Demirgüç-Kunt, Beck & Honohan, 2008).

SMEs' need for finance also differs between firms. Finance can be used to acquire new assets such as buildings or machinery to improve productivity or even to employ more workers (Falkena, 2001). Finance can be sourced from two areas, either internally and externally. Working capital is an important part of a company's internal finances and consists of stock, debtors and creditors. Management has to be aware of the status of outstanding debt, credit and suppliers and the stock of goods (Cinnamon & Helweg-Larson, 2007; Bized, 2010). External sources are seen as funds received from friends and family, equity, banks and state sources (Malhorta *et al.*, 2006).

Small firms face obstacles in obtaining finance, due to a lack of collateral, limited or poor credit history and firm characteristics such as size. Studies show that firms in countries with higher income per capita and competitive banking face lower barriers to access finance (Demirgüç-Kunt *et al.*, 2008). The private sector may not be the only source of finance and finance can be supplemented by government support programmes to accommodate the demand for finance. This needs proper policies and regulations and African countries are often hindered by high levels of corruption (Demirgüç-Kunt *et al.*, 2008; Campos, Estrin & Proto, 2010).

Therefore, an important barrier preventing firm growth is access to finance and its sources.

1.2 PROBLEM STATEMENT

SMEs can play a significant role in the economy as drivers of economic growth and job creation. Firm and SME growth can encourage higher demand to the specific goods or services and can potentially provide job opportunities. Employment can have a positive effect on the economy of a country, especially in a developing country such as South Africa that has high unemployment and poverty rates. Many firms and SMEs are, however, constrained by their limited access to finance.

Access to finance can be seen the supply of financial services available to firms. Financial institutions use either the traditional method such as analysis of the company's financial statements to determine the firm's credit profile for loan

applications or they can use credit scoring methods. By adapting the evaluation methods for loan applications, more firm can have the necessary access to financial sources. Apart from access to finance, firms and SMEs also face several obstacles when obtaining finance from the various sources available. Finance can be sourced either internally or externally. Internal sources of finance originate from within the firm such as retained profits or personal wealth. External sources are found outside the firm usually in the form of bank loans, government aid programmes and investors. This study examines the source of finance of firms in South Africa and estimates the importance of finance as a predictor of output per worker.

1.3 MOTIVATION

Small and medium-sized firms are vital to a country's economic development, whether in developed or developing countries. These smaller firms offer many employment opportunities and improve the production of certain goods or services. Entrepreneurs have the ideas to initiate a new venture and access potential markets where a need for a specific product or service is noticeable (Man *et al.*, 2002).

Small firm growth also contributes to economic growth and development. While they play an important role, the financial resources available and the access to these sources can pose obstacles for firms. The main sources of finance are internal and external sources (Rogers, 2009:154-155). Each type presents firms with obstacles to overcome. Internal financial sources come from within the organisation, such as retained profits and personal contributions. This is an option if the firm has performed well enough or if the owner's credit history allows personal loans to be approved (Avery, Bostic & Samolyk, 1998). External sources can present even greater obstacles to firm growth.

An important factor affecting access to external finance is the level of development of a country. Developed countries such as the USA or Germany may offer better financial services and advice for new firms than those in a developing country such as South Africa or India (Beck & Demirgüç-Kunt, 2006). The reasons for this may include the differences in the development of banks, differences in interest and inflation rates as well as the overall levels of skills of entrepreneurs and workers.

Together with this, is the country-specific factors such as government regulations and corruption that will influence the ease with which firms gain access to finance or enter the market (Beck & Demirgüç-Kunt, 2006), as found in a study done in Russia. These factors are mostly based on macroeconomic stability, where developed countries are in a better position than developing countries (Beck & Demirgüç-Kunt, 2006).

A country such as South Africa already struggles with issues concerning economic growth in terms of a high unemployment rate and poverty (Landman *et al.*, 2003:1,3). By stimulating the growth of SMEs, the economy will benefit in the long-run. This means that firm growth will be a vital part of the economic solution. The effects of growing SMEs can be seen in the studies of Falkena (2001) and Beck and Demirgüç-Kunt (2006). Falkena (2001) also indicated the substantial contribution of SMEs in South Africa and the economic significance such as employment of more than half of the labour force. A study by Rogerson (2008) identified access to finance as one of the greatest barriers for SMEs in South Africa.

Firms in financial need will mostly turn to banks for a loan, instead of investigating other options such as joint ventures or equity investors. SMEs are also more likely to be rejected for additional financing due to lack of collateral or existing levels of debt. More small firms are typically rejected than larger firms, although for various reasons (Seglin, 1990:45; Chaston, 2010).

This study focuses on the firm's access to finance and sources of finance, as a predictor of the productivity of South African firms. Other factors that are taken into account include sources of finance such as the overdraft of the firm, collateral available and the type of financial institution used to acquire financing. These covariates all play an integral role in whether or not the firm will receive the financing, the amount granted and the repayment terms.

1.4 OBJECTIVES

The general objective of this study is to examine access to finance as a determinant of firm productivity in South Africa.

The specific objectives are to:

- review the literature on the finance-firm growth link and draw conclusions for empirical application within the South African context;
- describe the characteristics of the firms and their sources of finance in the South African World Bank Enterprise Survey data; and
- use an econometric model to estimate the determinants of firm productivity, including the importance of access to finance and to also estimate the predictors of firms' access to finance.

1.5 RESEARCH METHOD

To achieve the objectives of the study, the literature overview will set out to achieve the first specific objective. It consists of a review of firm-level and finance studies. These studies focus on firms and economic growth and development as well as the sources of finance in relation to firm growth. The empirical analysis uses firm-level data from the World Bank Enterprise Survey 2007 to achieve the second and third specific objectives. Measures of firms' access to finance are described and compared to measures of firms' performance. The data on access to financial resources are obtained from the South African World Bank Enterprise Survey, specifically Section K of the questionnaire. The empirical analysis is done using SPSS. Two econometric models are estimated: a cross-section OLS model of the determinants of firm-level productivity, including access to finance, as well as a logistic regression of the predictors of firms' access to finance.

1.6 OUTLINE

The outline of the study is as follows:

- Chapter 1 is the introduction and background.

- Chapter 2 contains the literature on firms and economic growth and development.
- Chapter 3 describes the literature on sources of finance and firm growth.
- Chapter 4 consists of an empirical analysis of sources of finance and firm growth.
- Chapter 5 concludes and makes recommendations.

Chapter 2 – Firm and economic growth

2.1 INTRODUCTION

The end of World War II left damaged businesses and industries geared towards war-time production in its wake. The economic situation forced many to consider alternative solutions for the high unemployment and reconstruction of damaged cities. This time saw the start of many new endeavours, starting with a single person with an idea and some growing into multinational corporations (Chaston, 2010).

The same could be seen after the oil crises of the 1970s, the crash of Wall Street in the 1980s, and the Asian crisis of the late 1990s. The recovery took place with small firms supplying employment opportunities for those who did not have sufficient training or the experience required by large firms. These firms have powered economic growth and development for many countries in a downturn (McPherson, 1996).

The World Bank (2010) defines economic growth as an increase in a country's Gross Domestic Product (GDP) or Gross National Product (GNP) in a year. The increase can be a result of an increase of resources or using existing resources more efficiently. Resources can be classified as natural, capital or human resources. Economic development focuses on the structure of the economy and the wellbeing of the population (World Bank, 2010).

The point made in this chapter, is that firms are the key to economic growth. To explain this statement, this chapter examines the growth theories of the past and how they have changed accordingly (see Section 2.2). Section 2.3 studies the function of Small and Medium Enterprises¹ (SMEs) in the economy with regard to employment and growth, and Section 2.4 identify the determinants of firm growth,

¹ Small and Medium Enterprises can be defined by the number of employees or the annual turnover. Micro-enterprises have 50 employees or fewer, small enterprises have 100 employees or fewer and medium firms have 250 or fewer employees (European Commission, 2003). In South Africa, the total

such as the entrepreneur, firm-specific and external factors. Section 2.5 concludes the chapter.

2.2 ECONOMIC GROWTH THEORIES

Economic growth theories have changed with economic and government systems over the years. Many governments focus on economic growth and development, stating macro-economic factors such as low inflation and a trade surplus as the main objectives (Spiegel, 2007). Policies to achieve this also have an impact at the micro-economic level of firms to improve productivity and increase production (Fisher, 2007). This section examines economic theories of growth, as well as their basic principles and shortcomings.

2.2.1 Classic Growth Theory

One of the earliest theories of economic growth was Mercantilism, which argued in favour of an increase in the amount of gold and silver in circulation and control by the state. This framework focussed on trade and therefore encouraged the start of manufacturing, by importing materials and intermediary goods and then exporting the final product. With Mercantilism it was believed that trade improved economic growth at the expense of the other countries. Therefore, a government was to control the trade balance by limiting imports to have a surplus of exports (Krugman & Obstfeld, 2009).

Following Mercantilism was the classical theory of economic growth. It is based on trade where a nation has a relative or comparative advantage in production. Smith and Ricardo were, unlike in Mercantilist theory, in favour of free trade between countries, not state-controlled trade agreements (Krugman & Obstfeld, 2009).

Free trade is considered a fair market to consumers and suppliers while prices are determined by market forces instead of by suppliers alone. Free trade also promotes

annual turnover must be less than R2 million to R18 million for medium and R2 million to R4.5 million for small firms, depending on the industry (Falkena *et al.*, 2001).

specialisation as this encourages firms to improve productivity and quality of goods and services (Mohr & Fourie, 2008).

The four production factors are used to maximise profits in firms. The productivity and distribution of the available natural resources will result in either a relative or comparative advantage in trade. This is as a result of the uneven distribution of resources as well as the level of development of a country (Mohr & Fourie, 2008).

The classical theory was comprehensive enough when it was first introduced; however, it did not anticipate drastic economic influences of additional production factors such as new technology, which is incorporated in the exogenous growth theory.

2.2.2 Neoclassical Theory or Exogenous Growth Theory

Economic growth theories try to identify certain determinants of why countries develop, why some develop faster than others and the rate at which they change. After the World Wars, technology advanced rapidly and forced economists to look at growth in a new way. In 1956, Solow and Swan developed a model that took into account the importance of technology as a driver of economic growth in addition to the existing four production factors (Mulder, De Groot & Hofkes, 2001).

Solow (1956) had some concerns regarding the Harrod-Domar model to determine economic growth. The Harrod-Domar model does not allow for technical change and capital and labour change with fixed proportions. Solow proposed a model that would take into account not only variable rates of change for labour (population growth rate) and technical change, but also less strict assumptions on other factors such as savings and investment (Solow, 1956).

The theory was adapted to distinguish between the *potential* growth of output, the *actual* growth of output and the rate of changes in the population size along with technology (Roberts & Setterfield, 2007). This theory is seen as the neoclassical model of growth. As with the classical theory, it is derived from the production and competition of firms in a market. To accommodate the market demand, firms would

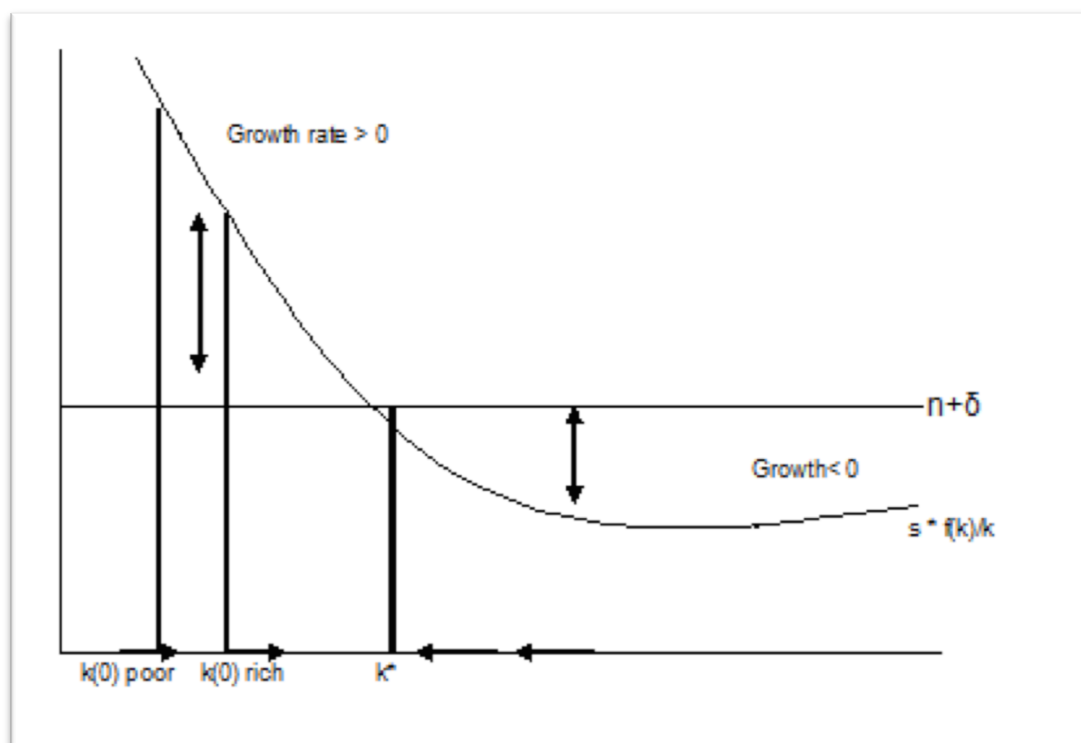
have to employ more workers or change production methods in order to be more efficient. The new increased demand can be a result of access to new markets, local and international, or an increase in population growth (Roberts & Setterfield, 2007). For the neoclassical approach, the equilibrium price is determined by demand, supply and technology. The impact of new technology can be seen in more efficient production techniques, improved quality and better distribution of goods and services. Technology has also promoted international trade and is used in the identification of potential new markets (Nelson & Winter, 1974).

The Neoclassical theory also introduced the Solow model. The Solow Model explains that the growth of output per capita is a result of exogenous technical change (Green, Kirkpatrick & Murinde, 2005). The production factors in an economy are used as inputs, as capital and labour (K and L, respectively), and use technology (T) to produce outputs (Y). This is the production function and can be expressed as: $Y = F(K, L, T)$ and uses the Cobbs-Douglas form. Economic growth occurs when one or more of these factors increase, in other words more workers, investment in capital or better production methods (Solow, 1956; Weerapana, 2005).

In this growth model, savings (S) provide the resources for investment (I). Investment in capital results in increased output per worker, but at a decreasing rate. In the long- run, the economy reaches a steady rate of growth, which is determined by the increase in labour (L). The only way to increase growth, is by technological input in the production process (Whelan, 2005; Econ IA State, 2006).

Figure 2.1 shows that the steady state of capital is the level where investment and depreciation intersect at $\Delta k=0$. With output (Y) and capital (K) held constant, labour (L) will increase at the rate of "n". Technical progress is added last to the production function and grows at a rate of "g", based on proficiency of workers and new technologies. The growth rate of technology, "g", and α (the controlling factor for the marginal returns to capital) can affect the growth rate of the output per worker (Whelan, 2005; Econ IA State, 2006).

Figure 2.1: The Solow Model



Source: Adapted from Barro & Sala-i-Martin, 2004:38

The neoclassical model has also been used to explain why some countries are “richer” than others. The higher investment/savings rates seen in the Solow model are an important indicator of developed and “richer” countries, while these countries also have lower depreciation rates and higher levels of output per worker (Weerapana, 2005). The model has often been used to predict convergence. According to these arguments, decreasing returns to capital cause growth rates in developed economies to slow and surplus funds to flow to developing economies and higher returns. This process would increase economic growth rates in developing economies, leading to a “catch-up” in per capita terms (Weerapana, 2005).

A shortcoming of the neoclassical explanation of growth is that it does not consider the source of the new technology. Even with all the praise for new machinery, production methods and e-commerce, many policymakers seem to neglect an important aspect – the person behind the new technology. Without the entrepreneur, or at least an individual with an idea, there would be no new improvements in the

global market. The role of the entrepreneur is discussed in the endogenous growth theory.

2.2.3 New Growth Theory or Endogenous Growth Theory

Since the 1990s, there has been a change in economic activity and trade. This started with the economic boom of the “Asian Tigers”², followed by the Asian crisis’ quick recession (Wattanapruttipaisan, 2002). During this time, the USA experienced rapid economic expansion, mostly from technology and the beginning of e-commerce (Ho, Kauffman & Liang, 2007).

In order to fully grasp the reasons why growth rates and income differ between countries, the endogenous growth theory was developed. The research was done to understand the economic conditions of less-developed countries (Thirlwall, 2006:153). With the data available for empirical research, the studies found that there was no convergence of income *per capita* as previously assumed by the neoclassical growth theory. Growth is determined by endogenous factors beyond only capital, labour and technology (Thirlwall, 2006:153-154).

Romer started the investigation into long-run growth and offered a model with the production factors that influenced the long-run growth of a country. These factors also include endogenous technological change, which generates increasing returns to scale and showed that growth rates can increase over time. This study looked at technological changes across different countries and the impact it has on long-run growth. The slower rate of convergence can also be a result of the uneven distribution of technology (R&D) and the mobility thereof (Romer, 1986).

In addition to endogenous technology, Alwyn Young (1991) introduced the theory of “learning by doing” in 1991. The model that Young (1991) proposed emphasised a particular characteristic in terms of technical progress – the spill over effect of knowledge across different sectors and industries, which can lead to innovation and technical changes. This spill over effect has a positive effect on economic growth by

² The “Asian Tigers” consist of the fast-growing economies of Taiwan, Hong Kong, Singapore and South Korea (Thirlwall, 2006).

means of improving the productivity of workers in several industries at a time, which is learning by doing (Young, 1991).

Human capital has played an important part in the production function of the classical theory. Without the human input, none of the other factors can function properly. Human capital will also influence how efficiently the other factors are applied and output is produced (Lucas, 1990). Human capital is influenced by the labour force, which in turn is affected by the rate of population growth in a country. Technology and income also play a role in human capital input and cannot be transferred between rich and poor countries as with physical goods (Lucas, 1990).

Thirlwall (2006) provided an overview of the empirical evidence of the “new” growth theory, for example the research done by Barro in 1991, which examined 98 countries over a period of 25 years. Barro (1991) wanted to test the neoclassical growth model with the added variable of human capital formation. The level of *per capita* income was not found to be significant in relation to the growth of *per capita* income, contradicting the neoclassical model and supporting the “new” theory of endogenous growth. When controlling for the effect of investment ratios and population growth and adding human capital formation, Barro (1991) also found a negative relationship between initial levels of per capita income and per capita income growth. This supports the neoclassical model. Barro (1991) also found that countries with high levels of human capital formation had higher growth rates, such as the Asian Pacific countries, compared to African countries with lower human capital levels and lower economic growth rates (Thirlwall, 2006:159).

According to Thirlwall (2006), Mankiv, Romer and Weil (1992) used the level of per capita income as the dependent variable and concluded that changes in savings and population growth rates will have an effect on the income levels. This supports the neoclassical growth theory. Their results also indicated a higher elasticity of output with respect to the added human capital formation variable. This concludes that human capital is a significant factor in growth of per capita income (Thirlwall, 2006:159).

Another study by Barro and Lee (1993) indicates several factors to explain the difference of growth rates between countries. These include the level of per capita income, which has a negative effect on the growth rate; a positive investment ratio; a negative government consumption ratio; market distortions, which have a negative effect; and political instability, which has a negative effect (Thirlwall, 2006:160). These and other studies are summarised in Table 2.1 below.

Table 2.1 Macro-determinants of growth

Study	Dependent variable	Savings-investment ratio	Population growth	Education	Government consumption distortions	Political instability	Trade variables
Barro (1991)	Growth of <i>per capita</i> income	Not considered	Not considered	Significant (+)	Significant (-)	Not considered	Not considered
Mankiv, Romer and Weil (1992)	Growth of <i>per capita</i> income	Significant (+)	Significant (-)	Significant (+)	Not considered	Not considered	Not considered
Knight, Loayza and Vilanueva (1993)	Growth of output per worker	Significant (+)	Significant (-)	Significant (+)	Not considered	Not considered	Significant (+)
Barro and Lee (1993)	Growth of <i>per capita</i> income	Significant (+)	Not considered	Significant (+)	Significant (-)	Significant (-)	Not considered
Levine and Renelt (1992)	Growth of <i>per capita</i> income	Significant (+)	Not robust	Significant (+)	Not robust	Not robust	Not robust
Levine and Zervos (1993)	Growth of <i>per capita</i> income	Not considered	Not considered	Significant (+)	Not considered	Significant (-)	Weak

Source: Adapted from Thirlwall, 2006:158

The new growth theory made provision for the various production factors that support economic growth, except for one – creativity of the entrepreneur.

2.2.4 Creative destruction

Schumpeter (1947) was the first to develop the concept of creative destruction. This involves the notion that an entrepreneur can take an idea and turn it into a successful business. Firms and entrepreneurs aim to maximise profits and with innovative products or services, gain and maintain a competitive advantage in the market. According to Schumpeter (1947), economic development does not depend on factors such as population changes or per capita income, but rather on entrepreneurs and innovation.

An increase in population means that more workers are available in the labour force and this can be seen as an adaptive response in the economy. A significant change that has an impact on the entire society or economy is seen as a creative response (Schumpeter, 1947).

Creative response can be identified by three characteristics: it cannot be predicted, it has an impact on the ensuing long-term outcome by means of transition of the economic situation, and finally, it depends on the current skills of the labour force and the consumer demands (Schumpeter, 1947). The concept and understanding of an entrepreneur have to be clear in order to clearly identify its effect on an economy. Broadly, an entrepreneur is associated with innovation, which can be either a new product or service or a new method of producing an existing product (Schumpeter, 1947).

Schumpeter (1947) has identified several concepts to clarify the means and purpose of an entrepreneur. The first distinction to consider is the difference between an entrepreneur and a manager. The entrepreneur initiates an idea or concept, but will not necessarily enforce ownership and management of the venture. The other distinction is made between an entrepreneur and inventor. The inventor will have an idea, but an entrepreneur will initiate it and follow through to a business venture. It may not even be an entirely new product, but merely a modification of an existing product or production method. The entrepreneur will oversee this new product, which can ultimately have an impact on the entire economy and he is able to cope with problems that might arise with the new product (Schumpeter, 1947; Hart, 1999).

The basic principle of entrepreneurship is to provide goods of which the final price or the cost of input materials is lower than that of existing products. Until competitors mimic this method of production, the entrepreneur will have, even if it is temporary, surplus gains in the market. It can also be seen as monopoly gains at this point. The entrepreneur will make use of patents and licenses to restrict competition and losses for as long as possible. Schumpeter believes that this plays an important role during economic cycles of depression and upswing. Creative destruction is therefore seen in the losses of the “old” firms and their products and methods with the changes brought on by the new firms and entrepreneurs (Schumpeter, 1947; Chaston, 2010).

In summary, all these theories stress the importance of economic growth for a country, for both developing and developed economies. Firms play an important role in achieving economic growth regarding poverty alleviation, productivity and competition (Schumpeter, 1947).

For the purpose of this study, the principles of creative destruction by Schumpeter (1947) will be used, as they identify the importance of the firm, the entrepreneur, innovation and technology and the impact it has on the economy.

2.3 THE ROLE OF SMEs IN THE ECONOMY

SMEs play an important role in any economy, but especially in a developing country. They provide an important platform for employment opportunities and economic growth and also drive competitiveness in the market between suppliers (Dhungana, 2003). The decrease of unemployment will gradually decrease poverty as well, therefore improving the living standards of the population living in poverty. Governments have seen the positive impact of SMEs in a country and some make use of organisations to promote SME growth, such as the United Nation Industrial Development Organisation (UNIDO, 2008).

The importance of SMEs can be seen in a country's economic development, whether in developed or developing countries. These smaller firms offer many employment opportunities and also improve the production of certain goods or services. Entrepreneurs have the ideas to initiate a new venture and access potential markets where a need for a specific product or service is noticeable (Marcati, Guido & Peluso, 2008). This section discusses the role that SMEs play in an economy through employment creation and the impact they have on economic growth.

2.3.1 Employment

Employment plays a very important role in any economy, regardless of whether it is a developed or developing country. According to Falkena *et al.* (2001), SMEs in South Africa provide employment for approximately 60% of the labour force and

contribute to more than half of the GDP. In South American countries, SMEs also provide work for more than half of the population (Nichter & Goldmark, 2009).

Newberry (2006) found that many SMEs are either labour intensive or of an agricultural nature. This means that the SMEs create jobs that cannot be easily replaced by machines, resulting in sustainable growth. An example of SMEs' impact on developing nations can be seen in Africa and South America in particular. There is evidence of job creation by SMEs, although this is not always sustained in the long- run, considering few firms "survive" the first two years of business (Kesper, 2001).

Studies show that smaller firms supply temporary jobs for a larger number of people, mainly to gain experience and skills required by the larger firms (Beck *et al.*, 2006b; O'Regan, Ghodian & Galleary, 2006; Nichter & Goldmark, 2009). Regularly training new employees instead of specialising existing workers may, however, cause many of these firms to stagnate (Nichter & Goldmark, 2009).

Another example of SMEs' importance can be seen in Asia. After several economic downturns, including the Asian crisis, many Asian countries have suffered and recovered on multiple occasions. Apart from farming, SMEs make up approximately 90% of firms in South East Asia (Wattanaputtipaisan, 2002). This means that almost three quarters of employment is in SMEs. Many East Asian countries have a large number of available workers and many firms are labour intensive and the SMEs help to alleviate poverty and reduce unemployment (Wattanaputtipaisan, 2002).

Firms, especially SMEs, can play important roles in terms of production and job creation, but may be deterred by financial resources (Cheng, Gutierrez, Mahajan, Shachmurove & Shahrokhi, 2007). Employment advantages of SMEs can be seen in the case of Dutch SMEs, which provide employment to approximately 90% of the population. Many of these Dutch firms focus on new innovations, but the lack of adequate finance hampers firm growth (Gombault & Versteeg, 1999).

Many European firms are also facing additional pressure to produce goods that are more environmentally safe, which is easier to accomplish in larger firms with easier

access to finance (Gombault & Versteeg, 1999). Rogers (2009:45) also found that more than 50% of the population was employed by a company with fewer than 500 employees and that small businesses account for approximately 70% of all new jobs created each year.

With the important effect that SMEs have on employment, the overall effect that SMEs have on the economy of a country and its growth will be discussed in the following section.

2.3.2 SMEs impact on economic growth

Development occurs in areas with a decrease in unemployment, income inequality and poverty. This leads to a higher quality of life for a large part of the population (Mohr *et al.*, 2008). In developing countries especially, the change of income can often be seen in the growth rates of the poorest part of the population. The part of the population living in extreme poverty seems to gain the most in times of economic growth. The reason can be that the sudden change in the extremely poor's income seems more substantial than with the rest of the population. Economic growth of a country can also be influenced by the size of the private sector, the government and the level of development of the country (Beck *et al.*, 2006b).

It is important to know whether the poor really benefit from economic growth and to what extent. In theory, economic growth will reduce poverty and income inequality, but in practice it is not always as easy to measure the changes accurately. Many believe that economic growth is promoted with trade and globalisation, while others may argue that trade and globalisation can actually harm the growth of a country (Ravallion, 2001). With a 5% increase in income for an entire nation, the richer part of the population will still receive more than the poorer part, even if the percentage change is the same. Therefore, the inequality gap will either stay the same or even widen. The policies have to aim more at the poorer sector than the entire population in order to reduce poverty (Ravallion, 2001).

In a study by Newberry (2006), the role of SMEs in the economy varies from the positive contribution to GDP growth to social responsibility. SMEs are here also seen as labour intensive, mainly agricultural and very innovative (Newberry, 2006).

The impact of SMEs on an economy can be seen in countries such as China. China has played an important role in the rapid economic growth of Eastern Asia and in the world economy (Yao & Yueh, 2009). Manufacturing SMEs aim to provide as many jobs as possible, even if it is with very low wages. Policymakers are also very interested in how China has achieved its impressive growth rates with the contribution of SMEs despite several institutional barriers (Chen, 2006; Yao & Yueh, 2009). It serves as a good example of what a country can achieve, even with obstacles and factors such as legal and financial barriers that may deter growth. One of the biggest changes that have started the growth, is the government restructuring and a market-oriented policy (Yao & Yueh, 2009).

Realising the importance of SMEs, some countries use institutional programmes to promote innovation, research and skills. An example of institutional programmes can be seen with the European Commission helping the Czech Republic with funding to promote small firms. The importance of SMEs and its positive effect on economic growth can be seen in the Czech Republic, especially after the transition from a communist to market system. Before the economic transition in 1992, the country had high tax, interest and inflation rates. After the transition, the government also implemented support programmes for new businesses. While the opportunity to start and register a new firm has been an improvement in terms of employment opportunities, these firms still face the problem of access to finance and institutional challenges (Bohatá & Mládek, 1999).

This section has shown the importance of firms, SMEs in particular, for economic growth. SMEs lower unemployment rates and promote long-run economic growth. In order to employ more workers and promote economic growth, firms need to grow first. Determinants of firm growth will be discussed in the next section.

2.4 DETERMINANTS OF SME GROWTH

There are three main factors to take into consideration with regard to firm growth. First to consider are the entrepreneurial characteristics such as motivation for starting the firm, role in the firm and his/her contribution. Secondly are the firm characteristics, including size, age and industry. Finally are the external factors that can influence firm growth. These are mostly in the form of institutional or government constraints, economic indicators such as inflation and consumer trends.

2.4.1 Entrepreneurial characteristics

Nichter and Goldmark (2009) have identified several key factors relating to SME growth and its role in the economy. One of the most important factors is the characteristics of the entrepreneur, which in turn are determined by the level of education and experience (Nichter & Goldmark, 2009; Chaston, 2010).

a. Education

Education is the first factor to look at what plays a role in the success of a small firm. It is expected that a higher level of education will lead to a more productive and successful company. This is clear when examining developed countries, while many developing countries' entrepreneurs do not have a similar educational background. The quality of education, as seen in Sub-Saharan Africa, is also much lower and tertiary education is expensive and for many not a possibility (Nichter & Goldmark, 2009).

The fact that formal education is not a viable option for many entrepreneurs in developing countries, can be seen as an incentive for the entrepreneur to come up with more efficient production methods and cost-cutting options compared to entrepreneurs in developed countries. The lower levels of education can also result in many to become self-employed, because of the formal education requirements of many large firms. The entrepreneur is motivated to succeed through the rewards to be gained from a successful company, such as financial security and independence (Chaston, 2010).

b. Experience

The second factor is the work experience of the entrepreneur. Experience can play a role in the entrepreneur's reason for establishing a new firm or buying an existing company. This decision can depend on whether the entrepreneur is in desperate need of the income or if he is driven by ambition for wealth (Nichter & Goldmark, 2009; Chaston, 2010).

SME owners depend more on past work experience in a developing country, because of the lower levels of education. The advantages can be either in the form of business skills and production methods or even in the networking aspect to expand the firm (Nichter & Goldmark, 2009). Experience will also affect the entrepreneur's approach to taking risks. The risk can make or break a company and decisions will be made based on past experience (Chaston, 2010).

According to Schumpeter's (1947) theory on creative destruction, the entrepreneur's ability to innovate is vital for firm survival and growth. These entrepreneurs can be seen as proactive in finding new solutions to old problems. It has also been found that experienced managers' firms are more successful, pertaining to either experience in the sector or in management (Chaston, 2010).

c. Gender

Another factor that could influence firm growth is the gender of the manager. Developing countries have a high number of female entrepreneurs in SMEs (Bolt, 2010). Reasons for this can include limited employment options and because women are generally considered a lower risk than men when it comes to access to finance (Nichter & Goldmark, 2009; Mazzarol & Reboud, 2009).

During the 1990s, increased gender inequality played a big role in the development of entrepreneurs (Rogers, 2009:1). The number of female entrepreneurs have increased significantly since the 1960s, rising from less than a million female-owned businesses to over 7.7 million in 2006 in the United States (Rogers 2009:48).

Apart from the characteristics of the entrepreneur, the growth of SMEs may also be determined by firm-level characteristics, which are explained in the next section.

2.4.2 Firm characteristics

Firm characteristics can be divided into two main factors; i.e. firm size and firm age. These two factors play an important role in the success or failure of a firm, as well as its growth potential, as discussed below.

a. Size

Firm growth can indicate an increase in the number of employees as well as higher sales and profits. It can also lead to the production of specialised goods that have a higher market demand, the acquisition of new assets and the creation of more employment opportunities (Nichter & Goldmark, 2009). For example, Rogers (2009:46) found that the growth rates of smaller firms (1-19 employees) were on average 3.4% compared to the 1.3% growth of large firms (more than 500 employees).

The probability of success in a market depends on the comparative or relative advantage that the firm has in a market. The larger firms are able to produce higher volumes at lower prices, while smaller firms may decide to specialise in a particular product or service in which it has an advantage. The distribution of funds and resources can affect this in any country, regardless of the level of development. Smaller firms are also more sensitive to minor economic changes and market trends. External influences such as entry and exit barriers, regulations and legislation can also influence the growth of small firms (Beck *et al.*, 2006b).

A study by Beck *et al.* (2006b) also considers the entry of new firms into the market. In this particular study, the data was gathered in Italy and the UK. The study concluded that even though firms in Italy started out larger, the growth of smaller firms in the UK was faster. Therefore, the larger firms do not necessarily have higher growth rates (Beck *et al.*, 2006b).

Beck *et al.* (2006b) also found that developed countries generally have larger firms, while the developing countries have smaller firms. The financial capacity of the country will allow or prevent firms in the private sector to grow or not. The study also indicated that small firms grow slower in developing countries as opposed to larger firms who are able to grow and expand faster in developed countries.

As seen below in Table 2.2, different factors can have different effects on small and large firms. In terms of capital market imperfections, small firms lack finance for proper research and development, while large firms are less dependent on external financial resources. For firm growth, large firms are far less likely to join another company in order to grow compared to a small firm.

Table 2.2: The effect of factors on firm size

	Small firms	Large firms
Capital market imperfections	Lack of finance prevents proper R&D	Easier to finance R&D because of larger funds and they are not dependant on external capital
Innovation and industry competition	More innovative in less concentrated industries that are less mature	More innovative in concentrated industries with high entry barriers
Economies of scale	Returns from R&D are smaller if output is small	R&D increases more than proportionally with firm size
Economies of scope	Small firms do not have separate departments for marketing or R&D	Non-manufacturing activities such as marketing complements R&D, which increases profit
Access to knowledge networks and research cooperation	With less R&D and smaller work force, small firms may lag behind	Larger number of employees leads to larger amounts of knowledge. Access new information earlier. Are involved in research activities more often
Management advantages	Workers can be less experienced and less access to newer technology as a result of lack of finance	Respond better to new technology because of better access to managerial skills
Loss of managerial control	Better management and control in small firms	Large firms tend to lose managerial control of the activities in the firm and might lose R&D efficiency
R&D incentives for researchers	Stronger incentives for small firms	Weaker incentives for larger firms
Cooperation opportunities	More possibilities for smaller firms to establish cooperation with other firms with similar interests. For example Joint venture.	Large firms less likely to join other company in order to grow.

Source: Adapted from Karlsson, Stough & Johansson, 2009:109-111

SMEs are also praised for their competitiveness, while few are able to compete fairly in the market with large firms. Most small firms do not have the funds available for the marketing or research that is accessible to large firms (see Chapter 3). Marketing and research gives the larger firms an unfair advantage and many small firms cannot “catch up” and compete in the market. The medium-sized firms perform better than

the smaller firms (Beck *et al.*, 2006b). According to Karlsson, Stough and Johansson (2009), innovation can be a competitive advantage for small firms. Many small firms cannot compete with large, existing companies and their pricing; the small firms have higher levels of innovation to gain a competitive advantage in the market. Larger firms have easier access to research and development to do market and trend research.

b. Age

Investment will rather occur with established, slightly larger firms than newer, smaller firms due to the risks involved (Entrialgo, Fernández & Vázquez, 1999; Skuras *et al.*, 2008). As with size, more established firms have better access to and relationships with investors and financial institutions to gain access to capital (Karlsson *et al.*, 2009:113).

As discussed in Section 2.2.3 on the “new” growth theory, learning-by-doing can be seen more often in younger firms pertaining to new skills and methods used to be innovative. The younger firms may also use newer technology and have workers with more “up-to-date” skills. Older firms, which are set in their ways concerning methods or production, may have human capital that will become obsolete (Karlsson *et al.*, 2009:113).

While many internal factors can be controlled by the firm or management, external factors can be unpredictable. Firms need to take these external factors into consideration when planning strategic objectives for the firm.

2.4.3 External factors

There are several external factors that can affect the growth of small firms in any given economy. External factors refer to those outside the control of the firm in the market. Listed below are the four dominant external factors that can influence the growth of SMEs.

a. Economic factors that influence firm growth

Macro-economic variables such as inflation, interest rates and exchange rates can influence a firm. These variables, for example high inflation and interest rates, may add to the cost of inputs and finance, which erodes a firm's competitiveness and ultimate growth prospects. It will also influence the firm's clients and their spending patterns on the firm's goods and/or services. Not only the levels of inflation or interest rates are of concern, fluctuations in these variables and the uncertainty that this creates also have a negative impact on firms and their growth.

Macro-economic stability will also play a role in the value and growth of a firm. In periods with steady economic growth, there is a greater availability of capital investors and stable inflation rates will also promote the access to funds. Better access to capital will result in better growth rates for the firms as well as for the investors. The investors will be more likely to invest in risky, new firms than during an economic downturn. Since the recession in 2001 in the USA, investment declined by 62% in 2002 compared to 2000 (Rogers, 2009:199).

b. Consumer characteristics

The needs of the customers as well as market trends change often and it may be hard for small firms to keep up and adapt accordingly. As mentioned in Section 2.5.1, innovation is very important for firm growth. However, this does not mean that an idea will be successful in any market and at any given time. The economic situation, consumer trends and institutional regulations may prevent a good idea from becoming a good product or service. The entrepreneur who is able to take various factors into account and identify a niche in the market may gain a competitive advantage (Chaston, 2010).

Firms have to know what their target market wants from a product or service. Customers consider the quality and prices, level of satisfaction and possible substitute products in the market. To have maximum customer retention and attract new customers, the entrepreneur has to continuously innovate and provide good quality goods at competitive prices. With market research, the firm can monitor

market trends and customer preferences to maximise the sales. A research department is a luxury for small firms and they often outsource this function to save money (Schiffman & Kanuk, 2004).

c. Technology

New technology can undergo rapid changes in short periods of time, preventing firms with limited funds and personnel from staying up-to-date. This is one of the opportunities for innovative firms to gain market share. Research and development by firms in developing countries also lag behind that of developed countries, especially in terms of technology and productivity (OECD, 2006). This is mainly a result of the allocation of funds, both from the government's side as well as the business sector. With the changes in technology, e-commerce and production methods, the volumes being traded have increased greatly over the past years and have promoted international competitiveness (Wattanapruttipaisan, 2002; Burgess & Bothma 2007).

New technology opens up a wide range of possibilities for both the entrepreneur and the consumer. Technology provides the chance to specialise in products according to consumer preferences, for business partners to exchange information and hopefully perform more efficiently (Schiffman & Kanuk, 2004).

The fast pace at which technology changes means that firms have to be up to date with trends and production methods. Doing so needs regular research in the target market and production chain. By merely changing a part of the production process, costs can be cut and revenues increased. By optimising the quality of goods, customer services and staying up to date with technology, a firm can have a competitive advantage (Cinnamon *et al.*, 2007).

d. Competition

Competition is the fourth factor that the firm has limited control over. Competition can both benefit and/or detract from the performance of firms. An economy will not grow with a large number of firms that are uncompetitive. Being competitive in any market,

a firm will increase profits and over time grow and develop (Beck *et al.*, 2006b). Fierce competition from other firms in the market may encourage competitiveness, for example by being more efficient, cutting costs and improving quality. If firms cannot predict entry of or prevent new firms from entering the market, this competition will foster competitiveness. SMEs can specialise in certain goods and be more competitive. If the quality of a product is good enough, it may eventually be exported. If the playing field is, however, not level, then dominant firms can use uncompetitive practices such as price wars or dumping that may negatively influence small firm competitors (Wattanaputtipaisan, 2002; OECD, 2006).

2.5 SUMMARY AND CONCLUSION

Section 2.2 has examined how the economic growth theories have changed over time. The Classic Growth Theory uses the four production factors – natural resources, capital, labour and entrepreneurs – in a free market system to promote economic growth. Adam Smith and David Ricardo argued that a country can have either a comparative advantage or relative advantage in the market due to the uneven distribution of natural resources. Free trade should be determined by market demand and supply and not by a country's government.

The Neo-Classical Theory followed in the twentieth century with Solow and Swan's theory to include technology as an additional production factor. The theory also distinguished between potential and actual growth of output in a country. In the New Growth Theory, the relationship between capital and labour has shifted – technology is only utilised with the human capital to control it.

Schumpeter introduced the concept of Creative Destruction. At the heart of the theory of Creative Destruction is the entrepreneur that can take an idea and turn it into a successful business. Schumpeter argued that economic development occurs through entrepreneurs and innovation. The importance of the entrepreneur is also used in this study to examine the success and growth of small firms.

Section 2.3 determined the importance of SMEs in developed and developing countries. Studies have concluded that SMEs promote employment, reduce poverty

and promote economic growth in many countries. A problem that is mentioned in several studies is a lack of long-term data on the role of SMEs on economic growth.

The impact of SMEs on economic growth will depend on firm growth. In Section 2.4, three factors were identified to determine the growth of small firms. These factors are entrepreneurial characteristics such as education and experience of the entrepreneur, firm characteristics including firm size and age, and external factors such as macro-economic factors, competition, technology and consumer trends.

In recent years, governments have started to realise the importance of SMEs in economic growth. SMEs are important for reducing unemployment and poverty, especially in developing countries as well as in improving the levels of inequality. Therefore, financial support for small firms has been included in government policies. In order to obtain financing from the financial sector or from government, a firm has to exhibit certain characteristics. The entrepreneur plays a vital role in the success of the firm. Firms have also indicated that some of the biggest problems faced by them include financial constraints, the tax system, loan requirements and institutional barriers. Therefore, access to finance and sources of finance is a significant barrier faced by small firms, and is considered a growth constraint and will be explained in Chapter 3.

Chapter 3 – Sources and access to finance

3.1 INTRODUCTION

Small and medium-sized firms (SMEs) play an important role in any economy as these firms increase employment opportunities and contribute to output growth (OECD³, 2006; Chaston, 2010). Small firms also make up more than half of the private sector firms in many countries (Falkena *et al.*, 2001; Skuras, Tsegenidi & Tsekouras, 2008). New and innovative ventures can turn into large globally competitive corporations (OECD, 2006).

In the previous chapter, the determinants of firm growth were discussed, concluding that finance plays an important role in the growth process. There is a distinct gap between access to financial sources for large and small firms (Nichter & Goldmark, 2009).

The reason why acquiring funds is so time-consuming, are the risks involved in starting or investing in a new firm. It takes time to build up a credit history, assets and cashflow needed later as collateral for further funding. Investing in a new firm is very risky and as many as 60% of new firms fail within the first few years. Only 10% of firms will survive the first ten years since starting (Rogers, 2009:230).

The role of finance in the operations of firms can be examined in terms of access to sources of finance. Access to different sources of finance can be further divided into start-up capital, expansion capital and finance of current assets, depending on the firm's needs. Before firms can investigate sources of finance available to them, they should know how much money is needed and what it will be used for. The amount needed can be influenced by several factors, such as the type of firm, possible machinery or inventory, sales, suppliers and wages to be paid (Seglin, 1990:27). The entrepreneur should also realise that raising capital for growth is a continuous process and takes time (Rogers, 2009:229).

³ OECD: Organisation for Economic Co-Operation and Development, Policy Brief November 2006

This chapter examines the sources of finance, which can be either internal or external and significant for the growth and development of firms. SMEs need financing for several reasons: new product development, wages or training of new workers, purchasing capital goods such as machinery, or for buying new assets such as land or buildings. The next section examines access to finance and the factors that play a role in acquiring credit. Section 3.4 discusses the challenges faced by small firms in obtaining credit. Section 3.5 concludes.

3.2 SOURCES OF FINANCE

SMEs are important for growth as many of these firms create employment opportunities and stimulate the economy (see Section 2.3). For firms to be able to continually innovate, expand and remain competitive, they need additional funding.

Funding can be obtained in two ways, either continuous lines of credit or once-off funding. Both types have advantages and disadvantages (see Table 3.1). While it can be beneficial to receive funds in smaller amounts at a time, it is not guaranteed that there will be funds available for future use. By receiving a lump sum at the start, the entrepreneur might not allocate the funds correctly and may require additional funding at a later stage. The entrepreneur would need to identify his/her firm's requirements and objectives to determine which type of funding would best suit his/her needs (Rogers, 2009:154-155).

Table 3.1: Advantages and disadvantages of types of funding

	CONTINUOUS FUNDING	ONCE-OFF FUNDING
ADVANTAGES	- It keeps the entrepreneur disciplined and minimises wasting money - The entrepreneur is paying only for current expenses - The new series of capital comes in at a higher valuation, thereby allowing less equity to be surrendered	- There is no need to allocate resources to raise future funding - It avoids the risk of capital not being available in the future
DISADVANTAGES	- There is no certainty that more capital will be available in the future	- Forecasts may be wrong as a result of incoming cashflows occurring earlier,

	- Resources must be allocated to secure additional funding	- requiring less up-front capital - Additionally, in the case of an equity capital investment, interest on unnecessary capital will be paid - Receiving too much capital at one time spoils the inexperienced entrepreneur and could lead to an unnecessary waste of capital - Invested capital comes in at a lower valuation
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Source: Adapted from Rogers, 2009:154-155

Funds can be used either for the start-up of a new firm or for the expansion of an existing company. Financing is most often used in existing firms for the production and development of new goods, wages or training costs for new staff, capital goods such as machinery or tools or for attaining new assets, including vehicles or buildings (OECD, 2006).

Smaller companies do, however, have more difficulty in receiving credit and loans from commercial sources, compared to large firms (Stephens, 1999:5). The biggest reason that firms struggle to get financing is the level of risk it poses to the institution providing the credit, normally banks. Small firms' risk is higher due to the higher possibility of bankruptcy (OECD, 2006; UNEP FI, 2007). Firms generally have two main types of financial sources to choose from, either internal or external.

3.2.1 Internal sources

Internal financial sources are existing assets that can be used by the firm to gain additional assistance. Personal wealth is the entrepreneur's personal savings and assets and can be used in combination with current company assets (Seglin, 1990:66).

a. Personal wealth or entrepreneurial finance

With the challenges facing small firms to obtain additional funds, many entrepreneurs have to start internally. Loan applications are most often rejected because of a lack of collateral (Seglin, 1990:67). Entrepreneurs can pledge personal assets instead of company assets for the required collateral (Avery, Bostic & Samolyk, 1998). These are often in the form of personal guarantees or collateral when applying at commercial banks for a loan. Therefore, the decision to grant the loan is based more on the creditworthiness of the owner and his/her credit history than the firm's.

Apart from the personal commitments, personal savings are also an option if the amount is not too substantial. Saving over a few years can generate a useful amount of capital, especially in an emergency such as theft or damages (Avery *et al.*, 1998). Du and Girma (2009) studied SMEs in China and found that the majority of small firms used self-raised capital as a result of the high costs and constraints associated with formal finance such as bank loans.

An advantage of personal funding is the possibility of better repayment terms or interest rates. Avery *et al.* (1998) show that many firms use personal wealth to obtain additional credit, but the personal investment in the firm only accounts for 10% of the owner's wealth. This personal contribution from the owner may seem small, but can be the deciding factor between approval and rejection of an additional bank loan (Avery *et al.*, 1998).

Personal wealth can be divided into collateral and guarantees. Collateral is the physical assets that can be used as a form of security for the repayment of a bank loan if no other funds are available (Anon., 2011a). Personal guarantees are the obligation or promise of the entrepreneur to repay his loan (Anon., 2011b). While they are not entirely interchangeable, personal guarantees are more commonly used than collateral. The personal commitments of the entrepreneur lower the risk of non-repayment for the lender (Avery *et al.*, 1998). The owner's wealth and investment are important as they indicate how much he/she is willing to risk for his/her firm. It shows

a level of trust and commitment that the firm will benefit from the additional funds (Avery *et al.*, 1998; OECD, 2006).

Another option entrepreneurs can consider instead of a conventional bank loan is funding from friends or family. The high costs of borrowing funds from banks encourage many entrepreneurs to consider getting credit from friends, family and investors instead (OECD, 2006). The investors or friends can receive shares in the firm in exchange for the investment, which is a trade-off with the banking costs and interest rates at commercial banks (De Haan & Hinlopen, 2003).

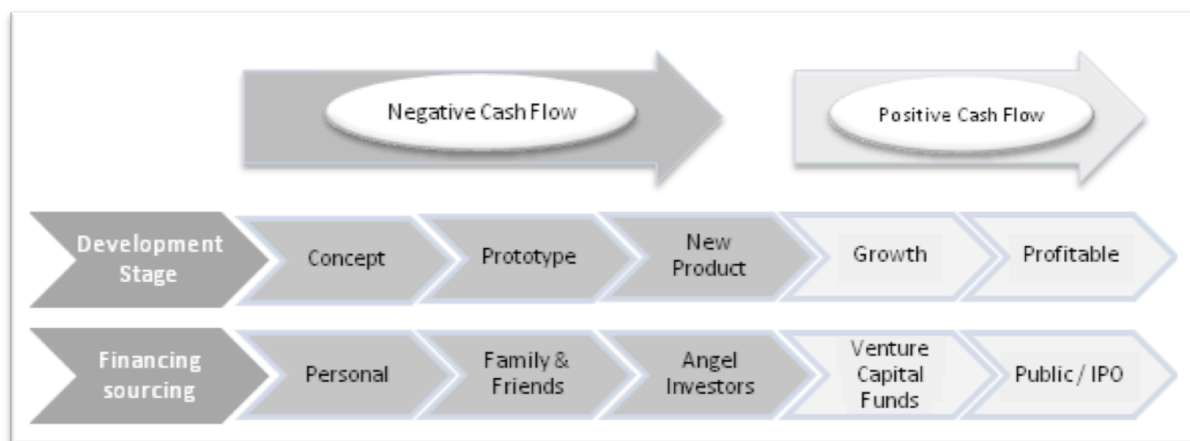
b. Profits and assets

Apart from personal savings, internal sources can also consist of retained profits and sale of assets. From the firm's side, the owner can use profits and re-invest them in the firm instead of paying staff bonuses, for example. If it is possible, the owner can also sell or lease office space, factory buildings, vehicles or machinery for an additional income (Seglin, 1990:86).

Internal sources of financing are a small part compared to the alternatives to gain capital. As it only accounts for approximately 10% of the investment, the remaining 90% comes from outside the company (Avery *et al.*, 1998). Working capital is also an important part of a firm's finances. It consists of stock, debtors and creditors. Management has to be aware of the status of outstanding debt, credit and suppliers and the stock of goods as they affect the working capital available (Watson & Head, 2004; Berger & Udell, 2006).

The entrepreneur might think that using personal savings or assets is ideal and makes him/her independent, but few firms can survive, much less grow, without extra funds. Many owners forget about the impact of inflation and tax rates. Supplier costs increase or workers may demand an increase in wages, lowering cashflow and increasing expenses (Seglin, 1990:87). As seen in Figure 3.1 below, various financial sources contribute to firms' resources at different stages in the product life cycle.

Figure 3.1: Financing spectrum



Source: Adapted from Rogers, 2009:235

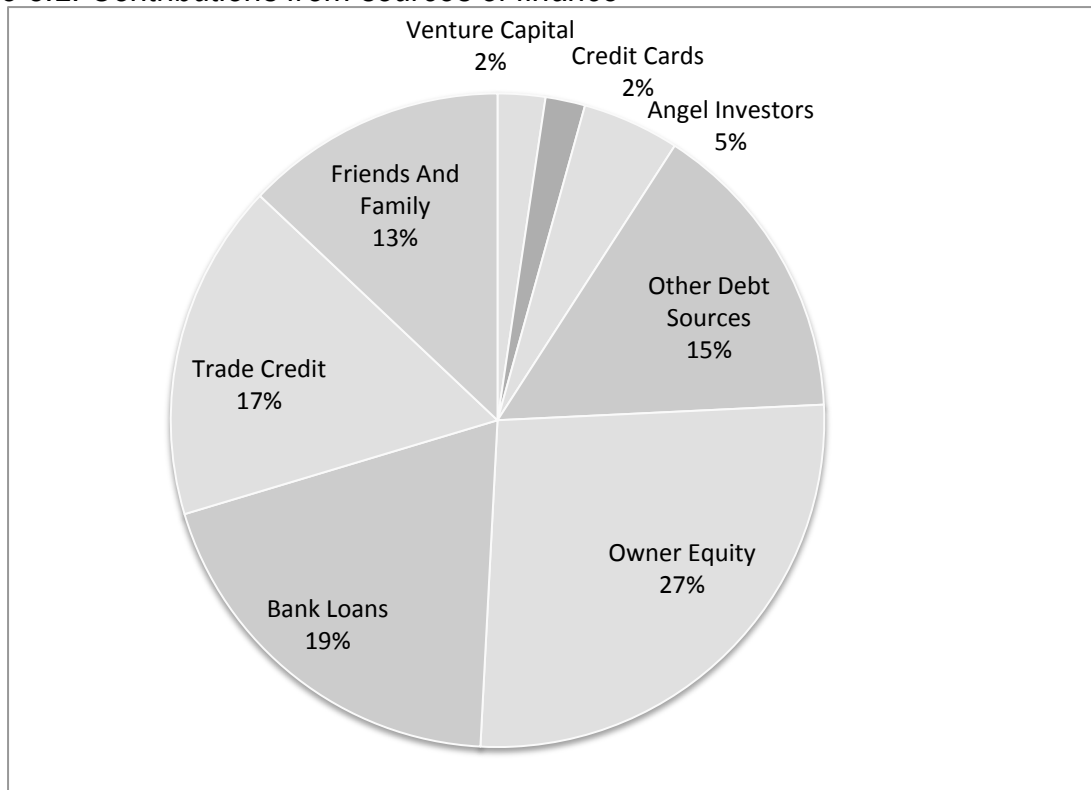
Internal funds from personal contributions, family and friends are used most in the early development stages. Angel investors may also invest in new or risky endeavours during the first part of the development process. Venture capitalists and public investors become more involved during the growth and profitable stages of the product life cycle (see Section 3.2.2); (Rogers, 2009:235).

3.2.2 External sources

External sources are any form of financial aid from outside the firm. There are several alternatives to banks, which is often the first place firms will go for loans. These firms can also consider investors and microfinance from private institutions. An entrepreneur can also consider merging with another firm. Merging can give the entrepreneur access to additional collateral and investors. An advantage of investors is that they may offer management and strategic advice to entrepreneurs.

The owner might also consider selling additional stock while giving up part-ownership to attract investors (Dobbs & Hamilton, 2006). This is seen as equity finance. Suppliers or creditors may be able to provide the firm with extended credit terms, while hiring assets instead of purchasing. The firm can also consider overdraft facilities on existing accounts to give them more time to receive the outstanding amounts from sales (Watson & Head, 2004:29). The average percentages from the different sources of finance are summarised below in Figure 3.2.

Figure 3.2: Contributions from sources of finance



Source: Adapted from Rogers, 2009:232

The decision of a bank or investor to provide funding for a firm will be influenced by the value of the firm. The value is determined by the value of the assets, inventory and cashflow. The valuation will therefore consist of a financial analysis and an assessment of assets (Rogers, 2009:188). The value can also be influenced by the type of industry, management and economic factors. It is important for the owner of an SME to know the value of his/her firm, to determine how much equity to give up for investor capital (Rogers, 2009:181-185).

There are four major sources of external finance available to firms, namely bank loans, government aid, investors and microfinance.

a. Bank loans

The most common form of external finance comes from commercial and business banks in the form of loans (Seglin, 1990:45; Chaston, 2010). De Haan and Hinloopen (2003) found that many Dutch firms use both personal funds and a bank loan to get the necessary funds. Bank loans are the primary source of finance.

As it is difficult to secure a bank loan, Seglin (1990:45) advises that the owner approaches the bank when the company is doing well. In other words, before he/she needs the loan. This will establish a relationship with the bank, build a positive credit history and banks will be more inclined to approve the loan when business looks promising than when it is on the brink of bankruptcy. If a loan is granted, it is also easier to extend the loan than to apply for a new one from scratch (Seglin, 1990:46; Watson & Head, 2004).

There are a number of advantages when using bank loans for financing. They provide a good credit history for future endeavours and the bank can provide special services for small business owners, such as advice on management and investments (Seglin, 1990:54). Apart from different repayment conditions and loan types, an entrepreneur might choose bank loans as he/she can maintain 100% control of the firm, compared to investors who may request partial ownership.

In contrast, disadvantages of bank loans include large amounts of administration, and also banks are selective in granting loans and ask high interest rates, which increase the total amount to be repaid (Seglin, 1990:55).

b. Government aid programmes

As seen in Chapter 2, small firms encourage economic growth and job creation, especially in developing countries (Kesper 2001; Nichter & Goldmark, 2009). Governments have started to implement programmes to support small firms specifically because of the obstacles to obtain finance. Government support can be seen in the form of lowered company taxes and financial initiatives aimed at small firms (Chaston, 2010; DTI, 2011). Similar to personal commitments, the purpose is to minimise the risk of non-repayment by up to 80% of the loan value (see Section 3.2.1). This is mostly used by firms lacking personal and company assets for collateral (Seglin, 1990:97; Evanson, 1998:135).

An example of government aid is the Small Business Administration (SBA) initiative used in the United States. The principle of the financial aid programme is that the SBA provides a guarantee for small business loans (Chaston, 2010). In South Africa,

the Department of Trade and Industry (DTI) has helped to establish several programmes for small firm development (DTI, 2011). Some of the programmes available in South Africa include the Centre for Small Business Promotion (CSBP) and Khula Enterprise Finance initiatives of the DTI. The Industrial Development Corporation (IDC) oversees most of the administration of the funds, most of which is allocated to new firms. Khula Enterprise Finance was a support system that ranged from credit guarantees, loans, microfinance and grants, depending on the requirements of the firm (Falkena *et al.*, 2001; DTI, 2011).

There are several alternative sources of finance a company can consider, such as venture and corporate investors or “Angel” funds.

c. Investors

Investors can be seen as a form of equity finance. Equity financing is income from the sale of shares in the firm. This is seen as equity financing in the sense that the firm does not directly increase levels of debt (Watson & Head, 2004:121). Therefore, the investors lend money in exchange for partnership in the firm.

Investors will inevitably differ in what they offer the firm and what they will want in return. The level of security, guarantees or collateral will be different as will the expected rate of return on the investment. The investors may require different levels of involvement in the firm and its management, and the entrepreneur would have to keep this in mind when considering investors (Falkena *et al.*, 2001).

Venture capitalists invest in riskier companies, such as high-technology firms (Evanson, 1998). Because these venture capitalists are willing to take on so much risk, the firms have to have a solid business plan and presentation ready in order to convince them. However, once a firm has won over the trust of a venture capitalist, it will be easier to acquire other financing if necessary at a later stage. These venture capitalists invest mainly in firms with a growth strategy and promising rates of return (Evanson, 1998; Dobbs & Hamilton, 2006; Falkena *et al.*, 2001).

Corporate investors are usually large firms with strategic reasons and Angel investors are individuals outside the company investing personal funds. Some corporate investors focus specifically on SMEs, whether it is new or start-up firms or an existing firm wishing to expand (Falkena, 2001; Denis, 2004). In South Africa, a well-known investor of small firms is Business Partners Limited, who works with the DTI on projects to finance small businesses (DTI, 2011; Business Partners, 2011).

Evanson (1998) divided the “Angel” investors into different categories. Corporate angels are often owners of successful, large corporations with funds available. Entrepreneurial angels also have their own companies, but will be more focused on investing in new entrepreneurial ventures. Enthusiast angels will invest as a sideline or special interest and are usually older, even retired businessmen. Micromanagement angels will invest in exchange for a management position in the company (Evanson, 1998).

Alternatively, firms can consider approaching a micro-credit institution if the loan amount is not too substantial.

d. Microfinance

Muhammad Yunus was the first to introduce microfinance in 1974 during a period of extreme famine in Bangladesh. He provided loans of very small amounts (micro-loans) to a group of women living in extreme poverty, without a specified repayment date (Bolt, 2010). Later, he launched the Grameen Bank, which has almost eight million clients and a repayment rate of 97%. Most of the loans go to women, as they use it to provide for their families and pose a lower risk than men. These loans are given to groups of five, forcing the clients to be more responsible. The micro-loans are aimed at low-income households and they require no collateral. This concept can be used in almost any developing nation with success, as long as it is managed correctly (Bolt, 2010).

The concept of microfinance is not to provide large amounts of capital to a high risk venture, but more as a starting platform for a new entrepreneur. The loan amount is smaller and therefore the repayment terms are better. An advantage of microfinance

is that it can help firms to build a reliable credit history for future loans (Ahlin & Jiang, 2007).

One of the noticeable effects of microfinance is lower poverty rates. The micro-credit can help those living in extreme poverty to become self-employed, while having subsequent effects on the community as well. This can include work opportunities and new products (Ahlin & Jiang, 2007).

According to Banerjee and Newman (1993) (cited by Ahlin & Jiang, 2007), there is a distinct difference between entrepreneurial ventures and self-employment when it comes to micro-credit. Many self-employed workers make use of micro-credit and eventually improve their standard of living and disposable income. However, providing finance to entrepreneurial ventures is preferred, as it employs other workers as well, creates more employment opportunities. Micro-credit should be applied to expand firms, improve productivity and promote economic development. If credit is used incorrectly, it increases the levels of debt and has more negative results than positive (Ahlin & Jiang, 2007).

Deciding on a financial source is an important step in the future growth of a firm. The next obstacle facing entrepreneurs is the access to the particular source. The access to financing can differ between countries with their own sets of guidelines and requirements. The next section will look at the different ways of deciding whether to grant loans to a small company.

3.3 ACCESS TO FINANCE

Past studies (Kesper 2001; Du & Girma, 2009; Nichter & Goldmark, 2009) have shown that SMEs play an important role in employment opportunities and economic growth in a country. Access to finance can be defined as the “*availability of the supply of quality financial services at reasonable costs*”, according to Claessens and Tzioumis (2006:8). The growth of these firms is influenced by the access to finance available. The economic environment has changed in the past few decades due to globalisation and easier access to international markets (UEAPME, 2004).

The development of the financial and institutional systems varies greatly across different countries and will influence the access to finance. Two methods have been used in the past to determine the firm's access to finance. The first method would be an analysis of financial statements or the alternative method is to use surveys done on firms. The difficulty to access funds can be seen in the firm investments and reflect the internal finance available (Claessens & Tzioumis, 2006).

3.3.1 Factors influencing access to finance

There are several factors that can influence the access to finance for small firms. The factors can be divided into two categories, namely firm factors and institutional factors. Both contribute to whether or not the firm will have sufficient access to financing. This section will look at the factors influencing access to finance, the methods used to evaluate the risk level of the firm and the institutional and financial systems, which are discussed below.

a. Size and age

Bechetti and Trovato (2002) found that there is a negative relation between firm size and age and the growth of the firm, although size and age are not the only influencing variables.

Studies cited by Bechetti and Trovato (2002) indicated that the level of risk associated with the firm will also play a role in the firm's access to finance. Therefore, the lower the risk involved with the firm, the better the access to finance. A greater contribution of personal wealth will also lower the risk levels of the firm. The empirical evidence shows that 60% of firms in the study are family owned and that more than 40% of the firm only have one controlling shareholder (Bechetti & Trovato, 2002). The study was repeated and some of the firms participated in both studies in order to measure firm growth. The empirical evidence from this study showed that size plays an important role and 30% of the smallest firms showed a growth rate of 7%, while the large firms had only 2% growth in the same time (Bechetti & Trovato, 2002).

Size and age play a role in the access to finance and this confirms that firms with better access have significantly higher growth rates. The small firms that survive in the market have higher growth rates, but the growth is affected by access to finance (Bechetti & Trovato, 2002:3).

The study done on Chinese firms by Du and Girma (2009) has shown several positive relations between firm size and the access to finance. There is a positive relationship between firm growth and access to finance and smaller firms are more severely affected by financial constraints than large firms (Du & Girma, 2009). The problems regarding the financial systems in poor countries also play a role in the access to financial sources in the private sector. The high cost of formal financing, such as bank loans, makes it very difficult to obtain funding, therefore limiting or even preventing growth. External funding in the form of foreign investment has benefited the firms involved, regardless of the size. This means that both domestic and foreign firms benefit from the growth from foreign investing (Du & Girma, 2009).

b. Country and institutional structure

A factor to consider with regard to access to external finance is the level of development of a country. Developed countries such as the USA or Germany may offer better financial services and advice to new firms than those in developing countries such as South Africa or India. This includes the differences in interest and inflation rates as well as the overall literacy and skills of workers (Demirgüç-Kunt *et al.*, 2006).

Along with this is the political situation in a country such as government regulations and corruption that will influence the ease with which a firm gains access to finance and enter the market, as found in a study of Russian firms (Djankov *et al.*, 2004). Banks also consider the type of firm, e.g. manufacturing, when evaluating the credit application. Other important firm characteristics associated with the level of risk are the size and age of the firm. While small firms are considered a high risk, the age and credit history of an older, established company can also compensate for it to a certain degree (Avery *et al.*, 1998).

Beck, Demirgüç-Kunt and Peria (2008) conducted a cross-country study that included 209 banks in 62 countries in order to measure individuals and firms' access to bank finance. Several variables in the study included the physical access (in developing countries the banks are literally too far away to access for many individuals, discouraging customers to open an account), affordability of banking services (banking administrative fees are very high to maintain an account in countries such as Uganda and Malawi) and eligibility of the customer. The services offered by the banks also varied greatly between banks and countries. The interest rates were also determined based on the purpose of the loan – personal, SME loan, business loan or mortgage (Beck *et al.*, 2008).

The bank access can also be influenced by the ownership of the bank – government, foreign or privately-owned banks operate very differently from one another. Government-owned banks have very strict rules and barriers for lending; however, there are also government aid programmes available in some countries (as discussed in Section 3.2.2 (b)) and will tend to take on the smaller and riskier clients. Foreign-owned banks generally prefer larger corporations (Beck *et al.*, 2008).

Although these external factors play an important role in access to finance, the next section will look at the specific selection methods used by institutions.

3.3.2 Evaluation methods

In the current financial environment after the 2008 recession, the banking sector and other financial institutions were forced to evaluate firms more carefully before providing credit. This means that even with all the challenges facing small firms before the recession started in 2008, it has now become even more difficult. Banks tend to increase interest rates and administrative fees even though it is still the primary source of credit for most firms (Seglin, 1990:45; Berger & Udell, 2006).

a. Traditional evaluation methods

Banks consider five aspects when a company applies for a loan. First is the character of the applicant (owner) and his/her personal credit history. Second is the capacity of the applicant. This looks at liabilities and past repayments along with the firm's financial statements. Next the bank will consider the collateral available and if it is sufficient for the value of the loan. Capital is the funds currently available to the owner and finally, the conditions agreed upon for the loan, such as the interest rate (Seglin, 1990:47).

There are different forms of credit offered to firms, although the methods used to approve firms are oversimplified and view all firms as equals (Berger & Udell, 2006). These different types of credit are referred to as lending technologies and there are several techniques used to evaluate a firm's ability to repay a loan. Asset-based lending, financial statement lending, factoring, small business credit scoring, relationship lending and leasing are the most common lending technologies (Berger & Udell, 2006).

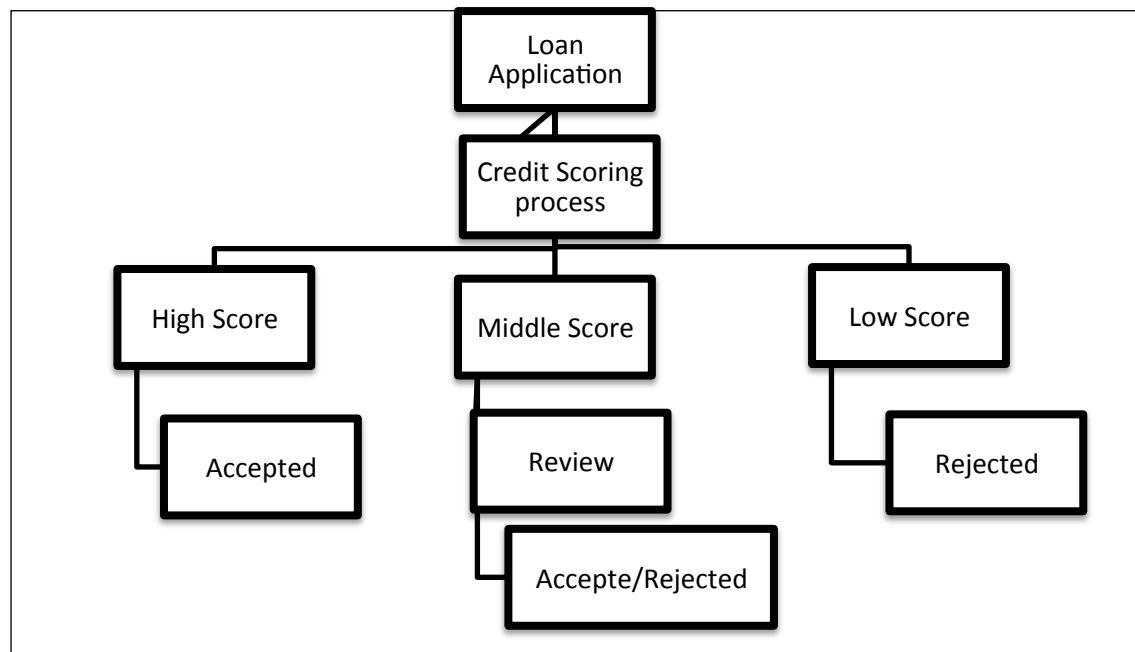
Financial statement lending is based on the audited financial statements and its reflection of the financial position of a firm. The possible repayment of a loan is therefore determined by the cashflow of the firm (Berger & Udell, 2006). Asset-based lending looks at the firm's current assets as collateral for repayment instead of just the creditworthiness of the firm. Factoring is a more complex method and combines three components of credit, financing and collection of receivable income (Berger & Udell, 2006).

b. Small business credit scoring

Another method that is used in developed countries is the Small Business Credit Scoring (SBCS) method. Small business credit scoring takes the credit history of the owner as well as the firm into consideration before deciding on a loan amount (see Figure 3.3). This method of evaluating firms was initiated by Fair Isaac and Company during the 1990s. It uses a combination of personal and business information to

assess the risk of the firm, as seen in Section 3.2.1.1 and Figure 3.3 on personal wealth (Cheng, Chiang & Tang, 2006).

Figure 3.3: Loan application process with credit scoring



Source: Adapted from Cheng, Chiang & Tang, 2006

Credit scoring is a very common way of evaluating loan applications in commercial banks. While credit scoring is widely used as the primary evaluation method, it is unfortunate that it is often used as the *only* method of evaluating a firm's loan application. Cheng *et al.*, (2006) found that many banks use a standardised method of credit scoring – rarely personalised by the bank or adapted for the specific industry of the company. This can be important as the credit history, cashflow and financial statements can differ between firms from different economic sectors (Cheng *et al.*, 2006).

The system works with a value assigned to certain factors, such as past debt repayment and serves as a guide when evaluating the loan application. Within the method, there are three types of models used. The Expert model is used in situations where there is not sufficient financial history available to accurately score the applicant. The Custom model uses the bank's information on the client and his

credit history, while the Pooled Data model takes advantage of several different financial institutions' information on the loan applicant (Wendel & Harvey, 2006).

The SBCS method has several advantages for both the lender and borrower. For the lender (bank) it provides a more reliable method of loan evaluation, while saving time and money. The reliability is especially important for any financial institution as it assures the lender of repayment to a certain degree. From the borrower's perspective, this is a way of gaining access to finance and it can even lead to lower bank costs and interest rates with the lowered level of risk (Wendel & Harvey, 2006; Cheng *et al.*, 2006).

Some firms may even be lucky enough to receive a higher value loan than hoped for. The SBCS method also considers low-income areas, which can be useful in developing countries. This method is already being used in the United States, the United Kingdom and Canada, and developing nations are starting to implement this system (Wendel & Harvey, 2006).

Even with a reliable source for finance and meeting the prerequisites of the source, the entrepreneur can still face several challenges in ultimately obtaining the funds. This section supports the conclusion of numerous studies that show that the access to finance has a negative relation to firm growth (Avery *et al.*, 1998; Bechetti & Trovato, 2002; Djankov *et al.*, 2004; Beck *et al.*, 2006b; Berger & Udell, 2006; Cheng *et al.*, 2006; Claessens & Tzioumis, 2006; Wendel & Harvey, 2006; Du & Girma, 2009).

This signifies the importance of the access to finance and the obstacles that firms have to face in order to attain it.

3.4 OBSTACLES TO ACCESS TO FIRM'S FINANCE

The most common problem facing firms is the collateral required by many financial institutions and banks (Avery *et al.*, 1998; Bohatá & Mládek, 1999). Regulations and legal issues regarding licensing or copyrights, especially with new products can prevent quick access to credit. Lack of information for both banks and SMEs creates

unnecessary delays, while the volatile market conditions and high risk of default in repayments of loans by small firms are the most common problems (Yao & Yueh, 2008).

There are several challenges associated with the use of the SBCS method in developing countries. The first problem is the lack in data when investigating the credit histories of applicants (Wendel & Harvey, 2006). Secondly, is the management of the system and the institution itself, while investment costs and a reluctance to share information are also preventing the use of the system. The best type of method within the SBCS system for developing countries would be the Pooled data method, as this would consist of the maximum amount of data available (Wendel & Harvey, 2006).

Credit providers generally investigate the owner of the firm, the current investors and the credit history of the firm. High interest rates, should the firm be granted the loan, may make it even more difficult for the firm to repay its debt. This means that the profits generated from the additional funds have to be substantial enough to compensate for the repayment of capital and interest (Ahlin & Jiang, 2007).

Other aspects that can prevent sufficient access to finance can include a lack of collateral, legislation, the functioning of financial markets, infrastructure that prevents communication, taxes, governments and corruption (Ayyagari, Demirgüç-Kunt & Maksimovic, 2006). The problem in many emerging markets or developing countries is a general lack of funds that are available. This can be eased with new ways to identify the risk associated with small firms regarding the possibility of success or failure (Pissarides, 1999).

African countries have several issues that can prevent investments as it increases the level of risk associated with that country. The strength of the local currency and credit risks can directly affect the return on investment for investors. Other problems are government corruption, bad infrastructure and macro-economic instability. The problems with financing can occur from both sides. On the demand side there are the small firms wishing to get financing and on the supply side there are the institutions and investors, evaluating the level of risk (UNEP FI, 2007).

Four barriers were identified that pose a problem for small firms to gain access to finance. Firstly, there is a perception that small firms do not have the necessary skills to run a business and that the costs of working with banks in Africa are too high. Some of the entrepreneurs do not have a lot of experience and might be wary of equity investors and the part-ownership that goes with it (See Section 3.2.2) (UNEP FI, 2007).

Secondly, are institutional barriers such as banks, which do not have the funds or capacity to aid in SME development (UNEP FI, 2007). Banks and formal institutions decide on the interest rates set on loans, while investors are more concerned with profits (Ravallion, 2001; Beck *et al.*, 2006b; Nichter & Goldmark, 2009).

Thirdly, are the policy and regulatory barriers, as many African countries do not follow a standardised set of rules and regulations regarding small firms. This can be seen in government policies and legal issues such as entry and exit regulations. Licensing problems can prevent investors and could further prevent firm growth (UNEP FI, 2007).

The final barriers are skills and information deficiencies. Many African businesses lack the necessary skills to promote and expand in the market. Some innovative firms operate in a specialised niche in the market and require specific skills and information. Banks may not have all the information to accurately determine the risk of a firm applying for a loan (UNEP FI, 2007).

3.5 CONCLUSION

This chapter discussed the sources of finance available for small firms, how to access them and the possible obstacles to prevent access to finance. Many studies, such as that of Du and Girma (2009), have found that there is a positive relation between firm size, access to finance and firm growth.

Small firms pose a bigger risk on repayments of loans because of insufficient collateral. Banks and financial institutions are hesitant to invest in SMEs on account

of lower returns. Premiums are usually also higher for small businesses than for their larger counterparts.

Section 3.2 has looked at internal and external sources of finance. Internal sources are seen as retained profits or personal contributions from the entrepreneur. External sources consist of bank loans, government aid, microfinance and investors. Investors can be divided into venture capitalists, who invest in high-risk firms, and corporate investors, who invest in exchange for shares or part ownership of the firm and angel investors, who invest almost as a form of charity to help the firm, but also to get a return on investment.

In Section 3.3, the access of finance was discussed. This section looked at the methods that determine whether or not a firm will receive finance. Certain factors will influence firm growth, such as firm size and age. Country structure can also play a role in access to finance in terms of macroeconomic stability, inflation and interest rates on loans. Institutional factors include the formal financing sector such as banks and credit-scoring methods. Traditional methods, such as credit scoring, are widely used, while traditional methods include asset-based lending, financial statements lending and factoring.

Section 3.4 covered the challenges faced by firms to access finance. There are different obstacles facing new SMEs that hamper their growth and profits. These obstacles can include a lack of technology, such as machinery, underdeveloped workers and even marketing. The main cause of these obstacles is lack of funds, increasing the dependence on financial institutions. The obstacles also influence a firm's competitiveness and consumers prefer the better product at the lowest price. If a firm is not competitive in the market, profits are limited. Insufficient profits will affect the firms' access to finance. This is a vicious circle that many SMEs face in order to succeed.

Chapter 4 will empirically analyse the data collected in the 2007 World Bank National Enterprise Survey, specifically Section K of the survey on finance and with the focus on South African firms.

Chapter 4 – Empirical Analysis

4.1 INTRODUCTION

The main objective of this study is to examine the sources of finance of SMEs in South Africa and to determine the importance of access to finance as a determinant of output per worker. Chapter 2 reviewed the importance of SMEs for growth and development and the factors that influence growth of firms. Section 2.3 mentioned studies that show that small firms play an important role in job creation. To be able to expand enough to employ more workers, firms need additional finance. Firms need finance to cover operating costs and buy current assets, but also use it to purchase fixed assets and new technology that may give them a competitive advantage in the market. Financial sources can be divided into two main types – internal and external sources. Internal sources are funds accumulated within the firm, either from retained profits or the owner's contribution to capital. Investors, bank loans and government aid programmes may also be available as external sources of finance.

A firm's ability to obtain finance may be influenced by entrepreneurial characteristics such as the experience and education of the manager. Firm characteristics such as the size and age of the firm will also affect the access to finance. Smaller and younger firms often face greater risks and financial institutions are hesitant to grant loans to small firms, in comparison with large firms. The largest obstacle for small firms is a lack of sufficient collateral. Access to finance is limited due to existing collateral or assets that are limited, poor credit history of the firm or owner, and the level of risk associated with the firm.

This chapter will use data and empirical analysis to examine the case of firms and access to finance in South Africa. The rest of the chapter will be structured as follows: Section 4.2 will discuss the data used for the descriptive and empirical analysis. Section 4.3 will provide the complete description of the data. This section is divided between the predictors of firm growth and sources of finance. Section 4.4 will be the empirical analysis of the data using a Cobb-Douglas production function

regression and a logistic regression and a discussion of the results. Section 4.5 will conclude the chapter.

4.2 DISCUSSION OF DATA

This study uses data collected by the World Bank Enterprise Survey 2007, specifically section K of the questionnaire. This section asked questions about the various factors that describe the financial situation of a firm. The data were collected by means of questionnaires and 1057 firms participated in the survey. The techniques used for this study will be a quantitative analysis of the data collected from the survey. This will be done using SPSS to view the frequencies of the data and a cross-tabulation of the finance variables and firm size.

The most important sections of the questionnaire are discussed below and related to the literature review in Chapters 2 and 3. The survey used information collected from 937 firms in total, of which 375 were small, 366 medium-sized and 196 were large firms.

Table 4.1 Firms per region as percentage of industry

	Johannes burg	Cape Town	Port Elizabeth	Durban	Number of firms
Other manufacturing	62.2	18.9	7.2	11.7	180
Food	70.5	13.1	9.0	7.4	122
Textiles	36.4	27.3	0.0	36.4	11
Garments	63.0	16.7	9.3	11.1	108
Chemicals	61.4	19.3	10.8	8.4	83
Plastics and rubber	63.6	13.6	9.1	13.6	22
Non-metallic mineral products	25.0	62.5	0.0	12.5	8
Basic metals	100.0	0.0	0.0	0.0	2
Fabricated metal products	64.5	11.8	4.5	19.1	110
Machinery and equipment	73.5	17.6	0.0	8.8	34
Electronics	68.2	4.5	13.6	13.6	22
Construction	62.5	18.8	0.0	18.8	16
Other services	60.0	4.0	0.0	36.0	25
Wholesale	50.0	0.0	0.0	50.0	14
Retail	79.0	9.6	3.5	7.9	229
Hotels and restaurants	81.5	3.1	7.7	7.7	65
Transport	0.0	50.0	0.0	50.0	2
Information technology	75.0	25.0	0.0	0.0	4

Source: Author's own calculations

The data show that small firms are more likely found in the retail, wholesale and manufacturing industries, while medium-sized firms are present in textiles, rubber and plastics, chemicals, wholesale and other services industries. The larger firms can be found specifically in the mining and electronics sectors, as seen in Table 4.2.

Table 4.2 Industry as a percentage per size

	Small (5-19 employees)	Medium (20-99 employees)	Large (100 employees and more)
Other manufacturing	19.5	17.8	19.4
Food	10.7	12.0	15.3
Textiles	0.5	1.4	1.0
Garments	12.0	9.8	10.2
Chemicals	5.3	10.4	12.8
Plastics and rubber	1.6	3.3	2.0
Non-metallic mineral products	0.0	1.1	2.0
Basic metals	0.0	0.3	0.5
Fabricated metal products	10.1	11.5	14.8
Machinery and equipment	1.9	4.1	6.1
Electronics	1.1	1.9	5.6
Construction	0.8	1.6	3.1
Other services	2.4	3.0	1.5
Wholesale	1.6	2.2	0.0
Retail	21.6	13.4	5.6
Hotels and restaurants	10.1	6.0	0.0
Transport	0.3	0.3	0.0
Information technology	0.5	0.0	0.0

Source: Author's own calculations

By looking at the industries per region in Table 4.3 below, the largest concentration of firms is in Johannesburg, followed by Cape Town and Durban. The retail sector is very important in the Johannesburg region for firms, especially in terms of job creation for small firms. The basic metals industry (mining) is only present in Johannesburg, while 63% of non-metallic products (agricultural products) are found in Cape Town. Electronics (68%) and information technology (75%) firms are concentrated in Johannesburg, along with 79% of retailers and 82% of hotels and restaurants.

Table 4.3 Region as a percentage within industry

	Johannesburg	Cape Town	Port Elizabeth	Durban	Number of firms
Other manufacturing	62.2	18.9	7.2	11.7	180
Food	70.5	13.1	9.0	7.4	122
Textiles	36.4	27.3	0.0	36.4	11
Garments	63.0	16.7	9.3	11.1	108
Chemicals	61.4	19.3	10.8	8.4	83
Plastics and rubber	63.6	13.6	9.1	13.6	22
Non-metallic mineral products	25.0	62.5	0.0	12.5	8
Basic metals	100.0	0.0	0.0	0.0	2
Fabricated metal products	64.5	11.8	4.5	19.1	110
Machinery and equipment	73.5	17.6	0.0	8.8	34
Electronics	68.2	4.5	13.6	13.6	22
Construction	62.5	18.8	0.0	18.8	16
Other services	60.0	4.0	0.0	36.0	25
Wholesale	50.0	0.0	0.0	50.0	14
Retail	79.0	9.6	3.5	7.9	229
Hotels and restaurants	81.5	3.1	7.7	7.7	65
Transport	0.0	50.0	0.0	50.0	2
Information technology	75.0	25.0	0.0	0.0	4

Source: Author's own calculations

It is possible to examine the age of the firms per firm size. The smaller firms are on average younger, their average age being nine years old. Medium-sized firms have been in existence for 18 years, and the larger firms have been doing business for an average of 31 years (see Table A1 in appendix). This may mean that it takes time to grow a large firm. As seen in Table 4.4 below, 88% of the firms in the survey are privately owned by domestic owners, 11% by private foreign owners and only 1% of firms have other or government ownership.

Table 4.4 Firm ownership (percentage ownership)

Private domestic ownership	Private foreign ownership	Government ownership	Other ownership
88.3496	10.5062	0.07	1.09

Source: Author's own calculations

Table 4.4 shows that small firms are not only younger, they also face more competitors. According to the survey, almost 60 percent of small firms have more

than five competitors. Approximately 51% of medium-sized firms face more than five competitors, but this is the case for only 39% of large firms (see appendix, Table A2).

As with any study, the data have certain limitations. Surveys in particular can have several restrictions. The types of questions asked and how they are asked will determine whether the participant answers them or not. As the subject of finance is quite sensitive and may involve confidential information of a firm, there are certain questions in the survey where many of the participants did not provide an answer to the particular question. This may lower the reliability of the results as a whole, but thorough checks were made to ensure the robustness of the results.

The description of the data will be followed by two regression models. The first models firm-level output per worker as a function of a range of variables, including finance variables. The second models the probability of a firm being finance-constrained as a function of a range of firm-specific characteristics.

4.3 DESCRIPTION OF THE DATA

Firm growth can be influenced by multiple factors. The determinants of firm growth can be grouped into entrepreneurial, firm-specific and external factors (see section 2.4).

4.3.1 Entrepreneurial characteristics

In Chapter 2 (see section 2.4.1), several entrepreneurial characteristics that can affect the growth of the firm were identified from literature. Two of these entrepreneurial characteristics are the education and experience of the manager/entrepreneur of the firm. In the World Bank survey, managers were asked about their level of education and number of years of experience.

For the question about the manager's education, 21% answered that they had at least a secondary school qualification (i.e. Grade 8-12 or equivalent senior certificate), while 23% had a graduate degree of some kind. Approximately 24% of

participants received vocational training. Of all the managers, almost 8% completed a post-graduate qualification, such as an MBA (See Table 4.5 below).

Table 4.5 Managers' education

Level of Manager's Education	%
No education	1.1
Primary school	1.6
Started but did not complete secondary school	4.1
Secondary school	21.2
Vocational training	24.4
Some university training	12.6
Graduate degree (BA, BSc etc.)	22.7
MBA from university in this country	7.8
MBA from university in another country	2.4
Other post-graduate degree from university in this country	1.9
Other post-graduate degree from university in another country	0.3
Total	100

Source: Author's own calculations

Managerial experience is important in any firm, regardless of the size of the firm. An experienced manager may be able to mitigate many of the typical barriers to doing business, including access to finance. Section 2.4.1 in Chapter 2 argued that many entrepreneurs gain experience in larger firms before starting their own firm. These entrepreneurs then apply the experience they have gained over the years.

Table 4.6 shows the distribution of the years of experience of the managers in the World Bank survey. On average, the managers have 14 years of managerial experience. Approximately 52% of the participants have one to 10 years of experience, 27% have 11 to 20 years experience and only 7% of the participants have more than 30 years of experience.

Table 4.6 Managers' experience (measured in years)

	1-10 years	11-20 years	21-30 years	More than 30 years	Skipped
Valid percentage	51.9	27.3	13.7	7.0	0.1
Mean (years)	4.7	2.7	1.4	0.3	0
Statistics					

Valid (n)	1056
Missing	1
Mean	13.7

Source: Author's own calculations

The survey also asked if the firms had female owners. Only 23% of the firms had female owners, while 76% had only male owners. The advantage of female owners can be a lowered risk profile for the firms, as women are less likely to take big risks and are generally seen as careful (Table 4.7). For financial firms, the risks are lowered in terms of non-repayment and banks and investors will more likely invest in firms with female owners (see section 2.4.1(c)) (Nichter & Goldmark, 2009; Mazzarol & Reboud, 2009).

Table 4.7 Female owners

	%
Not provided	1.1
Yes	22.7
No	76.2
Total	100

Source: Author's own calculations

In terms of firm size and female owners, small and medium-sized firms have slightly more female owners than large firms. Of the small firms, 22% had female owners. Approximately 23% of medium-sized firms had female owners and almost 20% of the large firms had female owners, as seen in Table 4.8 (see also section 2.4.1(c)).

Table 4.8 Cross-tabulation of firm size and female owners

Size		Not provided	Female ownership %	
			Yes	No
Small (5-19 employees)	% within size	2.4	22.1	75.5
(375)				
Medium (20-99 employees)	% within size	0.8	23.2	76.0
(366)				
Large (100 employees and more)	% within size	0.0	19.9	80.1
(196)				

Source: Author's own calculations

4.3.2 Firm characteristics

Firm characteristics are described by firm size and firm age in the dataset. As was shown in section 2.4.2, larger firms receive preference from financial institutions when it comes to approving loans. Small firms often do not have enough assets for collateral when compared to larger firms. This presents a greater risk of non-repayment for banks. Firms that are new in the market need to establish a good client base, compete in terms of quality products or services and establish a good credit history in order to obtain access to finance. New firms are a big risk to investors and financial institutions and this prevents a firm from receiving additional funding (see section 2.4.2).

In this survey, 937 firms were used to collect information. Of these firms, 375 were classified as small firms, 366 as medium-sized and 196 large firms. Small firms have between one and 19 employees, medium-sized firms have 20 to 99 employees and large firms have more than 100 employees. Small firms are younger, with the average age for a small firm being nine years. Medium-sized firms are slightly older with an average age of 18 years, while large firms are on average 31 years old. This also shows that small firms grow as they get older and more established in the market.

4.3.3 External factors

Several external factors can influence firm growth, as was explained in section 2.4.3. These include economic factors such as inflation and interest rates. Macroeconomic instability can also affect foreign investments (section 2.4.3(a)). Consumer preferences are important and will have a direct impact on sales and revenues (section 2.4.3 (b)). Firms need to stay updated with market trends and competing firms (section 2.4.3 (d)). The third factor is technology in a firm. Technology can be seen in production methods and new machinery and materials. New technology is usually expensive and hard to acquire for a firm without financing (section 2.4.3 (c)).

Political instability is important as it can potentially prevent and limit local and foreign investment. Political instability can also directly affect firms, e.g. social unrest or strikes. In the World Bank dataset, a larger number of small and medium-sized firms

face obstacles due to political instability. Within the group of firms that consider political instability as a major obstacle, 47% are small firms and 29% are medium-sized firms. Most of the large firms (77%) do not experience political instability as an obstacle (see Table 4.9).

Table 4.9 Cross-tabulation of political instability and firm size.

Size	Political instability	No obstacle	Minor obstacle	Moderate obstacle	Major obstacle	Very severe obstacle
Small (5-19 employees) n=375	% within size	83.2	10.1	3.2	2.1	1.3
	% within political instability	40.8	39.6	25.0	47.1	45.5
	% of total	33.3	4.1	1.3	0.9	0.5
Medium (20-99 employees) n=366	% within size	82.8	8.7	6.0	1.4	1.1
	% within political instability	39.6	33.3	45.8	29.4	36.4
	% of total	32.3	3.4	2.3	0.5	0.4
Large (100 employees and more) n=196	% within size	76.5	13.3	7.1	2.0	1.0
	% within political instability	19.6	27.1	29.2	23.5	18.2
	% of total	16.0	2.8	1.5	0.4	0.2

Source: Author's own calculations

Macroeconomic instability can cause many problems for firms. As with political instability, smaller firms are struggling more than large firms to overcome these obstacles. Table 4.10 below shows that 9% of small firms faced moderate obstacles and 6% had to overcome major obstacles. Of the medium-sized firms in the survey, 13% felt that macro-instability is a moderate obstacle, while 16% of large firms saw it as a minor obstacle.

Table 4.10 Cross-tabulation of macroeconomic instability and size

		No obstacle	Minor obstacle	Moderate obstacle	Major obstacle	Very severe obstacle
Small (5-19 employees) n=375	% within size	75.2	7.5	9.1	6.1	2.1
Medium (20-99 employees) n=366	% within size	71.3	9.8	13.1	3.8	2.0

Large (100 employees and more) n=196	% within size	73.0	16.3	6.6	2.6	1.5
Total n=937	% within size	73.2	10.2	10.1	4.5	2.0

Source: Author's own calculations

According to the survey, almost 60% of small firms have more than five competitors. This is the case for 51% of medium-sized firms and 39% of large firms. This just emphasises the importance of obtaining a competitive advantage for small firms in the market and the need to grow and improve (see Table 4.11).

Table 4.11 Competitors according to firm size

		Skipped	None	1	2 to 5	More than 5
Small (5-19 employees) n=235	% within size	1.7	6.8	6.4	26.4	58.7
Medium (20-99 employees) n=269	% within size	3.0	6.0	4.8	35.3	50.9
Large (100 employees and more) n=176	% within size	10.2	7.4	8.5	35.2	38.6

Source: Author's own calculations

4.4 Finance

Firms can need financing for different reasons, such as product development, capital goods such as machinery or to acquire new assets such as factories. This questionnaire posed several important questions to the participants in terms of firm finance. One of the first questions in Section K was whether the land was owned or leased.

This is already an important indicator of the financial situation of the firm, as ownership of the property means it can be used as an asset for loan applications. The follow-up question is the firm's existing overdraft and interest rate, which were discussed in Chapter 3. Question 3 was the contribution of various financial sources for the firm, discussed in section 3.2. The rest of the questions included existing loans, the type of financial institution and reasons for the loan being rejected.

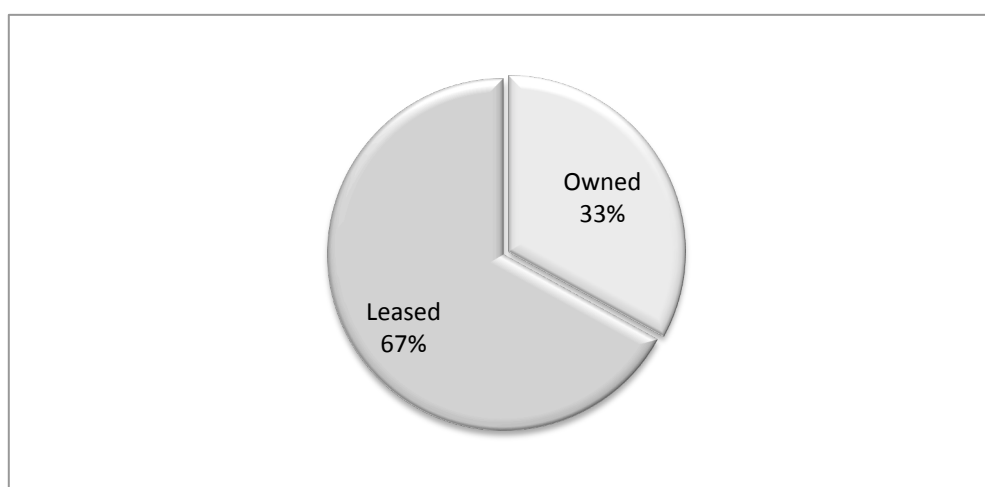
4.4.1 Sources of finance

Sources of finance can be divided between internal and external sources. Internal financing can be from profits, working capital or owner contribution (see section 3.2.1), while external sources are mainly banks and investors (3.2.2). Financing is used to purchase new assets or existing assets are used as collateral for additional funds.

a. Assets and collateral

Firms' assets and collateral are used when applying for formal financing such as a bank loan. This section in the survey started with property assets, whether the land is owned or leased by the firm. The descriptive statistics below indicated that an average of 33% of the firms owned their property, while 67% of the firms are leasing their property at the time of the survey, as seen in Figure 4.1 below.

Figure 4.1 Property ownership



Source: Author's own calculations

In terms of fixed assets of firms, the cross-tabulation shows 72% of small firms did not purchase any fixed assets in 2006, while 62% of large firms have purchased additional fixed assets in the same year (see Table 4.12 below).

Table 4.12 Size and fixed assets

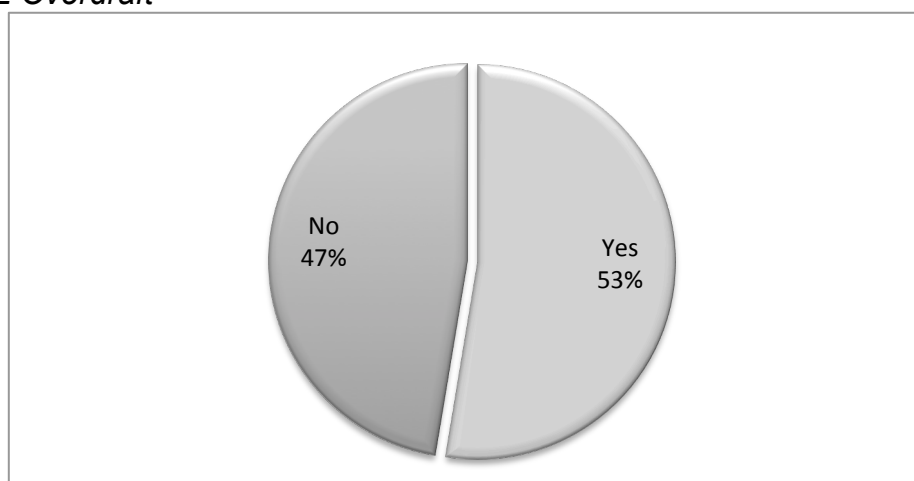
	Yes %	No %	Total %
Small (5-19 employees)	105	270	375
Medium (20-99 employees)	177	189	366
Large (100 employees and more)	122	74	196
Total	404	533	937

Source: Author's own calculations

b. Loan / overdraft

Existing loans or overdraft facilities are important in the financial history of a firm. Of the firms that participated in the survey, more than half (53%) have an existing overdraft, as seen in Figure 4.2. This can have a positive or negative effect on future loan applications. It can have a negative effect on the credit history of the firm if the overdraft or loan is not repaid in a timely manner. This will increase the risk for future loan repayments from a bank's perspective. On the other hand, if payments are made on time and the loan or overdraft is repaid within the prescribed time, this can look very promising for future repayment for banks.

Figure 4.2 Overdraft



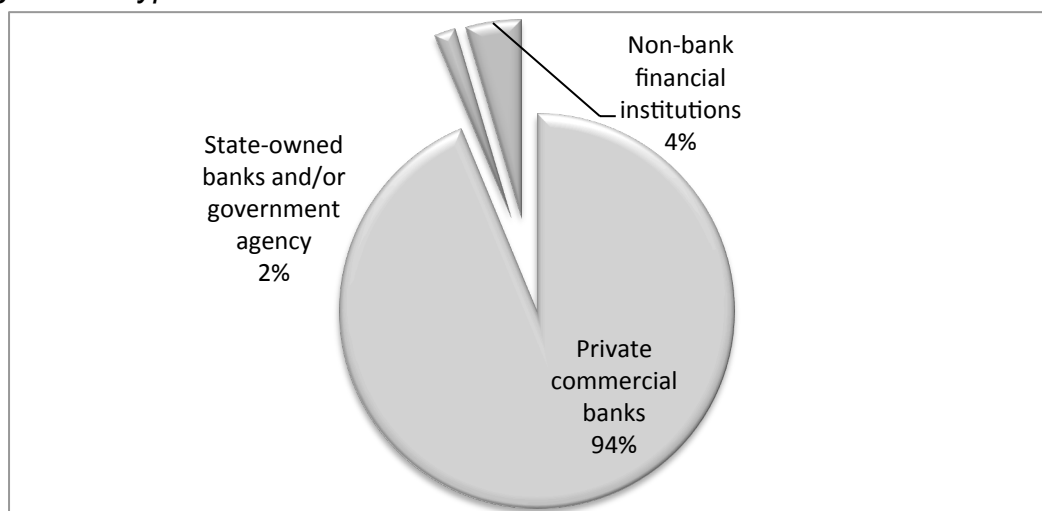
Source: Author's own calculations

This level of risk associated with the firm will also influence the interest rate at which the loan or overdraft will have to be repaid. Unfortunately, almost 48% of participants failed to provide an answer for this question. Of the other 52% that did answer, the interest rate for repayment ranged from 10% with most between 12 and 13%.

Unfortunately, there were several questions regarding the bank loans that were not useful for the purpose of this study. These questions were for: the line of credit or loan, the duration of the loan, the annual interest rate charged, the amount approved for the loan and the year the loan was approved. These were excluded based on the fact that approximately 70% of the participants did not provide answers to these questions.

The following part of the survey, however, was an important indicator of the type of financial institutions that small firm owners prefer. An overwhelming 94% of owners would consider approaching a private or commercial bank in order to obtain a bank loan, as opposed to the 2% and 4% who would use state-owned banks or government agencies or a non-bank institution, respectively, as seen in Figure 4.3.

Figure 4.3 Type of financial institution



Source: Author's own calculations

Before applying for a bank loan, there are several factors that a firm/owner will first have to take into consideration. As seen in Table 4.13 below, apart from the firms that did not need a loan, 9.1% would have preferred better interest rates on the loan repayment terms. Another 4.6% did not believe that the loan application would be successful.

Table 4.13 Reason for no loan application

	%
Skipped	21.1
No need for a loan –establishment has sufficient capital	51.1
Application procedures are complex	7.8
Interest rates are not favourable	9.1
Collateral requirements are unattainable	2.6
Size of loan and maturity are insufficient	0.8
Did not think it would be approved	4.6
Other	3
Total	100

Source: Author's own calculations

c. Collateral

Collateral plays a very important role in the access to finance for a firm of any size (see section 3.2). The following section will look at the relationship between size and various forms of collateral within a firm by means of cross-tabulation. Approximately 100 out of 366 medium-sized firms (27.3%) had access to sufficient collateral, while only 15.5% of small firms did, according to Table 4.14

Table 4.14 Tabulation of collateral by firm size

Firm Size	Skipped	Yes	No	Total
Small (5-19 employees)	294	58	23	375
Medium (20-99 employees)	231	100	35	366
Large (100 employees and more)	117	48	31	196
Total	642	206	89	937

Source: Author's own calculations

In terms of property and buildings to pledge as collateral, only 20 small firms had these specific assets available, while 48 medium-sized firms owned the land or building and could use it as collateral. Of the larger firms that participated in the survey, only 16 did not have land or buildings to use as collateral (approximately 80% of survey participants did not provide an answer to this question).

4.4.2 Access to finance (size and age)

In this survey, the participants were asked whether they faced any major obstacles in order to access finance. From all the firms that participated in the survey, more than 10% have to face major obstacles in order to get additional financing. Another 9.5% had moderate problems to access financial sources. The access to finance can depend on the collateral available to the firm involved. This can vary greatly between firms in different sectors and between countries (Table 4.15).

Table 4.15 Access to finance and obstacles faced by firms

	%
No obstacle	63.7
Minor obstacle	12.2
Moderate obstacle	9.5
Major obstacle	10.8
Very severe obstacle	3.9
Total	100

Source: Author's own calculations

By looking at the cross-tabulation in Table 4.16 on firm size and access to finance, 12% of small firms had moderate obstacles and more than 14% still faced major obstacles to access finance. Almost 15% of medium-sized firms still have to face minor obstacles and 11% have moderate problems in terms of access to finance. Larger firms have far lower numbers, with less than 4% that have major obstacles and 12% with minor obstacles.

Table 4.16 Access to finance obstacles by firm size

	No obstacle	Minor obstacle	Moderate obstacle	Major obstacle	Very severe obstacle
Small (5-19 employees) % within size	59.70%	9.10%	12.00%	14.40%	4.80%
Medium (20-99 employees) % within size	64.20%	14.50%	10.90%	7.90%	2.50%
Large (100 employees and more) % within size	79.10%	12.20%	3.10%	3.60%	2.00%

Source: Author's own calculations

By looking at access to finance per industry (see appendix, Table A3), there are several sectors that stand out. Sectors that face minor obstacles are the food (19%), textiles (27%) electronics (27%) and wholesale industries (21%). Moderate problems are faced by the transport sector with 50%. Sectors with major obstacles to access finance include garments (20%), basic metals (50%), construction (25%) and information technology (50%).

Across the four regions, 14% of Johannesburg firms consider access to finance a minor and 13% a major obstacle. In Cape Town, 12% of firms have moderate difficulties, and in Durban, 12% have minor obstacles. In Port Elizabeth, 89% had no obstacles to access finance and very few firms reported severe obstacle to access finance (see appendix, Table A4).

4.4.3 Summary of descriptive statistics

The first part of the description looked at the general profile of firms surveyed in South Africa. The majority of firms surveyed are in the Johannesburg and Cape Town regions, followed by Durban and Port Elizabeth. Firms face several problems that can prevent growth. Many obstacles are faced by small and medium-sized firms compared to that of large firms, such as inflation. Older and larger firms grow faster and face fewer obstacles than smaller, younger firms do. Small firms do not have the necessary collateral as required by many financial institutions. Access to finance is a problem for all firms, varying in intensity according to firm size.

The next section will look at the empirical analysis of the data in two regression models to determine the effect of the variables on a) output per worker and b) access to finance.

4.5 EMPIRICAL ANALYSIS OF DATA

4.5.1 Cobb-Douglas production function regression

For this study, two regressions were done using different dependent variables to examine access to finance and the relationship with the independent variables. The first regression uses a Cobb-Douglas production function as seen in the works of Rankin (2001) and Du and Girma (2009). The function is as follows:

$$Output_i = f(c_i, capital_i, labour_i, materials_i, indirect\ costs_i, sector_i, size_i, age_i, finance_i, source_i)$$

For the first regression (Table 4.17), the dependent variable is output, therefore measuring the efficiency of the firm's production and the influence that access to finance will have on output. The *c* term in the function refers to the constant or intercept, *capital* is the capital costs of the firm. *Labour* refers to the labourers of the firms in 2006, *material* is costs such as fuel, rent and transport costs and *indirect costs* is seen as indirect input costs. All variables are per worker and denoted per individual firm (*i*). Firm age is measured in years since establishment until 2006. *Finance* is a dummy variable used to measure access to finance as a constraint by firms, when the answer of the dummy = 1. *Sources* indicates the possible sources of finances that can be used by firms. The production function is estimated by considering natural logarithms of both sides. An OLS estimator is used with the correction for heteroscedasticity robust standard errors.

Table 4.17 presents the results of different specifications using the 2007 survey data. The table shows estimated coefficients with t-statistics in brackets.

The linear regression model measured output per worker in firms as the dependent variable in terms of the various independent variables. The variables used are all important to determine the output per worker and the access to finance for small firms.

Table 4.17 Regression model 1 – Output per worker dependent variable

	Model 1	Model 2	Model 3	Model 4	Model 5
Constant	4.094 (14.885)*	4.229 (14.200)*	4.191 (14.193)*	4.153 (13.976)*	4.532 (10.708)*
Capital	0.90 (4.975)*	0.090 (4.937)*	0.93 (5.144)*	0.094 (5.203)*	0.053 (2.016)
Labour	0.187 (8.180)*	0.139 (2.943)*	0.149 (3.166)*	0.155 (3.278)*	0.125 (1.984)
Materials	0.413 (13.365)*	0.411 (13.274)*	0.407 (13.245)*	0.409 (13.293)*	0.347 (8.352)*
Indirect cost	0.279	0.276	0.289	0.289	0.355

	(10.419)*	(10.233)*	(10.739)*	(10.722)*	(9.428)*
Firm age	0.004 (2.280)*	0.004 (2.331)	0.005 (3.125)*	0.005 (3.158)*	0.005 (2.294)
Firm size dummy: medium		0.154 (1.721)	0.175 (1.964)	0.175 (1.970)	0.420 (3.270)*
Firm size dummy: large		0.161 (1.008)	0.158 (0.995)	0.154 (0.940)	0.361 (1.689)
Access to finance 1 = access is a constraint		-0.081 (-1.013)	-0.082 (-1.031)	-0.87 (-1.099)	-0.257 (-2.025)
Manager's experience			-0.010 (-3.695)*	-0.010 (-3.613)*	-0.007 (-1.909)
Overdraft interest rate				-0.004 (-1.102)	-0.003 (-0.590)
Source of finance: Internal finance					0.000004136 (-0.045)
Source of finance: Non- bank finance					-0.003 (-0.607)
Adjusted R²	0.61	0.62	0.62	0.62	0.65

Source: Author's own calculations

In the first model, the variables for capital, labour, materials, indirect cost and firm age have a positive relation to output per worker. Firm age also has a positive relation to output, which means that the older firms have higher levels of output per worker. Firm age is also significant like the others on a 5% level.

In model 2, firm size dummies were added for medium and large firms as well as an access to finance dummy. The adjusted R² increased slightly to 0.62. The access to finance dummy has a negative correlation with output per worker and is not significant. Both firm size dummies have positive relations to the dependent variable, but are not significant.

Model 3 added manager's experience and this increased the medium-sized dummy's effect on output in comparison to small firms and is significant. In model 4, overdraft interest rate was added and this variable had a negative coefficient. This means that the high interest rates charged on overdrafts have a negative effect on the output of workers of firms.

The last model (model 5) added two sources of finance – internal- and non-bank sources – to the regression. For internal sources of finance, the variable has a very

small coefficient of 0.000004136 and non-bank sources of finance have a negative relationship to output. Neither sources of finance are significant on the 5% level. The final model also has the best fit with an adjusted R^2 of 0.65.

4.5.2 Logistic regression

The second regression model uses a logistic regression function with access to finance dummy as the dependent variable. Table 4.18 shows the coefficients and the t-statistics for the models. The values in the table are the $\text{Exp}(B)$, the standard error in brackets and the significance indicated by the * (on a 5% level).

Where the access to finance dummy is the dependent variable, b_0 is the Y-intercept, b_1 is the gradient of the line, and ε_i is the residual term. The logistic regression is used to measure the probability of access to finance (Y) as a constraint for firms in terms of the variables. Therefore, when access to finance = 1, the firm is finance constrained. Positive relations will indicate a higher probability that the firm is finance constrained. The $\text{Exp}(B)$ used for interpretation indicates that if the value is more than 1, the probability of the outcome (finance constrained firm) is higher and vice versa.

The following table (Table 4.18) will describe the variables for the logistic regression models.

Table 4.18 Variable description – logistic regression

Output	Output per worker as indicated in linear regression
Firm age	Measured in years
Firm size	Measured by number of workers
Manager's experience	Measured in years
Access to land	Is access to land an obstacle for firm operations? Y/N
Overdraft	Whether the firm has an existing overdraft Y/N
Overdraft interest rate	Interest rate percentage on existing overdraft
Collateral	Does the financial institution require collateral (when applying for loan)? Y/N
Land, building	Used as collateral for loan application Y/N
Machinery and equipment	Used as collateral for loan application Y/N
Account receivable	Used as collateral for loan application Y/N
Owner's personal assets	Used as collateral for loan application Y/N
Other collateral	Used as collateral for loan application Y/N
Value of collateral	Approximate value of total collateral pledged for loan

Loan or line of credit	Loan or line of credit applied for–If line of credit = Yes
Year approved	Year that loan was approved
Amount approved	Value of loan / amount approved
Annual interest rate	Annual interest rate on loan / credit
Duration	Measured in months

These variables were used in the following five logistic regression models.

Table 4.19 Logistic regression model: Access to finance – dependent variable

	Model 1	Model 2	Model 3	Model 4	Model 5
Constant	53.251 (1.183)	5.019 (1.252)	1.708 (1.335)	1.676 (1.991)	0.000 (48.142)
Output	0.667 (0.100)	0.775 (0.104)	0.781 (0.105)	0.760 (0.106)	0.790 (0.108)
Firm age	0.971 (0.011)	0.973 (0.011)	0.975 (0.011)	0.973 (0.011)	0.976 (0.011)
Firm size (a6b)	0.721 (0.167)	0.716 (0.180)	0.753 (0.183)	0.803 (0.189)	0.824 (0.191)
Manager's experience (b7)	1.000 (0.011)*	1.001 (0.012)*	1.004 (0.012)	1.001 (0.013)*	1.000 (0.013)*
Access to land (g30a)		1.896 (0.083)	1.929 (0.085)	1.904 (0.087)	1.934 (0.091)
Overdraft (k7)			1.710 (0.222)	1.084 (0.799)*	0.739 (0.806)
Overdraft interest rate (afk7a)				0.968 (0.048)	0.946 (0.048)
Collateral (k13)				0.904 (0.092)	0.000 (10.259)
Land, building (k14a)				1.423 (0.495)	1.242 (0.546)
Machinery/equipment (k14b)				0.507 (0.502)	0.461 (0.528)
Accounts receivable (k14c)				0.802 (0.505)	0.472 (0.587)
Owner's personal assets(k14d)				0.482 (0.524)	0.542 (0.559)
Other collateral (k14e)				2.625 (0.715)	0.727 (1.470)*
Value of collateral (k15)				1.011 (0.004)	1.012 (0.005)
Loan / line of credit (Afk8a)					0.926 (0.547)*
Year approved (k10)					1.036 (0.031)
Amount approved (k11)					1.000 (0.000)
Annual interest rate (Afk10a)					1.071 (0.051)
Duration (k12)					1.005 (0.007)
Cox & Snell R ²	0.058	0.114	0.120	0.134	0.142
Nagelkerke R ²	0.108	0.212	0.223	0.250	0.265
Overall %	87.1%	88.1%	88.4%	88.7%	88.2%

Source: Author's own calculations

Model 1 of the logistic regressions can be seen as the basic model for the logistic regressions. The variables in model 1 were output, firm age, firm size and manager's experience. In model 1, only the manager's experience variable is significant on the 5% level. Manager's experience has a Wald statistic of 0.000, which is also significant, while several variables had an Exp(B) value greater than one, increasing the probability of the outcome – in this case, being finance constrained. The only variable is manager's experience. The model has an overall percentage of 88.1%, the Cox & Snell R^2 is 0.058 and Nagelkerke R^2 is 0.108.

The second model had one additional variable: access to land. In this model, manager's experience (0.012) had a significant Wald statistic. Variables with Exp(B) values greater than one are manager's experience and access to land. This model had an 88.1% overall percentage, Nagelkerke R^2 of 0.212 and Cox & Snell R^2 of 0.114.

In model 3, overdraft was added to the regression variables. Firm age (0.975) approaches a value of 1.000 and manager's experience, access to land and overdraft are significant in the model with Exp(B) values of more than 1.000. The model has a Nagelkerke R^2 of 0.223 and Cox & Snell R^2 of 0.120, while the overall percentage of the model stays at 88.4%.

Model 4 looked at the difference that collateral will play in access to finance. Additional variables are the type of financial institution, collateral, land and building, machinery and equipment, accounts receivable, owner's personal assets, other collateral and the value of collateral. This also indicates that collateral, types of collateral and value of collateral are important for access to finance. In terms of the Wald statistic, manager's experience (0.003) and overdraft (0.010) are significant, while many variables have values greater than one. Variables with an Exp(B) value of more than 1.000 are manager's experience, access to land, overdraft, land and building, other collateral and value of collateral and will therefore increase the odds of the outcome occurring. The overall percentage of the model is 88.7%, with a Cox & Snell R^2 of 0.134 and Nagelkerke R^2 of 0.250.

In model 5, loan variables were added. These included: loan/line of credit, year approved, amount approved, annual interest rate and duration. In terms of significance, manager's experience (0.013), other collateral (0.047) and loan/line of credit (0.020) showed Wald statistic values of less than 0.05. Variables that will increase the odds of occurrence of the predictor are manager's experience, access to land, land and building, value of collateral, year approved, amount approved, annual interest rate and duration. This indicates that loan-related variables are important for access to finance. The overall percentage of the model is 88.2%, while Cox & Snell R^2 is 0.142 and Nagelkerke R^2 is 0.265.

4.5.3 Summary of results

The regression models looked at the output per worker and the influence of several factors. The basic model of the linear regression only included capital, labour, materials, indirect costs and firm size. Additional factors of firm size dummies, access to finance and manager's experience in the second and third models increased the R^2 of the models. Additional finance variables, such as overdraft interest rate and sources of finance, showed that output per worker is indeed influenced by finance and firm variables. The output per worker will have a direct impact on the growth of the firm.

The linear regression was done to determine the output per worker and factor which will influence it. The variable used in the basic model is labour, capital, materials, indirect costs and firm age. Capital, labour and materials is the basic input factors in production. Firm age was discussed as an important factor of firm growth in the literature and indirect costs are seen as rental fees, maintenance and staff expenses. The results of this model show that firm age is significant and that means that older firm usually have better output levels compared to newer/younger firms (see Section 2.4.2).

In the second model size dummies were added for medium and large firms and access to finance dummy. Although the size dummies are positive in relation to output, they were not significant to this model. The third model added manager's experience as it is an important factor in firm growth as seen in the literature (see

Section 2.4.1) and affected the medium-sized dummy's effect on output. The fourth model added finance variables for overdraft interest rate. The results showed a negative coefficient and a high interest rate on a loan can have a negative effect on the firm and the output of the workers.

The final model had an additional two sources of finance that measured the internal and non-bank sources. The results of the model show that neither of the two factors was significant and the non-bank sources variable had a negative relation to output. With the results of the linear regression, the basis was formed for the logistic regression to examine access to finance as a determinant of firm productivity in South Africa along with other important firm factors.

The second empirical analysis was a logistic regression method and started with the same variables as used in the linear regression (output, size, firm size and manager's experience). These factors were chosen as discussed in the literature and data description as important factors of access to finance. For the logistic regression, variables with an $\text{Exp}(B)$ value of 1.000 or more increase the likelihood of the outcome of the model to occur, in this case, being finance constrained.

The logistic regressions were done to determine access to finance and which variables may have an effect on the firm's abilities to access financial sources. Only manager's experience (see Section 2.4.1 (b)) was significant in the first model. Access to land was added in the second model as this is seen as an asset for the company. However, it did not have a major effect on the overall percentage of the model compared to the first one. The third model added the variable overdraft (see Section 3.3.1) to take into consideration the credit history of the firm and the effect it will have on access to finance. The results showed that it is a significant factor.

Adding collateral and asset variables (i.e. loan related financial factors) in the fourth model, indicated that these factors are important to access of finance and variables such as overdraft are significant to the outcome in the model. This model had several significant variables and includes manager's experience, access to land, value of collateral, year approved, amount approved, annual interest rate and duration.

The models in the logistic regression improved as the variables were adjusted and it shows that important variables include collateral and loan variables can influence the results and output of the models. This indicates that loan-related variables are important for access to finance.

The empirical results show that a) output is influenced by access to finance and sources of finance and b) access to finance is influenced by firm factors such as existing credit, assets and sources of finance available. Collateral and loan variables will affect the access to finance and future finance of a firm. This access to finance will in turn affect the productivity of the workers. The firms with more collateral to use against a loan are more likely to have success in securing a future loan compared to firms with little or no collateral available. Previous loan applications which were rejected and high interest rates also discourage firms from applying for new loans, limiting firm growth. Access to financial sources is therefore crucial to firms and firm growth. Removing these financial factors will also have a direct effect on the productivity on the workers. SMEs need finance in order to improve the productivity of its workers and for the firm to grow in the market.

4.6 CONCLUSION

This chapter examined the different aspects of finance and the effect they will have on firm growth. The first section was a description of the data collected in the World Bank Enterprise Survey 2007. This indicated that small firms are present more in the wholesale and manufacturing industries, medium-sized firms are predominantly in textiles, rubber and plastics and larger firms are in the mining industry. The majority of firms are in Johannesburg, followed by Cape Town. The data also show that size is relative to age, as smaller firms are younger and the large firms are the oldest. Most of the firms have private domestic ownership.

The finance-specific questions are in section K of the questionnaire. According to the data regarding the managers, more than 20% have a formal education or a degree and 8% have an MBA. The data also shows that the managers have an average of 13 years experience. In terms of firm assets, only 33% of firms owned the property or building and 72% of small firms did not purchase fixed assets in 2006 compared

to the 62% of large firms. More than half the firms that participated in the survey have an existing overdraft and participants agreed that interest rates are too high and 94% of firms used private/commercial banks. For access to finance obstacles, 60% of firms encountered minor or no obstacles, but 10% had moderate and 12% had major obstacles to gain access to finance.

In the linear regression model, output per worker was used as the dependent variable and the results confirm that access to finance and sources of finance are important for output in a firm and will therefore influence firm growth. The logistic regression model used access to finance as the dependent variable. The results show that finance variables such as collateral, loan factors and sources of finance will affect access to finance.

Chapter 5 – Conclusion

5.1 INTRODUCTION

Small and medium enterprises are an important part of a country's economy. Small firms provide employment and stimulate long-term economic growth. In South Africa, SMEs provide employment for more than half of the labour force and make a noticeable contribution to the GDP of the country. The stimulation of growth and development of small firms can lead to job creation opportunities in South Africa. Many SMEs are, however, constrained by their limited access to finance. This study examined the source of finance of firms in South Africa and estimated the importance of finance as a predictor of output per worker.

According to the existing literature, access to finance and the available sources of finance are a problem for many SMEs who want to grow and expand. Additional finance may be used for various reasons depending on the needs of the firm, for example new equipment, working capital and acquiring new inventory or assets such as cars or buildings. These can all be regarded as ways to make a firm grow and improve both its productivity and competitiveness.

Sources of external finance are bank loans, microfinance, government aid or investors. There are also different types of investors – angel investors, venture capital and friends or family. Internal finance can be obtained from personal contributions and retained profits. Access to finance explains how firm can access these sources. This can be seen in the evaluations by banks for a loan, e.g. credit history of the firm or owner. It can also be influenced by external obstacles such as interest rates, regulations and institutional barriers.

5.2 CONCLUSIONS

The general objective of this study is to examine access to finance as a determinant of firm productivity in South Africa. This objective was achieved through the following specific objectives.

The first specific objective was to review the literature on the finance-firm growth link and to draw conclusions for empirical application within the South African context. Chapters 2 and 3 achieved this objective by examining the relation between firms (especially for small and medium-sized firms), finance and growth in general and in South Africa.

Chapter 2 investigated the impact of SMEs on economic factors, as well as factors influencing firm growth. The chapter started by briefly explaining the various economic growth theories.

The first theory was the Classical Growth theory of Adam Smith and David Ricardo. The theory was based on the comparative and relative advantage of trade based on the distribution of resources. This theory uses four production factors used in an economy. These factors are natural resources, capital, labour and entrepreneurs (see Chapter 2, section 2.2.1). The Neo-Classic theory followed, based on the work of Solow and Swan and their model of total production. They added technology as a production function and the potential and actual growth of a country's output, determined by labour and capital (see Chapter 2, section 2.2.2). Schumpeter's theory of creative destruction states that factors cannot be used efficiently without human input and management and highlights the important role that entrepreneurs play (Chapter 2, section 2.2.3).

A lack of long-term and reliable data has been a problem for researchers, especially for studies on developing countries. Taking this into account, there are still numerous studies discussed in section 2.3 that indicate the importance of SMEs in a nation's economy in terms of job creation, poverty alleviation and long-term economic growth. In order to make a contribution to the economy, firms would need to grow enough to create employment opportunities. There are three main sets of factors that may

influence firm growth. The first set is entrepreneurial characteristics, which include the manager and worker's past experience and education levels (Chapter 2, section 2.5.1). The second set is the firm characteristics such as the size and age of the firm (Chapter 2, section 2.5.2). Lastly, are the external factors such as competition from other firms, changing technology and consumer trends. Macro-economic factors (e.g. inflation and interest rates) are also included here because they cannot be controlled by the firm.

The second part of the literature review focused on the access to and sources of finance for small firms and the challenges faced by firms to attain funding. Chapter 3 focused on the sources and access to finance. Studies found that there is a positive relation between firm size, firm growth and access to finance and this was an important starting point of the chapter (Chapter 3, section 3.1). Smaller firms seem to pose a bigger risk to formal financial institutions than larger firms do, mainly due to lower levels of collateral. This means that there is a higher risk of non-repayment of loans to banks. This leads to higher premiums, higher interest rates and stricter repayment terms with banks (section 3.1).

There are two main sources of finance available to small firms, i.e. internal or external sources. Internal finance is obtained through the owner's contributions to the firm from personal savings or from retained profits (Chapter 3, section 3.2.1). External sources can be seen as loans from commercial or business banks, investors, microfinance or government aid programmes (section 3.2.2). Access to finance determines who will receive credit. This looks at factors such as firm age and size and country structure. Institutional factors are the evaluation methods used to determine whether or not a firm will receive financing. Traditional methods include factoring, financial statement lending and asset-based lending (Chapter 3, section 3.3).

Firms can face several challenges in order to access additional finance. Firms need to have adequate collateral in order to apply for financing at a formal institution such as a bank. Firms need to be competitive and have sufficient profits, but in order to be competitive, the firm may need new equipment. In order to acquire the new

equipment, the firm needs financing – this is a vicious cycle for many firms and can prevent them from growing (section 3.3).

The second specific objective was to describe the characteristics of the firms and their sources of finance in the South African World Bank Enterprise Survey data. This was achieved in the first part of Chapter 4 with a description of the firms that participated in the survey and the general conclusions from the data regarding firm, manager and financial descriptives, frequencies and cross-tabulations using SPSS. The descriptive statistics indicated that the majority of firms are found in Johannesburg, followed by Cape Town and Durban (Chapter 4, section 4.2, Table 4.2.3). Firm ownership in South Africa consists of 88% private domestic ownership (Table 4.2.4) and the average manager has approximately five years experience (Table 4.3.2). Small and medium-sized firms face the most obstacles in obtaining additional finance (Table 4.4.6) as they do not have sufficient collateral for a loan (Table 4.4.3).

The third specific objective was to use an econometric model to estimate the determinants of firm productivity, including the importance of access to finance and to also estimate the predictors of firms' access to finance. This was achieved with the empirical analysis in the second part of Chapter 4. Two regression models were run in this study. The first model was a linear regression model with finance variables and output per worker as the dependent variables. This regression showed that access to and sources of finance along with firm size and the manager's experience will influence output per worker, which will ultimately affect the growth of the firm. The second model was a logistic regression model that used access to finance as the dependent variable, measuring the effect that obstacles to access finance will have on a firm. The other independent variables included firm age, size and sources of finance. The empirical models showed that while many firms did not view access to finance as an obstacle to firm growth, the models improved with additional finance variables and therefore it will affect long-term firm growth.

Therefore, the general objective was to to examine access to finance as a determinant of firm productivity in South Africa. Finance is a crucial part of

productivity and firm growth, therefore sources to finance will influence access to finance. Small firms in South Africa face obstacles to access financial sources.

5.3 RECOMMENDATIONS

Future research regarding firm finance can be more specific to answer questions on firm productivity. If access to finance is not a major obstacle to firm growth and output, what factors are responsible? Government intervention to aid SMEs will depend on the country, resources available and the management of those resources. Unfortunately, the political and economic instability in many African countries does not encourage too much government intervention; however, in European countries such as the Netherlands, this approach might be more appropriate. Firms need to produce goods at a high, competitive standard to draw private investors. Many of the credit scoring techniques used by financial institutions are outdated or based on the characteristics of larger firms. The methods of evaluating firms' creditworthiness and loan applications should be adapted to take into account the history and characteristics of small firms. A big difference is the value of collateral and levels of existing debt and this is often the reason loan applications are rejected. By adapting the evaluation methods to take this into account, more firms will have access to finance.

This study had to face certain limitations, especially pertaining to the data. A problem that occurred in the empirical work with the models was the unobserved heterogeneity that was unaccounted for. There were also several important questions in the survey that were skipped by the participants, which would have provided useful insight into the problem regarding access to finance.

Although this survey made use of 937 firms, many did not state access to finance as an obstacle to firm growth. Many participants skipped the questions regarding the financial aspects of the firm.

Improvements or recommendations would be to use either a combination of surveys to get a broader cross-section of firms to answer the questions, survey more firms or use a questionnaire with more specific questions regarding firm finance. Additional

research can be done on firm finance with country-specific data, such as a case study of a specific country and over a longer period of time.

Appendix i: Descriptive Statistics

Table A1: Firm age and size frequencies

	Percent
Small (5-19 employees)	35.5
Medium (20-99 employees)	34.6
Large (100 employees and more)	18.5
Missing	11.4
Total	100.0

Table A2: Firm size and number of competitors

		Skipped	None	1	2 to 5	More than 5
Small (5-19 employees)	% within Size	1.7	6.8	6.4	26.4	58.7
Medium (20-99 employees)	% within Size	3.0	5.9	4.8	35.3	50.9
Large (100+ employees)	% within Size	10.2	7.4	8.5	35.2	38.6

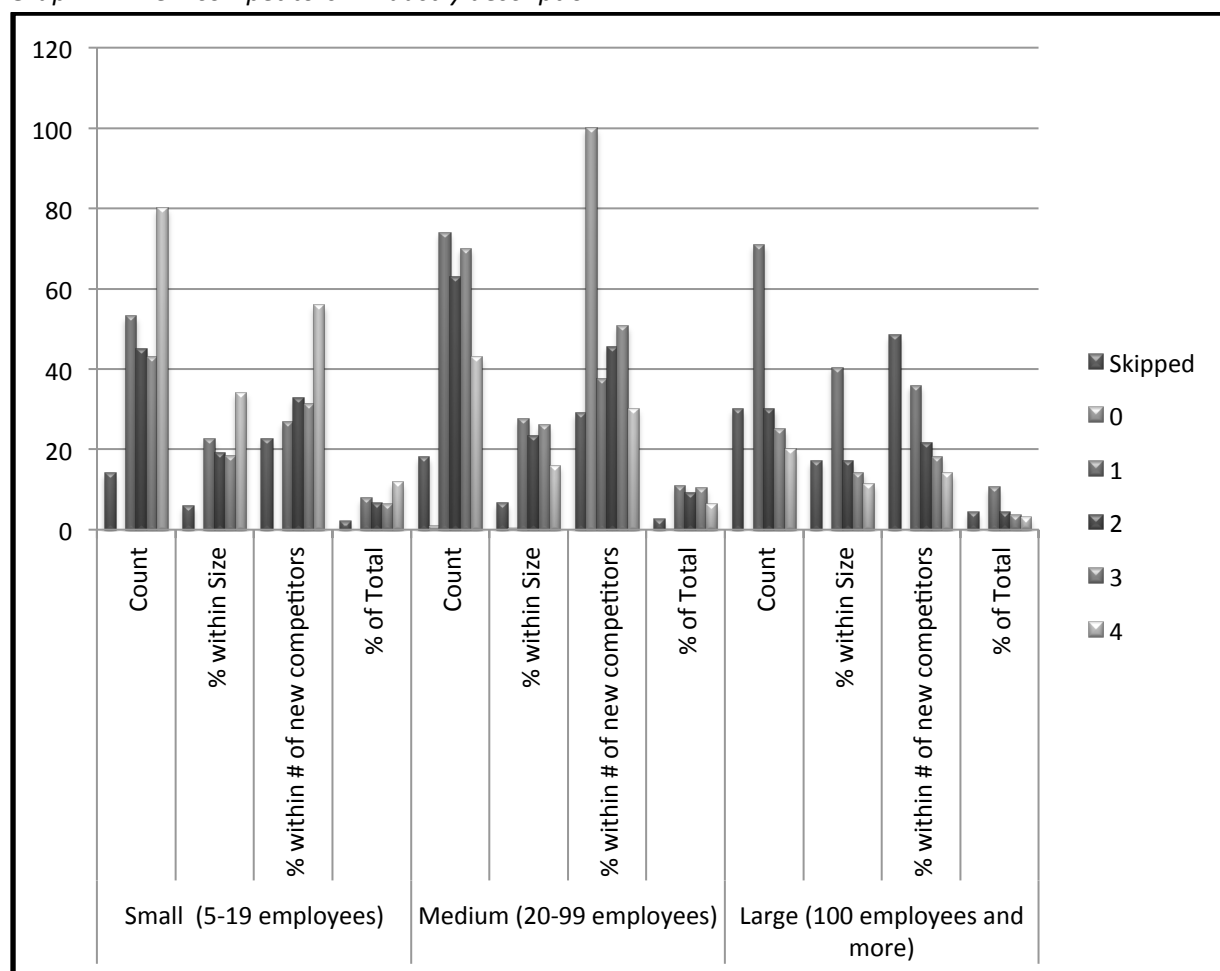
Table A3: Access to finance per industry (as a percentage within industry)

	No Obstacle	Minor Obstacle	Moderate Obstacle	Major Obstacle	Very Severe Obstacle
Other manufacturing	55.6%	12.2%	13.9%	13.3%	5.0%
Food	60.7%	18.9%	13.1%	7.4%	0.0%
Textiles	63.6%	27.3%	9.1%	0.0%	0.0%
Garments	55.6%	13.0%	8.3%	20.4%	2.8%
Chemicals	77.1%	6.0%	10.8%	4.8%	1.2%
Plastics and rubber	72.7%	0.0%	9.1%	18.2%	0.0%
Non metallic mineral products	62.5%	0.0%	12.5%	12.5%	12.5%
Basic metals	50.0%	0.0%	0.0%	50.0%	0.0%
Fabricated metal products	65.5%	16.4%	6.4%	5.5%	6.4%
Machinery and equipment	70.6%	14.7%	8.8%	2.9%	2.9%
Electronics	59.1%	27.3%	0.0%	9.1%	4.5%
Construction	56.2%	6.2%	6.2%	25.0%	6.2%
Other Services	64.0%	4.0%	8.0%	8.0%	16.0%
Wholesale	57.1%	21.4%	14.3%	7.1%	0.0%
Retail	66.8%	9.6%	7.9%	11.4%	4.4%
Hotels and restaurants	73.8%	9.2%	4.6%	7.7%	4.6%
Transport	50.0%	0.0%	50.0%	0.0%	0.0%
Information Technology	50.0%	0.0%	0.0%	50.0%	0.0%

Table A4: Region & Access to finance

		No Obstacle	Minor Obstacle	Moderate Obstacle	Major Obstacle	Very Severe Obstacle
Johannesburg	% within Region	57.7	14.5	10.4	12.7	4.7
	% of Total	39.3	9.8	7.1	8.6	3.2
Cape Town	% within Region	70.3	5.5	11.7	9.7	2.8
	% of Total	9.6	0.8	1.6	1.3	0.4
Port Elizabeth	% within Region	89.4	3.0	3.0	4.5	0.0
	% of Total	5.6	0.2	0.2	0.3	0.0
Durban	% within Region	76.4	11.8	4.7	4.7	2.4
	% of Total	9.2	1.4	0.6	0.6	0.3

Graph A1: New competitors – industry description



Graph A2: Industry & new competitors

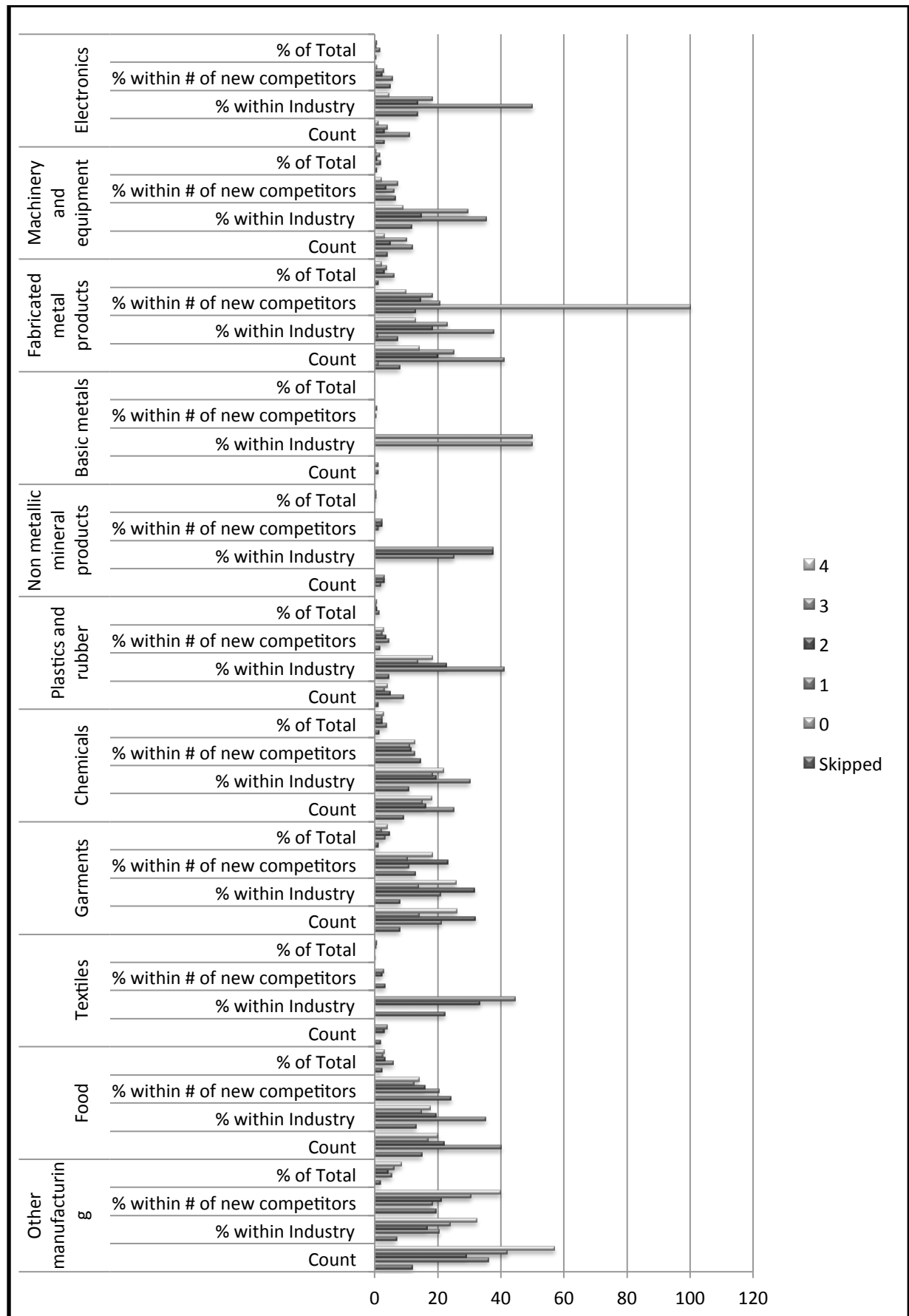


Table A5: Macroeconomic instability

		No Obstacle	Minor Obstacle	Moderate Obstacle	Major Obstacle	Very Severe Obstacle
Small (5-19 employees)	Count	282	28	34	23	8
	% within Size	75.2%	7.5%	9.1%	6.1%	2.1%
	% of Total	30.1%	3.0%	3.6%	2.5%	.9%
Medium (20-99 employees)	Count	261	36	48	14	7
	% within Size	71.3%	9.8%	13.1%	3.8%	1.9%
	% of Total	27.9%	3.8%	5.1%	1.5%	.7%
Large (100 employees and more)	Count	143	32	13	5	3
	% within Size	73.0%	16.3%	6.6%	2.6%	1.5%
	% of Total	15.3%	3.4%	1.4%	.5%	.3%

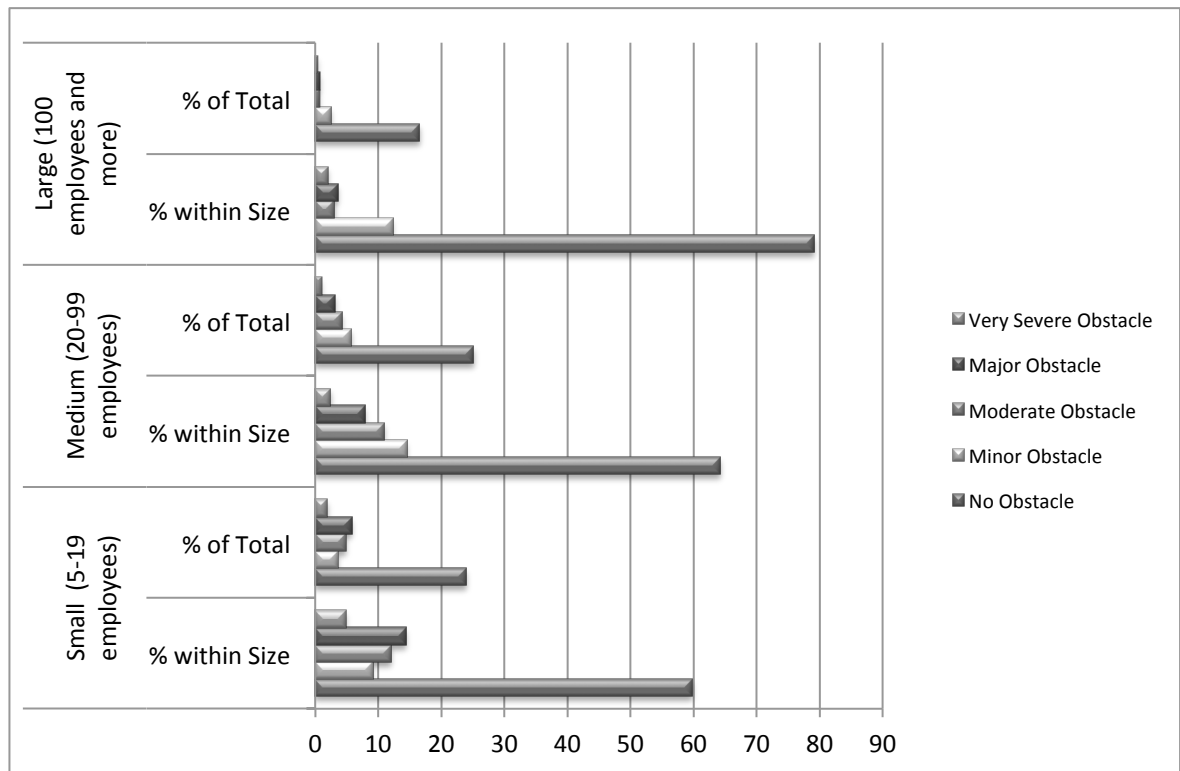
Table A6: Problematic instability obstacles

		Skipped	Exchange rate instability	Level of exchange rate	Inflation	Unstable domestic demand for this establishment's goods
Small (5-19 employees)	Count	281	13	5	27	49
	% within Size	74.9%	3.5%	1.3%	7.2%	13.1%
	% of Total	30.0%	1.4%	.5%	2.9%	5.2%
Medium (20-99 employees)	Count	263	26	13	24	39
	% within Size	71.9%	7.1%	3.6%	6.6%	10.7%
	% of Total	28.1%	2.8%	1.4%	2.6%	4.2%
Large (100 employees and more)	Count	146	16	10	14	10
	% within Size	74.5%	8.2%	5.1%	7.1%	5.1%
	% of Total	15.6%	1.7%	1.1%	1.5%	1.1%

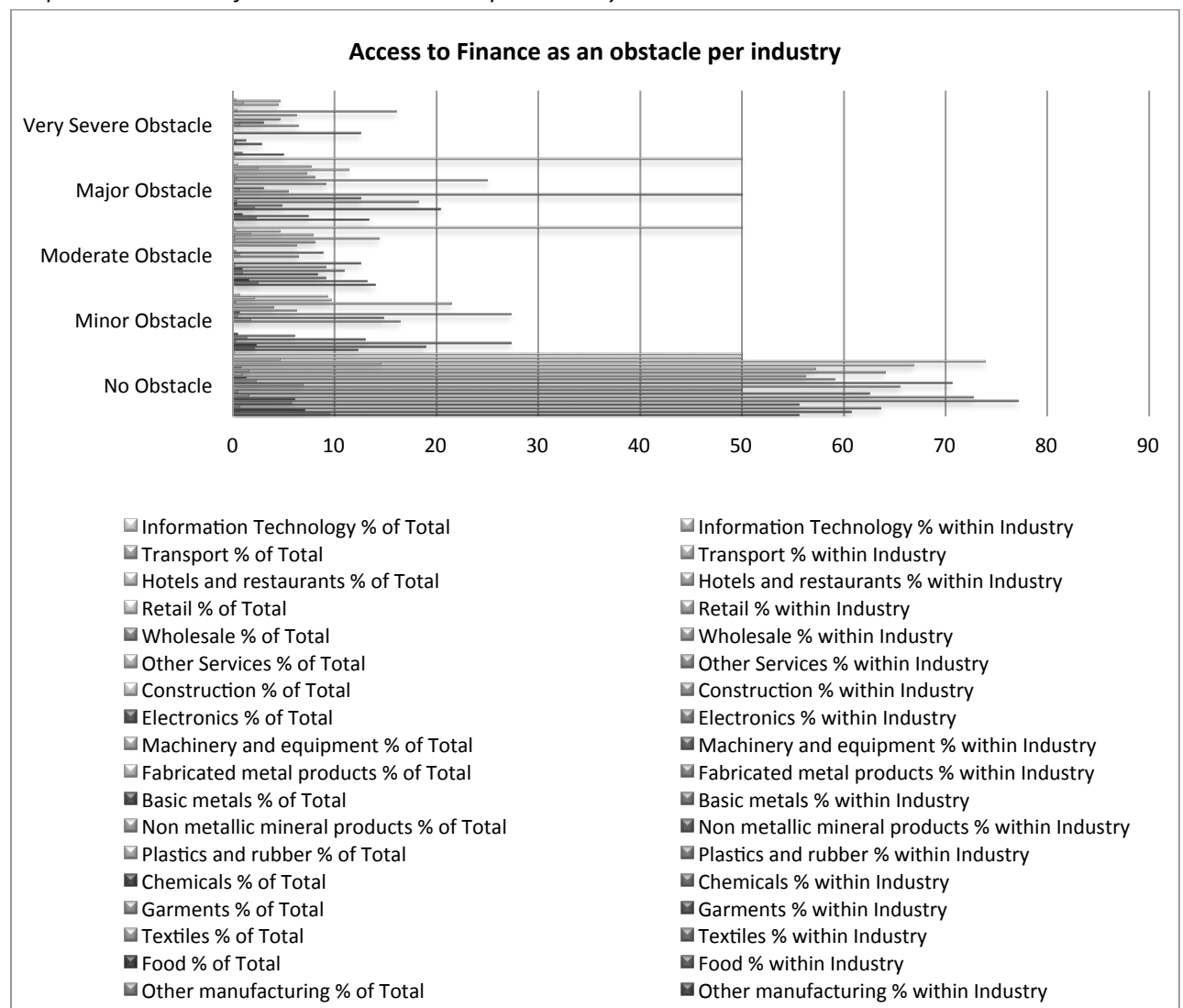
Table A7: Problematic instability: Crime, theft and instability

		crime, theft & disorder				
		No Obstacle	Minor Obstacle	Moderate Obstacle	Major Obstacle	Very Severe Obstacle
Small (5-19 employees)	Count	44	91	111	75	54
	% within Size	11.7%	24.3%	29.6%	20.0%	14.4%
	% of Total	4.7%	9.7%	11.8%	8.0%	5.8%
Medium (20-99 employees)	Count	47	89	77	95	58
	% within Size	12.8%	24.3%	21.0%	26.0%	15.8%
	% of Total	5.0%	9.5%	8.2%	10.1%	6.2%
Large (100 employees and more)	Count	46	37	50	45	18
	% within Size	23.5%	18.9%	25.5%	23.0%	9.2%
	% of Total	4.9%	3.9%	5.3%	4.8%	1.9%

Graph A3: Size & Access to finance



Graph A4: Access to finance: as an obstacle per industry



Appendix i: Descriptive Statistics

Table A1: Firm age and size frequencies

	Percent
Small (5-19 employees)	35.5
Medium (20-99 employees)	34.6
Large (100 employees and more)	18.5
Missing	11.4
Total	100.0

Table A2: Firm size and number of competitors

		Skipped	None	1	2 to 5	More than 5
Small (5-19 employees)	% within Size	1.7	6.8	6.4	26.4	58.7
Medium (20-99 employees)	% within Size	3.0	5.9	4.8	35.3	50.9
Large (100+ employees)	% within Size	10.2	7.4	8.5	35.2	38.6

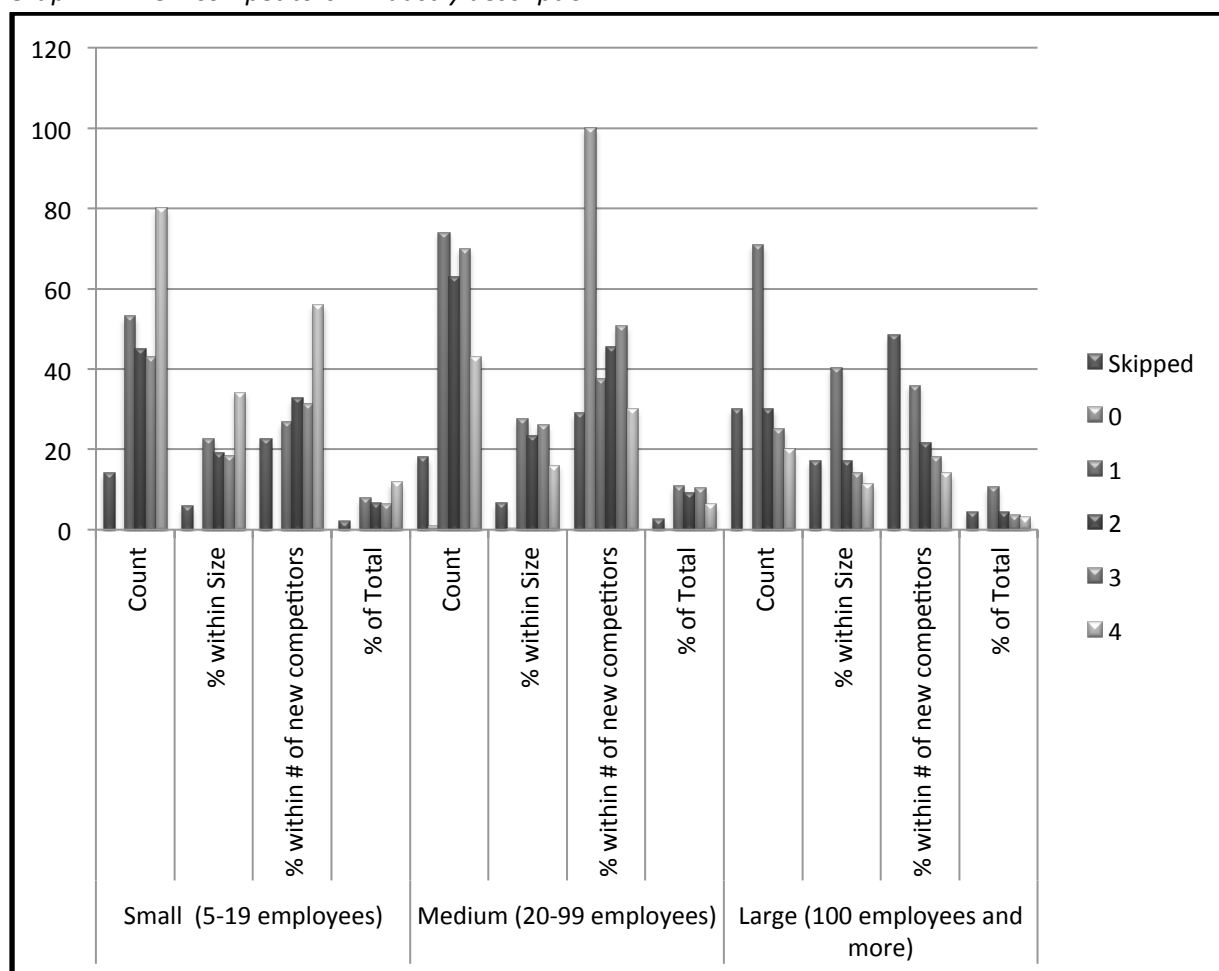
Table A3: Access to finance per industry (as a percentage within industry)

	No Obstacle	Minor Obstacle	Moderate Obstacle	Major Obstacle	Very Severe Obstacle
Other manufacturing	55.6%	12.2%	13.9%	13.3%	5.0%
Food	60.7%	18.9%	13.1%	7.4%	0.0%
Textiles	63.6%	27.3%	9.1%	0.0%	0.0%
Garments	55.6%	13.0%	8.3%	20.4%	2.8%
Chemicals	77.1%	6.0%	10.8%	4.8%	1.2%
Plastics and rubber	72.7%	0.0%	9.1%	18.2%	0.0%
Non metallic mineral products	62.5%	0.0%	12.5%	12.5%	12.5%
Basic metals	50.0%	0.0%	0.0%	50.0%	0.0%
Fabricated metal products	65.5%	16.4%	6.4%	5.5%	6.4%
Machinery and equipment	70.6%	14.7%	8.8%	2.9%	2.9%
Electronics	59.1%	27.3%	0.0%	9.1%	4.5%
Construction	56.2%	6.2%	6.2%	25.0%	6.2%
Other Services	64.0%	4.0%	8.0%	8.0%	16.0%
Wholesale	57.1%	21.4%	14.3%	7.1%	0.0%
Retail	66.8%	9.6%	7.9%	11.4%	4.4%
Hotels and restaurants	73.8%	9.2%	4.6%	7.7%	4.6%
Transport	50.0%	0.0%	50.0%	0.0%	0.0%
Information Technology	50.0%	0.0%	0.0%	50.0%	0.0%

Table A4: Region & Access to finance

		No Obstacle	Minor Obstacle	Moderate Obstacle	Major Obstacle	Very Severe Obstacle
Johannesburg	% within Region	57.7	14.5	10.4	12.7	4.7
	% of Total	39.3	9.8	7.1	8.6	3.2
Cape Town	% within Region	70.3	5.5	11.7	9.7	2.8
	% of Total	9.6	0.8	1.6	1.3	0.4
Port Elizabeth	% within Region	89.4	3.0	3.0	4.5	0.0
	% of Total	5.6	0.2	0.2	0.3	0.0
Durban	% within Region	76.4	11.8	4.7	4.7	2.4
	% of Total	9.2	1.4	0.6	0.6	0.3

Graph A1: New competitors – industry description



Graph A2: Industry & new competitors

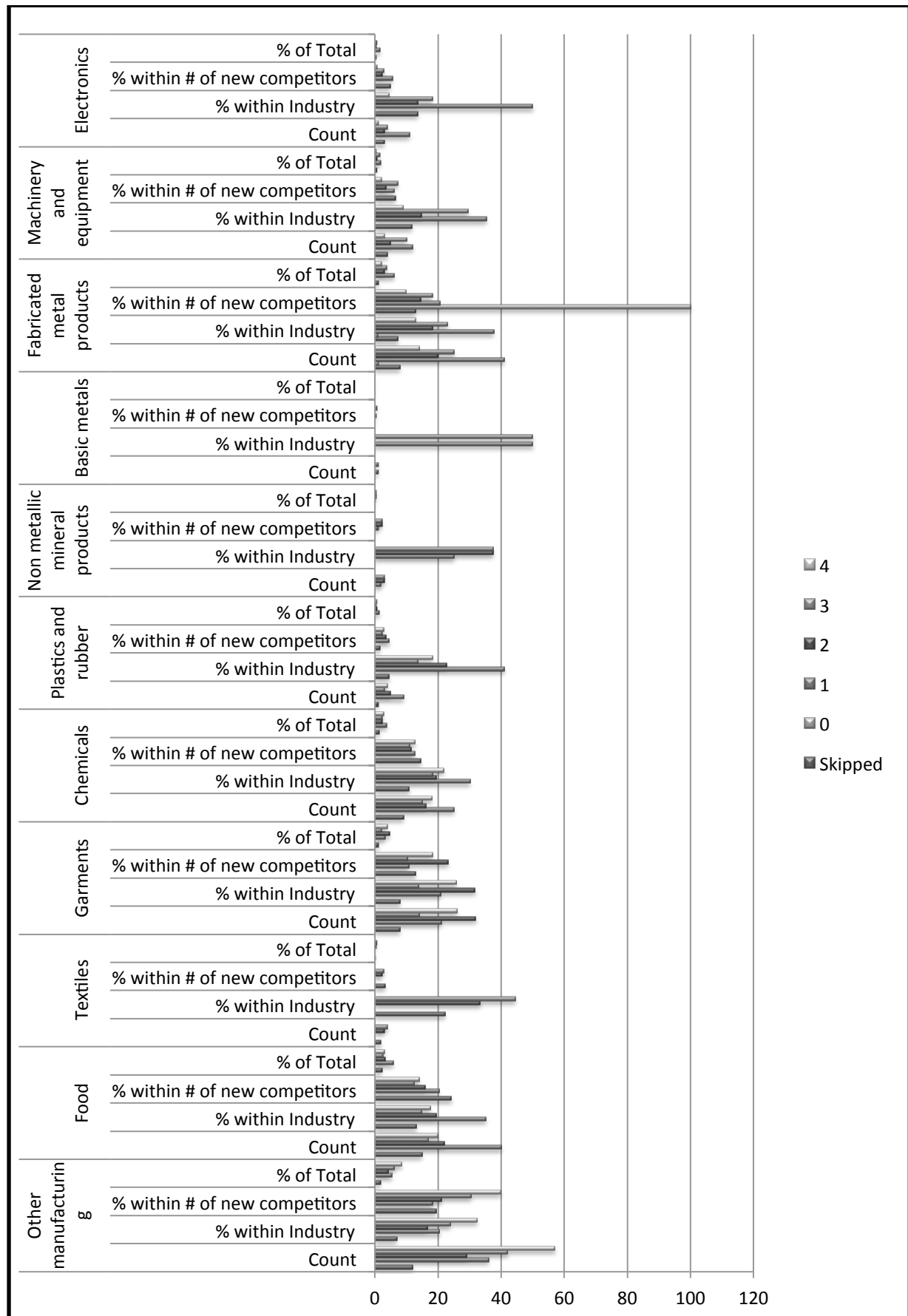


Table A5: Macroeconomic instability

		No Obstacle	Minor Obstacle	Moderate Obstacle	Major Obstacle	Very Severe Obstacle
Small (5-19 employees)	Count	282	28	34	23	8
	% within Size	75.2%	7.5%	9.1%	6.1%	2.1%
	% of Total	30.1%	3.0%	3.6%	2.5%	.9%
Medium (20-99 employees)	Count	261	36	48	14	7
	% within Size	71.3%	9.8%	13.1%	3.8%	1.9%
	% of Total	27.9%	3.8%	5.1%	1.5%	.7%
Large (100 employees and more)	Count	143	32	13	5	3
	% within Size	73.0%	16.3%	6.6%	2.6%	1.5%
	% of Total	15.3%	3.4%	1.4%	.5%	.3%

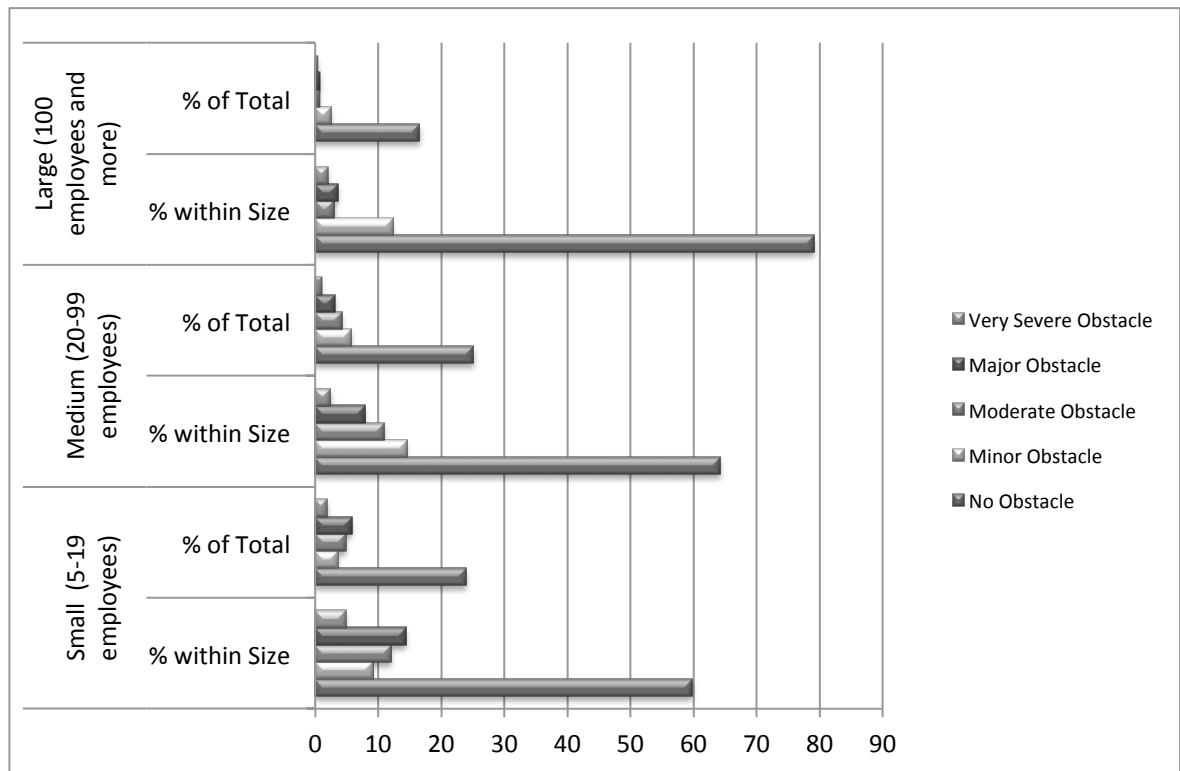
Table A6: Problematic instability obstacles

		Skipped	Exchange rate instability	Level of exchange rate	Inflation	Unstable domestic demand for this establishment's goods
Small (5-19 employees)	Count	281	13	5	27	49
	% within Size	74.9%	3.5%	1.3%	7.2%	13.1%
	% of Total	30.0%	1.4%	.5%	2.9%	5.2%
Medium (20-99 employees)	Count	263	26	13	24	39
	% within Size	71.9%	7.1%	3.6%	6.6%	10.7%
	% of Total	28.1%	2.8%	1.4%	2.6%	4.2%
Large (100 employees and more)	Count	146	16	10	14	10
	% within Size	74.5%	8.2%	5.1%	7.1%	5.1%
	% of Total	15.6%	1.7%	1.1%	1.5%	1.1%

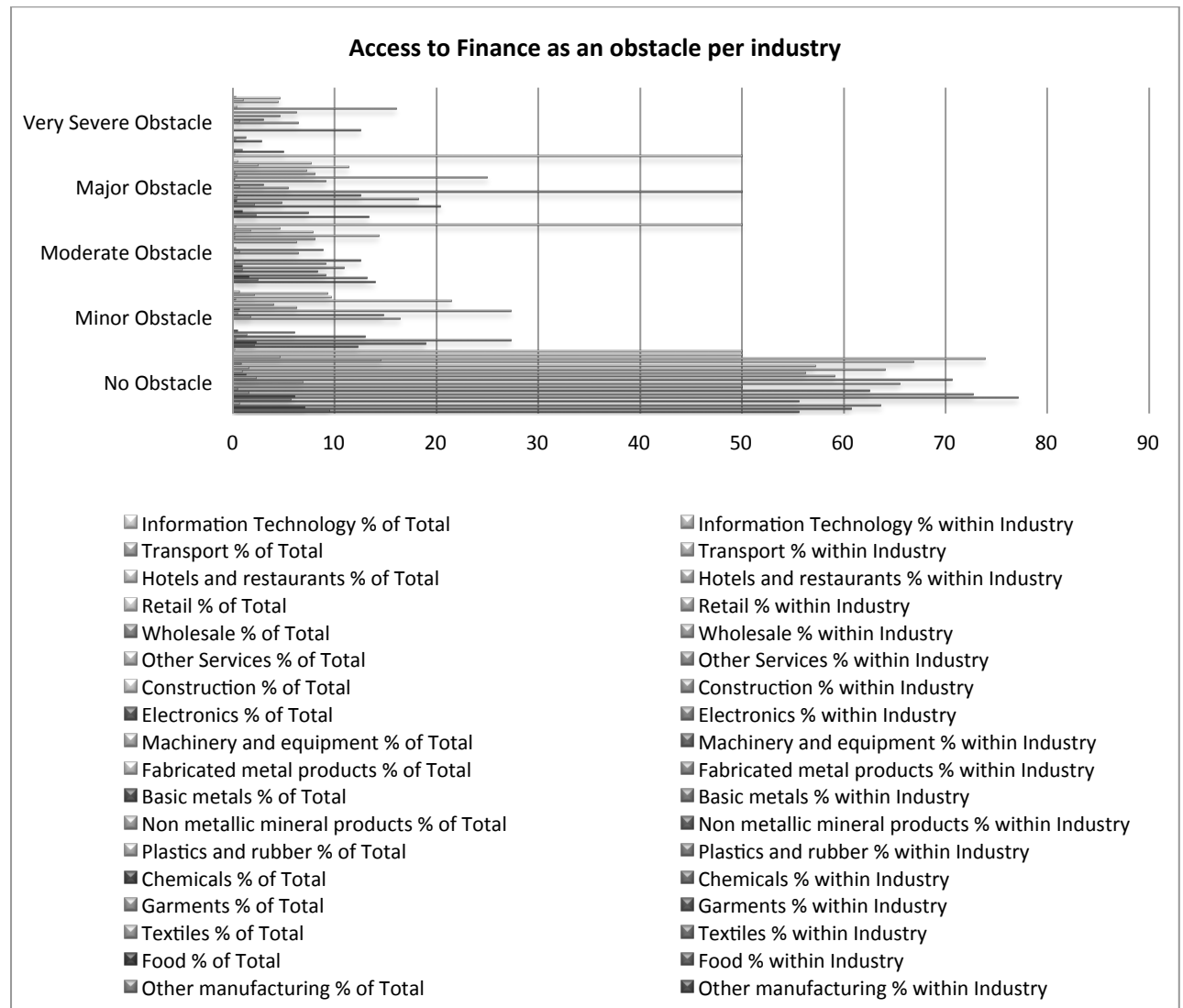
Table A7: Problematic instability: Crime, theft and instability

		crime, theft & disorder				
		No Obstacle	Minor Obstacle	Moderate Obstacle	Major Obstacle	Very Severe Obstacle
Small (5-19 employees)	Count	44	91	111	75	54
	% within Size	11.7%	24.3%	29.6%	20.0%	14.4%
	% of Total	4.7%	9.7%	11.8%	8.0%	5.8%
Medium (20-99 employees)	Count	47	89	77	95	58
	% within Size	12.8%	24.3%	21.0%	26.0%	15.8%
	% of Total	5.0%	9.5%	8.2%	10.1%	6.2%
Large (100 employees and more)	Count	46	37	50	45	18
	% within Size	23.5%	18.9%	25.5%	23.0%	9.2%
	% of Total	4.9%	3.9%	5.3%	4.8%	1.9%

Graph A3: Size & Access to finance



Graph A4: Access to finance: as an obstacle per industry



Appendix iii: logistic regression output (Block 1: Method = ENTER)

Model 1 Output

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	664.683 ^a	.058	.108

a. Estimation terminated at iteration number 6 because parameter estimates changed by less than .001.

Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	12.285	8	.139

Classification Table^a

Observed			Predicted		
			Access to finance dummy		Percentage Correct
			No, minor and moderate obstacle	Major and very severe obstacle	
Step 1	Access to finance dummy	No, minor and moderate obstacle	815	0	100.0
		Major and very severe obstacle	121	0	.0
	Overall Percentage				87.1

a. The cut value is .500

Variables in the Equation

	B	S.E.	Wald	df	Sig.	Exp(B)	95.0% C.I. for EXP(B)	
							Lower	Upper
Step 1 ^a	Output	-.405	.100	16.287	1	.000	.667	.548 .812
	Firm Age	-.030	.011	7.068	1	.008	.971	.949 .992
	Firm Size	-.327	.167	3.814	1	.051	.721	.520 1.001
	Manager's Experience	.000	.011	.000	1	1.000	1.000	.978 1.023
	Constant	3.975	1.183	11.282	1	.001	53.251	

a. Variable(s) entered on step 1: output, firm_age, a6b, b7.

Model 2 Output

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	607.351 ^a	.114	.212

a. Estimation terminated at iteration number 6 because parameter estimates changed by less than .001.

Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	8.932	8	.348

Classification Table^a

Observed			Predicted		
			Access to finance dummy		Percentage Correct
			No, minor and moderate obstacle	Major and very severe obstacle	
Step 1	Access to finance dummy	No, minor and moderate obstacle	803	12	98.5
		Major and very severe obstacle	99	22	18.2
Overall Percentage					88.1

a. The cut value is .500

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)	95.0% C.I. for EXP(B)	
								Lower	Upper
Step 1 ^a	Output	-.255	.104	5.951	1	.015	.775	.632	.951
	Firm Age	-.028	.011	6.259	1	.012	.973	.952	.994
	Firm Size	-.333	.180	3.440	1	.064	.716	.504	1.019
	Manager's Experience	.001	.012	.012	1	.912	1.001	.978	1.025
	Access To Land	.640	.083	58.913	1	.000	1.896	1.610	2.232
	Constant	1.613	1.252	1.661	1	.197	5.019		

a. Variable(s) entered on step 1: output, firm_age, a6b, b7, g30a.

Model 3 Output

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	601.449 ^a	.120	.223

a. Estimation terminated at iteration number 6 because parameter estimates changed by less than .001.

Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	3.900	8	.866

Classification Table^a

Observed			Predicted		
			Access to finance dummy		Percentage Correct
			No, minor and moderate obstacle	Major and very severe obstacle	
Step 1	Access to finance dummy	No, minor and moderate obstacle	803	12	98.5
		Major and very severe obstacle	97	24	19.8
Overall Percentage					88.4

a. The cut value is .500

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)	95.0% C.I. for EXP(B)	
								Lower	Upper
Step 1 ^a	Output	-.247	.105	5.570	1	.018	.781	.636	.959
	Firm Age	-.026	.011	5.599	1	.018	.975	.954	.996
	Firm Size	-.271	.183	2.197	1	.138	.763	.533	1.091
	Manager's Experience	.004	.012	.123	1	.725	1.004	.981	1.028
	Access To Land	.657	.085	60.273	1	.000	1.929	1.634	2.277
	Overdraft	.536	.222	5.829	1	.016	1.710	1.106	2.643
	Constant	.535	1.335	.161	1	.688	1.708		

a. Variable(s) entered on step 1: output, firm_age, a6b, b7, g30a, k7.

Model 4 Output

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	585.748 ^a	.134	.250

a. Estimation terminated at iteration number 6 because parameter estimates changed by less than .001.

Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	3.237	8	.919

Classification Table^{a,b}

			Predicted		
			Access to finance dummy		Percentage Correct
			No, minor and moderate obstacle	Major and very severe obstacle	
Observed					
Step 1	Access to finance dummy	No, minor and moderate obstacle	814	0	100.0
		Major and very severe obstacle	121	0	.0
Overall Percentage					88.7

a. Constant is included in the model.

b. The cut value is .500

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)	95.0% C.I. for EXP(B)	
								Lower	Upper
Step 1 ^a	Output	-.274	.106	6.703	1	.010	.760	.617	.936
	Firm Age	-.028	.011	5.867	1	.015	.973	.951	.995
	Firm Size	-.219	.189	1.348	1	.246	.803	.555	1.163
	Manager's Experience	.001	.013	.003	1	.958	1.001	.976	1.026
	Access To Land	.644	.087	54.234	1	.000	1.904	1.604	2.260
	Overdraft	.081	.799	.010	1	.919	1.084	.226	5.191
	Overdraft Interest Rate	-.033	.048	.480	1	.489	.968	.882	1.062
	Collateral	-.101	.092	1.201	1	.273	.904	.755	1.083
	Land & Building	.353	.495	.508	1	.476	1.423	.539	3.756
	Machinery & Equipment	-.562	.502	1.254	1	.263	.570	.213	1.525
	Accounts Receivable	-.221	.505	.191	1	.662	.802	.298	2.158
	Owner's Personal Assets	-.731	.524	1.948	1	.163	.482	.173	1.344
	Other Collateral	.965	.715	1.819	1	.177	2.625	.646	10.669
	Value Of Collateral	.011	.004	7.655	1	.006	1.011	1.003	1.019
	Constant	.517	1.991	.067	1	.795	1.676		

a. Variable(s) entered on step 1: output, firm_age, a6b, b7, g30a, k7, AFk7a, k13, k14a, k14b, k14c, k14d, k14e, k15.

Model 5 Output

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	576.444 ^a	.142	.265

a. Estimation terminated at iteration number 10 because parameter estimates changed by less than .001.

Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	4.122	8	.846

Classification Table^a

Observed			Predicted		
			Access to finance dummy		Percentage Correct
			No, minor and moderate obstacle	Major and very severe obstacle	
Step 1	Access to finance dummy	No, minor and moderate obstacle	797	14	98.3
		Major and very severe obstacle	96	25	20.7
Overall Percentage					88.2

a. The cut value is .500

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)	95.0% C.I. for EXP(B)	
								Lower	Upper
Step 1 ^a	Output	-.236	.108	4.734	1	.030	.790	.639	.977
	Firm Age	-.024	.011	4.604	1	.032	.976	.955	.998
	Firm Size	-.194	.191	1.032	1	.310	.824	.567	1.197
	Manager's Experience	.000	.013	.000	1	.985	1.000	.976	1.025
	Access To Land	.659	.091	52.897	1	.000	1.934	1.619	2.310
	Overdraft	-.302	.806	.141	1	.708	.739	.152	3.589
	Overdraft Interest Rate	-.056	.048	1.358	1	.244	.946	.861	1.039
	Collateral	-12.066	10.259	1.383	1	.240	.000	.000	3.105E3
	Land & Building	.217	.546	.158	1	.691	1.242	.426	3.624
	Machinery & Equipment	-.774	.528	2.151	1	.142	.461	.164	1.297
	Accounts Receivable	-.751	.587	1.636	1	.201	.472	.149	1.491

Owner's Personal Assets	-.612	.559	1.200	1	.273	.542	.181	1.621
Other Collateral	-.319	1.470	.047	1	.828	.727	.041	12.965
Value Of Collateral	.012	.005	7.056	1	.008	1.012	1.003	1.021
Loan / Line Of Credit	-.077	.547	.020	1	.888	.926	.317	2.707
Year Approved	.035	.031	1.314	1	.252	1.036	.975	1.100
Amount Approved	.000	.000	2.035	1	.154	1.000	1.000	1.000
Annual Interest Rate	.068	.051	1.819	1	.177	1.071	.970	1.182
Duration	.005	.007	.502	1	.479	1.005	.991	1.019
Constant	-55.265	48.142	1.318	1	.251	.000		

a. Variable(s) entered on step 1: output, firm_age, a6b, b7, g30a, k7, AFk7a, k13, k14a, k14b, k14c, k14d, k14e, k15, AFk8a, k10, k11, AFk10a, k12.

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