Occasional Research Paper

Financial Access and SME Size in South Africa

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Executive Summary

This occasional research paper utilized data from the FinScope Small Business Survey South Africa 2010 covering 5,667 small businesses. An econometric model was developed to estimate the effect of access to credit on firm size. A model for sole proprietorships including licensed businesses was separately estimated from the one for close corporations due to the latter being a hybrid form of an incorporated sole proprietorship in the sense that besides having several owners it can be sole owned. Other forms of businesses such as partnerships and private limited companies were excluded because they constituted a negligible proportion of SMEs captured in the survey.

The main conclusion of the paper is that access to formal credit by SMEs constituted as sole proprietorships has a positive relationship with firm size as measured by the number of employees. The other factors that have a positive relationship to SME size are turnover and business sophistication. Informal credit is observed not to have any significant effect on SME size, a result that is consistent with prior empirical studies. Generally, access to credit (both formal and informal) has a locational dimension. Provinces with higher GDP such as Gauteng, KZN and the Western Cape have a large proportion of SMEs with access to formal credit. On the other hand, SMEs in poorer provinces such as Limpopo, Eastern Cape and North-West largely rely on informal credit.

The policy implications of the paper are instructive. Government efforts to promote access to formal credit of SMEs are synonymous with encouraging growth of these enterprises. Interventions can be pursued on the basis of evidence-based knowledge that formal finance fosters the growth of SMEs and thus enabling them to graduate into large firms. Such interventions can be ideally targeted to the poorer provinces where SMEs are observed to rely more on informal finance than on formal finance.

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1. Introduction

Small and Medium Enterprises (SMEs) contribute to economic growth through various mechanisms. Primarily, they create jobs to the semi-skilled and unskilled labour force that would otherwise remain jobless. Their importance is recognized in many countries across the globe. The (OECD, 2009) reports that SMEs are key generators of employment and income, and drivers of innovation and growth. This is evidenced by the fact that they employ more than half the labour force in the private sector in OECD countries and account for 99% of private enterprises in the European Union. SMEs have also notable contribution to Sub Saharan African economies. For instance, as reported by Sleuwaegen and Goedhuys (2002), SMEs employ 78% of the manufacturing sector employees in Co'te d'Ivoire. In South Africa, micro and small businesses contributed to 27% of GDP in 2006 (DTI, 2008). According to FinScope studies, micro and small businesses are key players in the economies of Southern African countries.

However, SMEs exhibit a slower growth than their larger counterparts. It has been observed that in South Africa, small firms' contribution to employment creation is weak because most of them do not grow (Rogerson, 2004). According to the DTI (2008), most of the small firms go out of business within a short period of time. For instance, it was observed that those registered between April 1, 2005 and March 31, 2006, only 1% survived for 1.5 to 2.5 years. In another a study by Fatoki and Odeyemi (2010) it was reported that 75% of South African small firms fail. Although many factors that hinder their growth are cited in the literature , lack of access to external finance is viewed a serious constraint (OECD, 2009). This holds true for many economies in Sub-Saharan Africa for which the AfDB researchers Dauda and Nyarko (2014) have reported that small firms are constrained by lack of access to finance. In South Africa, financial constraints is one of the most daunting challenge for small firms; Fatoki and Odeyemi (2010) have reported that 75% of small firm loan applications are rejected . As a result of lack of access to external finance, SMEs heavily rely on internally generated funds that would not be sufficient to finance expansion and growth (Chittenden, Hall and Hutchinson, 1996). They experience either slow or stagnant growth. Carpenter and Petersen (2002) observed, for instance, that firms that heavily depend on new share issues exhibit growth rates far above what can be supported by internal finance, thus further suggesting that small firms that are constrained by external finance are likely to exhibit slower growth.

Both macro level and micro level factors are believed to determine SME access to finance. At a macro level, financial sector development coupled with a well-developed legal and institutional framework is critical in expanding access to small firms (Beck et al., 2011). Rajan and Zingales (1998) observed that firms that rely on external finance exhibit rapid growth in countries with more developed financial markets and institutions. A country study by Donati et al. (2012) reported that small firms in backward regions in Italy are more constrained by lack of external finance than those in developed regions. No less important are the micro-level factors that include firm specific and owner specific attributes (Pissarides et al., 2003; Nichter and Goldmark, 2009). Firm specific attributes such as age and size are found to have a role in SME access to finance. Similarly, owner related attributes such as age, gender and education are found to be important in determining access and hence growth.

Most studies on SME access to finance focus on macro level determinants, failing to account for important firm-level factors. While examining macro-level determinants of SME access to finance is important in identifying legal and institutional frameworks necessary to allow SMEs unfettered access to credit, understanding firm-level determinants to finance is important in understanding characteristics of SMEs that best suit the requirements of the formal credit market. This is critical

because a workable SME support policy cannot be designed disregarding some important firm-level attributes. It is against this background that this study aims at examining the link between financial access and SME size in South Africa using firm-level data from the FinScope South Africa Small Business Survey conducted by FinMark Trust in 2010.

The rest of the paper is structured as follows. The second section presents review of empirical evidence on financial access and firm size. Section three discusses owner specific and firm specific determinants of firm size. Section four presents an overview of access to finance by South African SMEs. Section five describes the data and the methodology employed for investigation. Section six discusses the empirical findings, and the last section presents conclusions and policy implications.

2. Determinants of Firm Size: Empirical Evidence

2.1 Financial access and firm size

The importance of financial access on firm size may be explained from the Modigliani and Miller (1958) theory of capital structure wherein they proved, albeit under restrictive assumptions, that firm value remains unchanged irrespective of the amount of leverage used. Their finding implied that access to credit does not have a role in increasing firm size. However, they showed in their revised paper that firm value increases with increase in leverage due to interest tax shield, which suggested importance of debt to firm size (Modigliani and Miller, 1963). Thus, following the Modigliani and Miller (1963) theorem, we postulate that while SMEs with access to credit can grow faster and hence achieve optimal size sooner, those with limited access to finance remain stagnant and hence remain smaller in size. Our hypothesis is strongly supported by empirical evidence (see Beck et al., 2005; Beck and Demirguc-Kunt, 2006; Watson, 2006; Wagenvoort, 2003, De Maeseneire and Claeys, 2012).

Inability of SMEs to access finance from a formal credit market forces them to resort to informal finance. It is therefore interesting to understand whether there is any perceptible differences on the impact of formal versus informal finance on firm size. Earlier studies by Steel et al. (1997) reported the vitality of informal finance as an alternative route to SME access to credit. Recent studies also show that informal finance can be used as a remedy to the information asymmetry problem faced by SMEs, and that it can also enhance efficiency of the credit market (Lin and Sun, 2006). However, despite its wider use among SMEs, it has been reported to have no robust impact on firm growth as much as formal finance. This is according to the findings of World Bank researchers Ayyagari et al. (2010) who reported that despite extensive use of informal finance by SMEs in China, those that use formal finance rather than informal finance exhibited faster growth. This could be explained by two reasons. Firstly, informal loans are small and hence they are mostly used for financing operations (working capital) rather than growth (expansion) (Fanta, 2012). Secondly, as reported by Bolnick (1992) and many others, informal lenders charge unreasonably high interest rate that erodes profit of small firms.

2.2 Owner specific determinants of firm size

Studies report that age, gender, education and ethnicity affect firm growth and performance (Jovanovic, 1982; Bates, 1990; McPherson, 1996; Mead, 1994). The effect of age on growth is based on an argument that entrepreneurs learn about their abilities over time (see Jovanovic, 1982, for instance). In contrast, some studies report that small firms owned by younger entrepreneurs exhibit a higher growth rate than those owned by older entrepreneurs (Kangasharju, 2000). Explaining the phenomena, Kangasharju (2000) postulates that younger SME owners are often more motivated than older ones because they want to test their abilities.

Gender is also considered to have an effect on firm performance (Robb and, Watson, 2012). Early studies report that female-operated small firms exhibit slower growth and have inferior performance than male owned firms (McPherson, 1996). This has also been confirmed by Mead and Liedholm (1998) who found that women owned firms are concentrated in low-return activities with low growth prospects. Furthermore, Sabarwal and Terrell (2008) reported that female operated firms are smaller in size and less efficient. They attribute the small size of female operated firms to more serious financial constraints than those faced by by their male counterparts.

On the contrary, Robb and Watson (2012) argue that studies that report inferior performance of female owned firms fail to control for some important factors such as risk. In their study they found no gender based differences in firm performance after controlling for risk. This is also confirmed by Chirwa (2008) who found no evidence of differences in the performance of female-owned and male-owned small firms. In fact, Chirwa (2008) reported that female-owned enterprises grow at a faster rate than male-owned enterprises partly due to the relative access to credit facilities from microfinance institutions. He also found that access to credit is more productive in female-owned enterprises.

The effect of education on entrepreneurship has been an issue of inquiry for quite some time. Early studies on education and firm longevity such as those by Bates (1990) reported that highly educated entrepreneurs are most likely to create firms that remained in operation for a long period. Similarly, McPherson (1996) reported that the educational level of a business owner is among the important determinants of firm growth. McPherson (1996) found that firms owned by trained entrepreneurs grow relatively faster. This is also confirmed by Kangasharju (2000) who reported that the likelihood of growth increases with the increase in educational background. Later studies by Bates (2005) and Kim et al. (2006) also confirm the importance of education in explaining firm growth. Furthermore, Solomon et al. (2008) reported that there is a general consensus which indicates a significant and positive relationship between education and entrepreneurial performance. More recently, Soriano and Castrogiovanni (2012) found that industry specific knowledge acquired before gaining ownership of SME and general business knowledge acquired after gaining ownership were positively related to both SME profitability and productivity. That educational background affects entrepreneurial decision was also reported by Lofstrom et al. (2014) who found that education enables entrepreneurs to make conscious industry choices based on rewards available to them.

Ethnicity is also considered to have effect on firm performance. The role race plays on wealth accumulation in USA was reported in a recent study by Boshara et al. (2015). In the SME context, as reported by Biggs and Shah (2006), SMEs establish ethnically based networks to circumvent the effect of financial constraints and those that belonged to such networks performed better. Based on the foregoing studies and by taking into account the fact that South Africa has a history of racial segregation, we expect race to play a role on the size of SMEs in the country.

2.3 Firm specific factors

Studies also report that some firm specific characteristics affect firm growth with firm age playing an important role (Evans, 1987; Variyam and Kraybill, 1992; Majumdar, 1997; Stinchcombe and March, 1965). Early studies (e.g. Stinchcombe and March, 1965) reported that firms become more experienced as they get older and take advantage of their experience to generate a better return. However, this has been challenged by later studies (e.g. Marshall, 2004) that reported that older firms are unlikely to react to changes in their operating environment due to their higher exposure to inertia caused by culture of bureaucracy developed over years which impedes performance. In a more recent study, Huynh and Petrunia (2010) observed that young firms grow faster than older ones. One explanation for such a phenomenon is provided by Evans (1987) who postulates that the need for further expansion diminishes with age because the larger is a firm the less likely the owners aspire for its growth. Besides, as reported by Krasniqi (2007) new firms grow faster than older firms because firms start up with smaller size and grow as entrepreneurs gain more experience, and attain optimum size at a later stage.

3. Access to Financial Services by South African SMEs: An Overview

South Africa is a more industrialized economy than most of its African peers, while at the same time the country is among those with the highest inequality in the world. With a gini coefficient of 0.65 in 2011, it is the second most unequal country after Lesotho in the world (World Bank, 2013). Unemployment is widespread in South Africa, and as reported by Banerjee et al. (2008) it has been increasing during the post-apartheid period. To address the problem of unemployment and poverty, the South African government has been promoting the development of small and medium enterprises. This is evident from the national development plan that envisages to generate 90 per cent of jobs through small and expanding firms (NPC, n.d).

In South Africa, SMEs account for about 91% of the formal business entities, contribute to about 57% of GDP, and provide almost 60% of employment (Kongolo 2010). The country has introduced a number of SME support frameworks that include both financial and non-financial assistance. For instance, the Small Enterprise Development Agency (SEDA) was set up to oversee the development of small businesses in the country. In addition, Khula Enterprise Finance and the Apex Fund were set up with the primary objective of extending micro-credit to startups. According to SBP (2015), R508 million were allocated to Small Enterprise

Development Agency (SEDA), Khula Enterprise Finance, and Apex Fund. To underscore the importance of SMEs, the government established a Ministry of Small Business Development in 2014. Evidently, this has in fact helped proliferation of SME in various parts of the country. For instance, of the 5676 SMEs included in FinMark Trust survey, 91% were established in the post-apartheid South Africa while only 8.7% trace their origin to the apartheid period.

Nevertheless, the country lags behind other developing economies in terms of promoting the growth and sustainability of small businesses, and it is among those with the highest failure rate of startups (SBP,2015). A recent survey by SBP of 500 SME owners showed that 35% reported to have their survival threatened and 49% have exhibited either a stagnant or shrinking turnover (SBP, 2013). Lack of finance is among the most serious challenges to SME survival and growth in South Africa (Kongolo, 2010). This is also acknowledged by SEDA in its 2012 report where lack of access to finance is identified among the top three barriers to SME growth in the country (SEDA, 2012).

A 2010 FinScope Survey of Small Business in South Africa reported the same reality. As shown in Figure 1, 93% of firms in the survey (both formal and informal) never had access to either formal or informal credit. The trend is almost the same even among registered enterprises. As depicted in Figure 2, while the proportion of those that accessed formal credit is a bit higher (increases from 3% to 9%) the overall picture remains almost the same. Still, a large majority of the registered firms do not have access to credit, formal or otherwise.

Figure 1: Access to credit by all SMEs

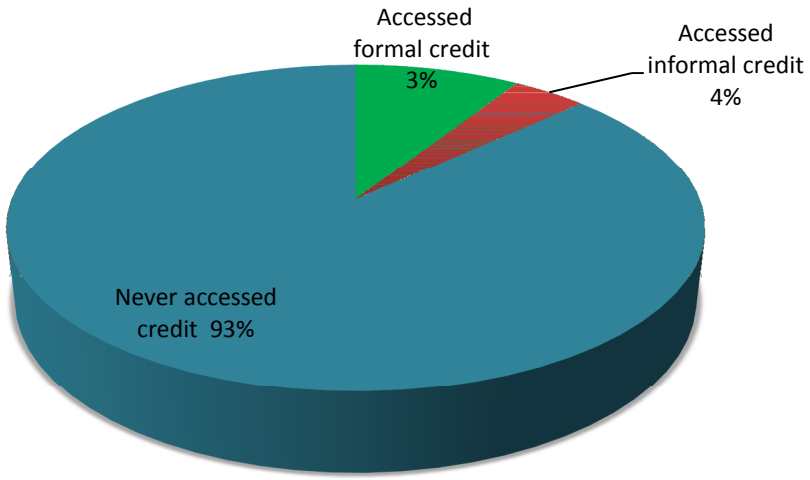
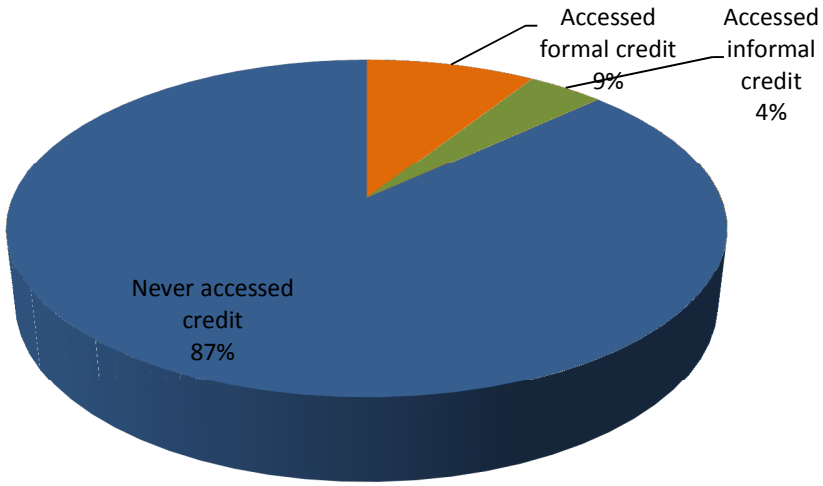
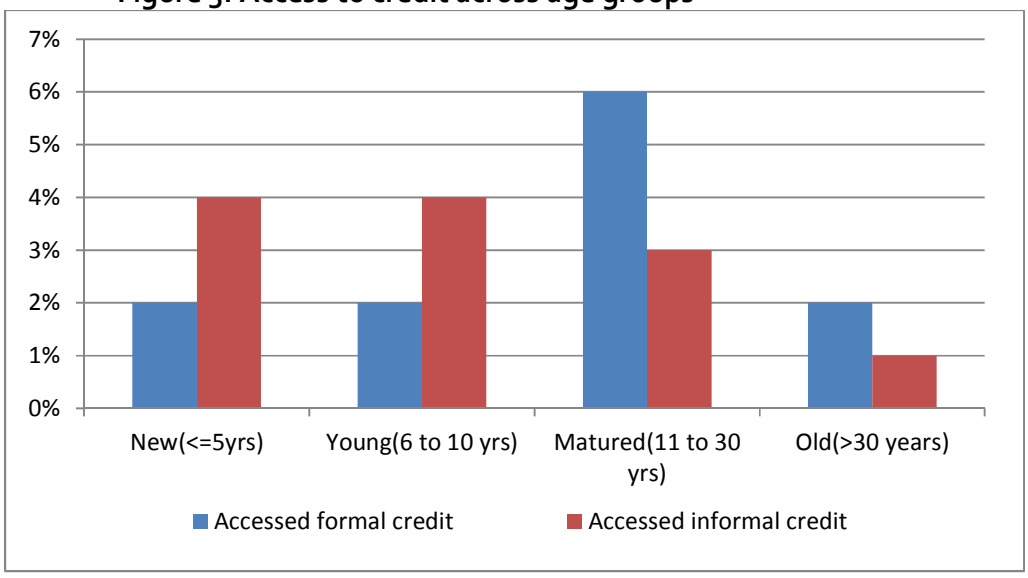


Figure 2: Access to credit by registered SMEs



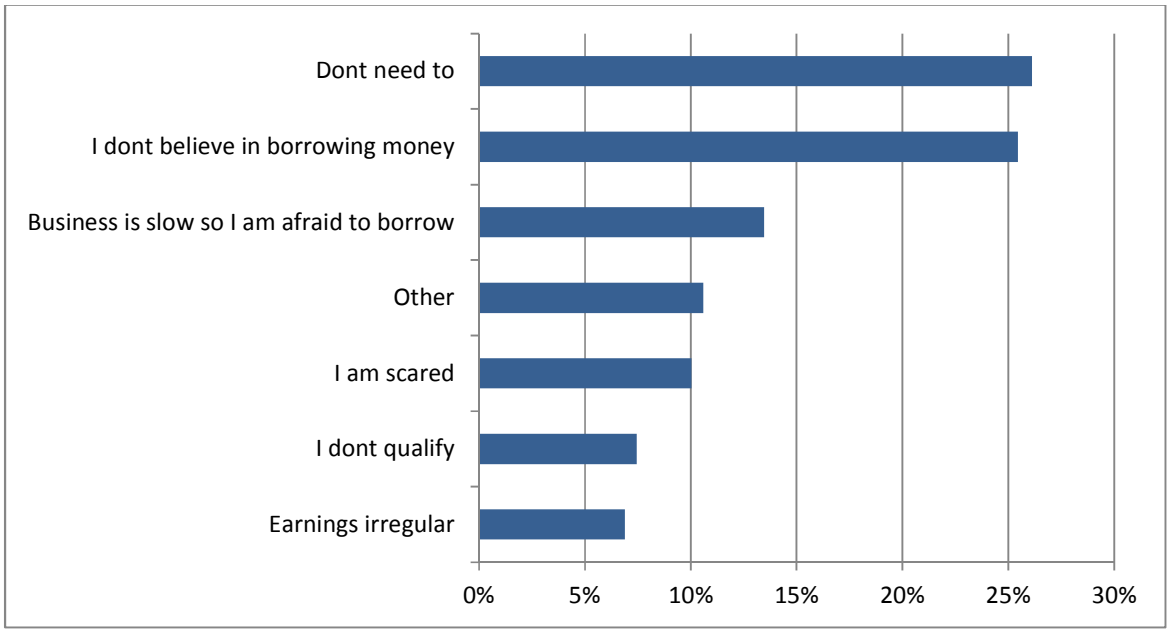
Examination of extent of access by age groups shows that new and young SMEs(those aged up to 10 years) have relatively lower access to formal credit compared to matured and older SMEs. As reported in Figure 3, SMEs aged 10 years and less that accessed a formal credit constitute only 4% of firms in that category while a comparable figure for matured and old firms is 8%. This implies that a formal credit is hard to come by for new and young SME and it becomes relatively easier to access as they grow older. In other words, new and young SME may not rely on a formal credit as a source of financing operation and growth. They instead resort to informal finance and this is evident from Figure 3 that shows a relatively higher usage of informal finance among this group of SMEs. In contrast, only 3% of matured SMEs and 1% of old SMEs use informal finance. Overall, new and young firms rely more on informal finance and mature and old ones rely on formal finance.

Figure 3: Access to credit across age groups



A deeper probe into the survey yields some interesting insights. As shown in Figure 4, an analysis of responses to the survey question 'reasons for not borrowing' shows that 51.5% of firms do not borrow either because they do not need it or they do not believe in borrowing money. Only 30.9% do not borrow because either they are scared, or feel they do not qualify. This shows that majority of small business owners lack adequate understanding about the benefits of credit as a financing tool. Absence of adequate knowledge about the usefulness of credit leads many SME to death or stagnation. In fact, almost a third of SME owners covered in the survey had interest in accessing a bank loan but they are discouraged perhaps by their past experience or by the experience of their peers whose loan application has been rejected.

Figure 4: Major reasons for not borrowing



In general, it is evident that South African SMEs are financially constrained and that some of them use informal finance to circumvent the harmful effect of lack of access to formal credit on their operation and growth. The usage of informal finance is higher among new and young SMEs while mature and old ones rely on formal finance. In fact, mature and old firms tendency to seek credit (both formal and informal) is significantly lower than that of new and young firms. This may be due to ability of mature and old firms to generate adequate internal capital to finance operation and growth. It has also been realized that some SME owners do not seek credit because they do not believe in borrowing due to cultural reasons or lack of knowledge about the benefits of credit.

4. Study Methodology

4.1 Source of data

Data were obtained from FinScope South Africa Small Business Survey conducted by FinMark Trust in 2010 covering 5,667 small businesses. FinMark Trust is an independent trust established in South Africa in 2002, with core funding from the UK's Department for International Development (DFID). FinMark Trust's purpose is to make financial markets work for the poor by promoting financial inclusion and regional financial integration. FinMark Trust uses evidence-based information in its engagement with the public and private sectors across Africa and more recently in Asia, to bring about systemic change in making markets work for unserved and underserved consumers. To date, the FinScope small business surveys have been implemented in 6 countries including South Africa.

In the FinScope Small Business Survey, the universe was defined as business owners in South Africa aged 16 years or older, with less than 200 employees. A total of 5,676 face-to-face interviews were conducted. The sample is representative at national, urban-rural and provincial levels. The sampling methodology entailed random sampling at three levels namely:

- Primary sampling unit – enumerator areas (EA) – 1, 000 selected using a probability proportioned to size (PPS) approach
- Secondary sampling unit – households within selected EAs with members qualifying in terms of selection criteria (business owners, 16 years and older, employing less than 200 people)
- The final respondent was selected using a Kish grid from a list of all qualifying individuals from the household.

Respondents were selected at random from qualifying household members in selected households. On average, six interviews were conducted per EA. The data was weighted back at provincial level to the population aged 16 years and older. The data are statistically reliable and were validated. It has been used by many researchers and has been noted to be of high quality for academic research purposes.

Examination of the data showed that only 21% of the firms were registered while 79% operated informally. To examine the effect of formal credit on firm size, we considered registered firms only because by and large informal operators do not have access to a formal credit. In fact, a review of the data showed that of the 4,447 informal businesses surveyed, only 0.8% reported to have accessed a formal credit.

4.2 Model specification

The econometric model represented by equation (1) below was developed to estimate the effect of access to credit on firm size. We estimated the model for sole proprietorships including licensed businesses separately from the one for close corporations due to the latter being a hybrid form of an incorporated sole proprietorship in the sense that besides having several owners it can be sole owned. Other forms of businesses such as partnerships and private limited companies were excluded because they constitute a negligible proportion of SMEs captured in the survey. An analysis of the data shows that private limited companies

account for only 2% and partnerships 0.6% of the sample. We employed factor analysis to extract the most important variables. As indicated in appendices 1 and 2, eight components explain about 90% of variations, which means the model leads to only a 10% loss of information. Variables are included in the model based on their respective factor scores.

$$SME\ Size_i = \alpha + \beta_1 FiInc_i + \beta_2 GEND_i + \beta_3 BLACK_i + \beta_4 COL_i + \beta_5 ASIA_i + \beta_6 WHT_i + \beta_7 OWNRAGEi_i + \beta_8 EDU_i + \beta_9 SMEAGE_i + \beta_{10} LBRPROD_i + \beta_{11} TO_i + \beta_{12} BSM_i + \beta_{13} SRTCAP_i + \beta_{14} KEEPBK_i + \beta_{15} OWNPROR_i + \varepsilon \quad \text{.....[1]}$$

Where:

- SME Size is measured by the number of full-time employees of each firm;
- FiInc is a measure of access to credit;
- GEND is gender of the owner;
- BLACK is a dummy variable for race =1 if SME owner is Black or 0 otherwise;
- COL is a dummy variable for race =1 if SME owner is Coloured or 0 otherwise;
- ASIA is a dummy variable for race =1 if SME owner is Asian or 0 otherwise;
- WHT is a dummy variable for race =1 if SME owner is White or 0 otherwise;
- OWNRAGE is age of SME owner;
- EDU is the educational background of SME owner;
- SMEAGE is age of the firm;
- LBRPROD is measure of labour productivity;
- TO is annual turnover of the business;
- BSM is a measure of extent of business sophistication
- SRTCAP is startup capital of the firm
- KEEPBK is dummy variable =1 if the firm keeps books of accounts or 0 otherwise; and
- OWNPROP is a dummy variable =1 if the firm owned the building from which it conducts business or 0 otherwise.

The model is estimated using ordinary least square (OLS), and all the requisite model diagnostic tests were conducted.

4.3 Definition of variables

Financial Inclusion

We use two dimensions of financial access (1) access to formal credit and (2) access to informal credit. In the first model, financial access is measured using a dummy variable 'have access to formal credit' where 1 is assigned to those who have access and 0 otherwise. In the second model, financial access is measured using a dummy variable 'have access to informal credit' where 1 is assigned to those who have some type of informal credit facility and 0 otherwise. Segregating access to credit into formal and informal is considered relevant due to differences in the magnitude, time span and cost of the two.

Gender

Some empirical studies cited in this paper report that firm performance differs across gender categories. Hence, we control for the effect of gender on size using gender dummy where 1 is assigned for male SME owners and 2 for female SME owners.

Race
To capture the effect of race on firm size; we introduced four dummy variables, namely, Black, Colored, Asian, and White.

Owner's Age
Owner's age is considered in the literature as an important factor in determining firm size due to the fact that entrepreneurial skills develop through experience. We use SME owner's exact age as reported in the FinScope survey.

Ownership of business premise
While SMEs generally have a large portion of their resources in the form of current assets, they have few fixed assets that can be pledged as collateral for a bank loan (Teruel and Solano, 2007). They start to accumulate fixed assets such as a commercial building, machinery and the like as they grow. Therefore, we use a dummy variable 'ownership of property' to control for the effect of ownership of a business premise on size.

SME Age
This is measured using the number of years since establishment of a firm. Generally, the literature shows that firms are expected to grow in size when they get older. Therefore, we introduce into the model a variable to control for the effect of SME age.

Business Sophistication Measure
This variable is introduced to control for the effect of business sophistication on firm size, and it is captured using Business Sophistication Measure (BSM) developed by FinMark Trust. The BSM segments small businesses along a "business sophistication continuum" comprising eight sophistication segments in rising order – from informal street vendors to more sophisticated businesses. It is a composite index computed by taking into account the following characteristics:

- Business registration
- Compliance with VAT, income tax, UIF, PAYE, etc
- Ownership structure
- Customer base
- Business premises
- Access to facilities (water, electricity, sanitation, etc)
- Business equipment (fax, computer, cell phone, etc)
- Some money management variables (record keeping, usage of financial services).

5. Empirical analysis

5.1 Preliminary analysis

Figure 5 below shows that 97.6% of the firms are micro[1] and very small, while small and medium firms constitute only 2.4% of the total. This implies that South African MSME sector is dominated by micro and very small firms. Literature suggests that financial constraints get tougher when firm size decreases, implying that a large majority of small firms in South Africa may be facing financial exclusion.

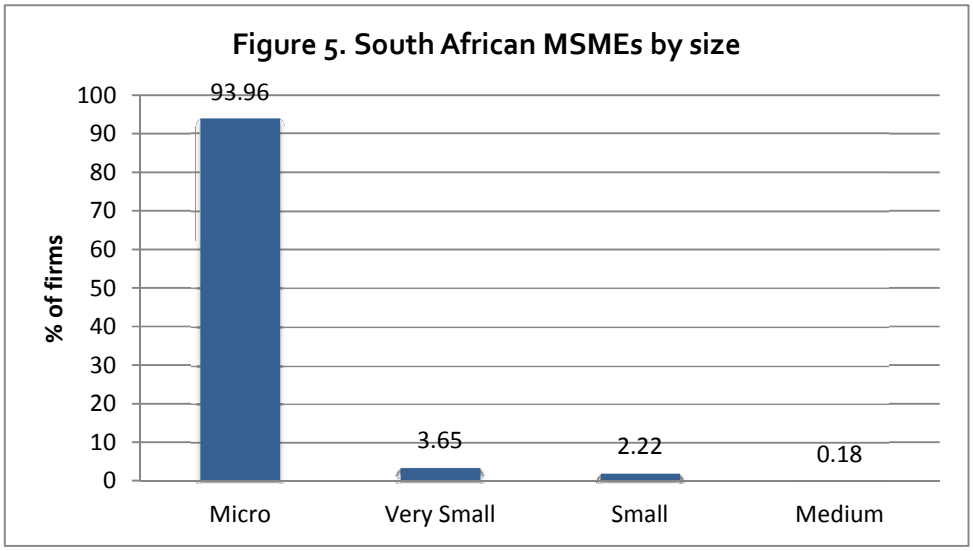
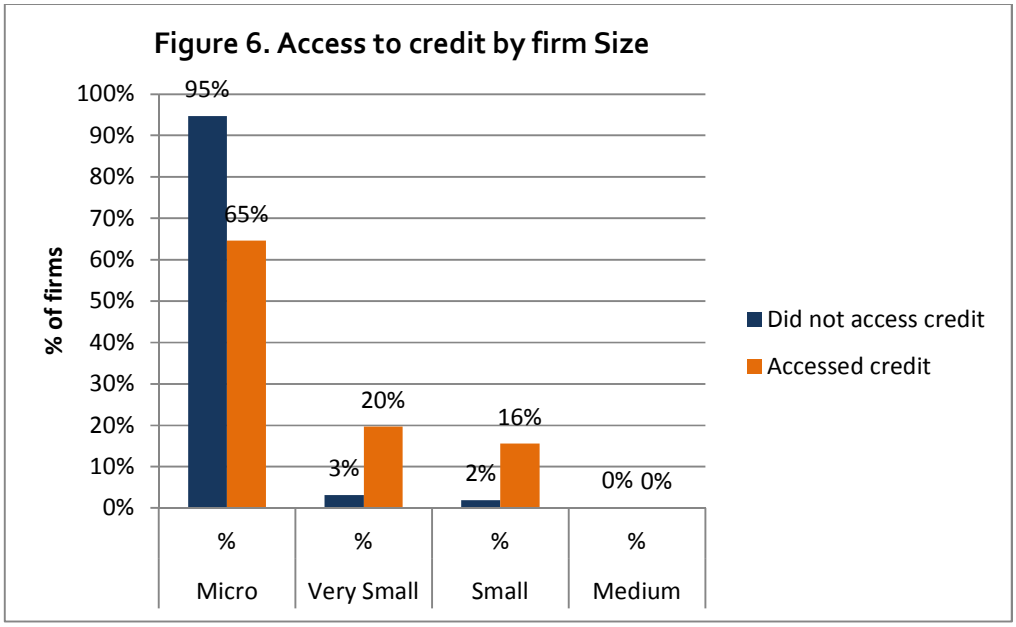


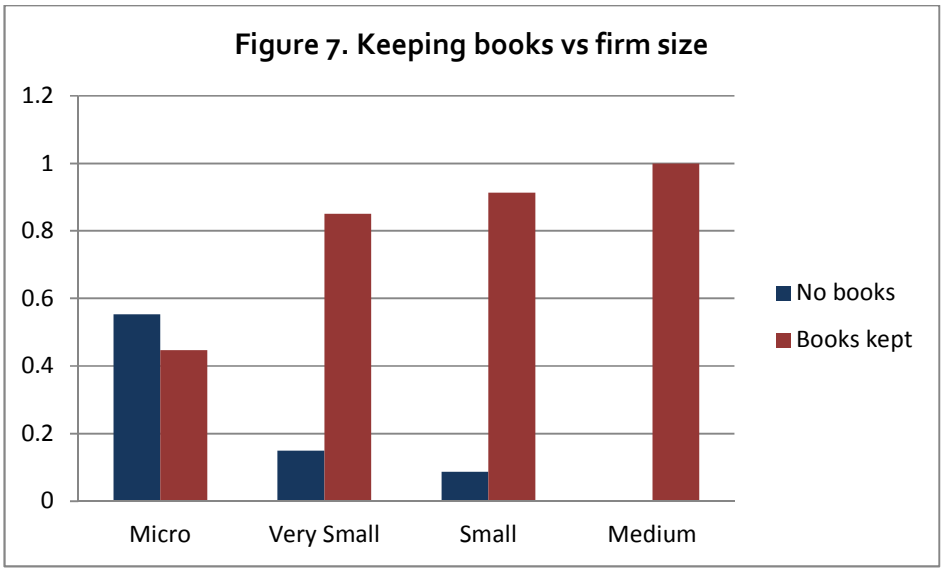
Figure 6 shows that while 98% of firms that did not access credit are micro and very small enterprises, only 2% are small and medium firms. In terms of those that accessed credit, micro and very small firms constitute 75% while the remaining 25% are small and medium firms. This strengthens our initial observation that a large majority of small firms in South Africa may not have access to credit.

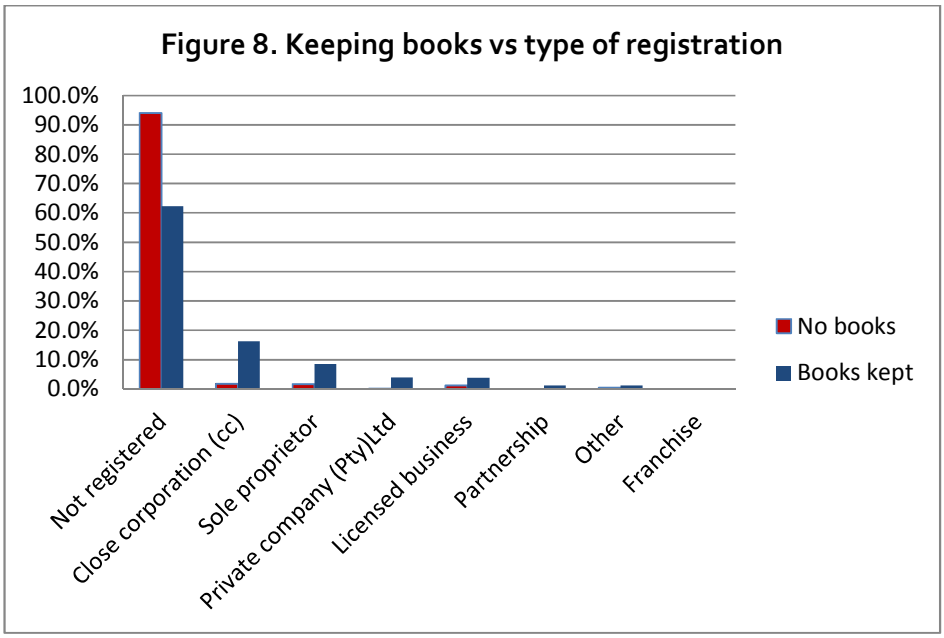
Financial transparency is important in the credit market, be it debt or equity market. Investors and creditors want to get as much information as possible about the firm whose share they buy or to which they extend credit. Banks require financial statements in the evaluation of borrower's credit worthiness. If a borrower is unable to present a financial statement, either the loan application is rejected or higher interest is charged based on the presumption that it is risky.

[1] Firms size classification is made following South African National Small Business Act 1996 which classifies firms as micro if they employ at most 5 workers, very small if they employ between 6 and 10 workers, Small if they employ 11 to 50 workers, and medium if they employ between 51 and 200 workers.

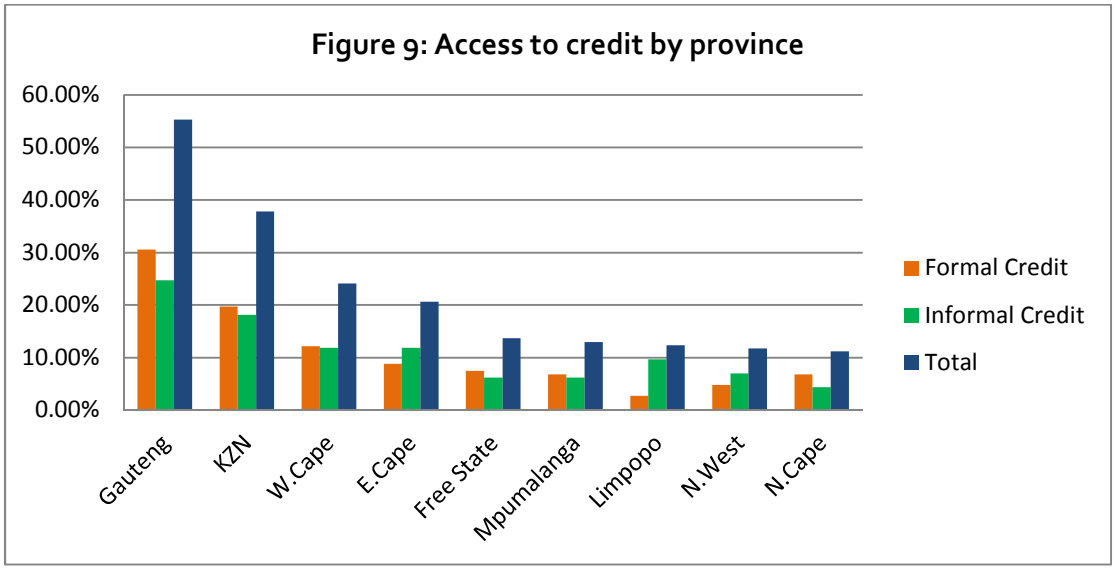


As observed by Pissarides (1999), SMEs are not transparent and their informational opacity further exacerbates their problem in accessing credit. Two reasons may explain this phenomenon. First, most SMEs do not have an accounting system in place to allow production of credible financial reports. Second, even those with an accounting system may elect to stay opaque in order to evade tax. Thus, as shown in Figure 7 , while most small firms do not keep books of accounts, all medium firms keep books of accounts. The proportion of firms that do not keep books declines as size increases, and the proportion of those who keep books increases with size. Examining the practice across registration types shows that a large majority of unregistered firms do not keep books while a larger proportion of registered firms keep books (see Figure 8).





An analysis by province depicted in Figure 9 shows that a large number of small firms have access to finance in Gauteng followed by KwaZulu Natal (KZN) and the Western Cape. In terms of access to formal credit, small firms in Gauteng have the most access while those in Limpopo have the least access. This is not surprising given that Gauteng is the economic and financial hub of the country. Access to informal credit is the most popular form of financing in the Eastern Cape, Limpopo, and North West. It is noteworthy that there is correlation between a province's GDP and its level of access to formal credit. Provinces with higher GDPs have higher access than those with lower GDPs.



5.2 Empirical results

To avoid any potential multi-collinearity problems, the variables measured as ratios were transformed into Z scores. The absence of multi-collinearity in the model is confirmed by a Durbin-Watson (DW) statistic that is closer to the standard 2.0. Besides, the largest variance inflation factor (VIF) is a little more than 2.0 implying the absence of any serious multi-collinearity problem in the model (see Appendix 3).

6.2.1 Sole proprietors: Formal credit and firm size

The OLS results for sole proprietors (including licensed firms) in Table 1 shows that access to formal credit has a statistically significant ($P<0.05$) positive effect on firm size, signifying the important contribution of formal credit to firm growth. However, such effect is no longer significant when labour productivity, startup capital and race are factored in. It has been observed that statistical significance of access to formal credit decreases when startup capital, labour productivity, and race are introduced at once. Owner specific control variables such as level of education, age, and gender are found to be statistically insignificant. Four dummy variables introduced to capture the effect of race show that while Black, Coloured and Asian races do not have effect on firm size, the White race has a statistically significant positive effect on size. This implies that white-owned small firms are likely to be larger in size while those owned by the other races do not show a similar pattern. Turnover and BSM are both economically and statistically significant in all the models, implying their importance in explaining firm size. A negative yet statistically insignificant coefficient for business premise status implies that ownership of a business premise does not determine size. Smaller firms operate using premises they own while larger ones operate in rented offices. This is consistent with the fact that micro-enterprise owners often run their business at their residential places and seek a rented office when the firm grows.

6.2.2 Sole proprietors: Informal credit and firm size

In contrast to the results for access to formal credit, Table 2 shows that access to informal finance by sole proprietors (including licensed firms) does not have a statistically significant effect on firm size, and this remains the case irrespective of the number and combination of control variables used. A statistically insignificant coefficient for informal credit illustrates the fact that firms use informal finance for financing operations rather than for growth because informal credit is small in magnitude and it matures within a short period of time. Therefore, we would expect firms to seek a formal credit when they wish to finance growth.

None of the owner specific control variables are significant. However, firm specific variables such as Turnover, Labor productivity, and BSM groups are significant. Labor productivity has a statistically significant negative effect on size. This may be due to the inability of SME owners to properly manage personnel to maintain productivity, or perhaps a more tenable reason could be diminishing returns to scale which can be explained based on the fact that SME owners hire additional workers or use family labour without increasing investment on fixed assets. Furthermore, it can be argued that most small firms are managed by a single person so

that labour productivity diminishes as the number of employees increases due to the increase in the span of control.

6.2.3 Close corporations: Formal credit and firm size

For close corporations, access to formal credit does not have significant effect on firm size. The coefficient for formal credit is negative but statistically insignificant in the first two models where we control labour productivity, startup capital and Black race. The coefficient turns positive in the remaining three models when entered with the rest of race variables, namely, Coloured, Asian, and White. Of the owner specific variables, age has a statistically significant positive effect in all models except in models 2 and 5 where the race variable Black and White are introduced, which implies that the role of age in explaining firm size fades away when we control for those owned by Blacks and Whites. For Asians and Coloureds, firm size increases with age. Labour productivity is negatively related with firm size and it is significant, implying as size increases labour productivity decreases. This is consistent with the result we obtained for sole proprietors, signifying the fact that the two forms of businesses are similar as far as human resource management is concerned. However, unlike sole proprietors, the BSM is insignificant in explaining the size of close corporations. This may be due to the fact that most close corporations are at the upper end of the sophistication spectrum while sole proprietors exhibit a lot of variation in sophistication that cuts across all the eight BSM segments. An analysis of data shows that 93% of close corporations are either in 6th, 7th and 8th BSM segments compared to only 76% of sole proprietors in the same segments while the rest are spread across the other segments.

For close corporations, informal credit is negatively related to size but the effect is not significant. Of the owner specific variables, age is found to be statistically significant except when it is introduced with the race variable White. It implies that age is important in explaining firm size for close corporations owned by Blacks, Coloureds, or Asians but not by Whites.

5.3 Discussion

It should be noted that the low adjusted R-squared in the regression models is indicative of the fact there are many other variables which explain SME size in addition to the firm-level characteristics included in this paper. The paper did not take into account of the macroeconomic characteristics and the business environment as measured by the World Bank's Doing Business indicators that the literature considers to be fundamental in explaining financial constraints of SMEs (World Bank, 2003). For instance, where the cost of registration is high, countries tend to have a smaller share of formal SMEs and larger informal sectors without access to formal credit, while on the other hand, there are strong positive correlations between the quality of institutions (viz, legal systems that protect property rights, levels of overall government effectiveness, low corruption levels, political stability) and the degree of development of the SME sector (World Bank, 2003, pp.13-15).

The FinScope South Africa Small Business Survey 2010 reported high informality as 79% of respondent businesses were not registered. Notwithstanding the undesirability of informal

activities, there are beneficial linkages between the informal and formal sectors. Informal sector enterprises have been shown to have varied linkages with formal enterprises, acting as providers of inputs, purchasers of outputs, and distributors and retailers. Thus there are both forward linkages to markets outside the informal economy, as well as backward linkages in the form of inputs from outside the informal economy. These linkages are repeated in terms of workforces, with many workers such as temporary workers and part-time workers being taken on by formal enterprises, as well as self-employed and homeworkers establishing links with formal enterprises through sub-contracting arrangements.

Studies undertaken in South Africa show that formal manufacturing firms are important suppliers of goods directly to informal street vendors, the same applying to formal sector import firms, while producers of fruit and vegetables supplied produce to both formal and informal retailers (Horn et al., 2002). Hence, current thinking on the phenomenon of informality is based on the notion of a continuum as per observation by Chen (2005) in Box 1 below).

Box 1 – The continuum of economic relations between formal and informal sectors

"Earlier, observers who subscribed to the dualist theory considered the informal and formal sectors to be two distinct economic sectors without direct links to one another. The reality is, as always, far more complex….production, distribution and employment relations tend to fall at some point on a continuum between pure 'formal relations' (i.e. regulated and protected) at one pole and pure 'informal relations' (i.e. unregulated and unprotected) at the other, with many categories in between. Depending on their circumstances, workers and units are known to move with varying ease and speed along the continuum and/or to operate simultaneously at different points on the continuum. Consider, for example, the self-employed garment maker who has to supplement what she makes on her own by stitching clothes under a sub-contract…for a garment firm…Or consider the public sector employee who has an informal job on the side.

Moreover, the formal and informal ends of the economic continuum are often dynamically linked…many informal enterprises have production or distribution relations with formal enterprises, supplying inputs, finished goods or services either through direct transactions or sub-contracting arrangements. Also, many enterprises hire wage workers under informal employment relations. "Source: Chen (2005, p.8)

In academia, the terminological shift from 'informal sector' to 'informal economy' is a reflection of the recognition of this continuum, with informality no longer being confined to a specific group of economic activities but rather seen as being represented in a whole range of sectors as well reflecting widespread interdependence between the two economies. The informal credit market which have links with the formal credit market is simply one of the many sectors comprising the informal economy.

When analyzed by province, access to credit in South Africa appears to be positively related to the GDP of the province (see Figure 5). The poor provinces such as the Eastern Cape, Limpopo and North-West which have lower total access to credit as compared with others actually depend more on informal access than formal credit. Hence, interventions that aim to raise access to credit of SMEs should be specifically targeted to locations in need to have impact.

Our empirical results show that informal finance has no significant impact on SME size. This appears to be consistent with empirical evidence of Ayyagari et al. (2010) who reported that despite extensive use of informal finance by SMEs in China, it was observed that those that use formal finance rather than informal finance exhibited faster growth. This could be explained by two reasons. Firstly, informal loans are small and hence they are mostly used for financing operations (working capital) rather than growth (expansion) (Fanta, 2012). Secondly, as reported by Bolnick (1992) and many others, informal lenders charge unreasonably high interest rate that erodes profit of small firms. Hence, in the literature, it has been generally observed that firms with access to formal finance grow faster than those with access to informal finance (Rajan and Zingales, 1998). Nevertheless, informal finance has a role to play in the economy. By providing credit to survivalist micro-enterprises, the informal credit market alleviates poverty.

5.4 Areas of further research

The present paper is based on cross-sectional data and hence it is difficult to make a causality claim. Hence, we believe that future studies that utilize panel data would be able shed more light on the link between access to finance and firm size in South Africa. Thus, a cross country study comprising other African countries would help in understanding to what extent the highly developed South African financial sector contributes to SME development. Besides, the type of formal finance South African SMEs access needs to be explored along with its relationship with their growth. SMEs are considered to be centers of job creation and hence it would be interesting to know whether or not those with access to formal credit open more job opportunities to the jobless.

6. Conclusion and Policy Implications

The main conclusion of the paper is that access to formal credit by SMEs constituted as sole proprietorships has a positive relationship with firm size as measured by the number of employees. The other factors that have a positive relationship to SME size are turnover and business sophistication. Informal credit is observed not to have any significant effect on SME size, a result that is consistent in prior empirical studies.

Generally, access to credit (both formal and informal) has a locational dimension. Provinces with higher GDP such as Gauteng, KZN and the Western Cape have a large proportion of SMEs with access to credit. On the other hand, SMEs in poorer provinces such as Limpopo, Eastern Cape and North-West largely rely on informal credit.

The policy implications of the paper are instructive. Government efforts to promote access to formal credit of SMEs are synonymous with encouraging growth of these enterprises. Interventions can be pursued on the basis of evidence-based knowledge that formal finance fosters the growth of SMEs and thus enabling them to graduate into large firms. Such interventions can be ideally targeted to the poorer provinces where SMEs are observed to rely more on informal finance than on formal finance.

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Appendices

Appendix 1: Factor analysis results

Appendix 1: Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.718	24.713	24.713	2.718	24.713	24.713	1.736	15.784	15.784
2	1.562	14.199	38.913	1.562	14.199	38.913	1.727	15.7	31.484
3	1.366	12.417	51.329	1.366	12.417	51.329	1.292	11.744	43.228
4	1.07	9.724	61.054	1.07	9.724	61.054	1.147	10.427	53.655
5	0.935	8.496	69.55	0.935	8.496	69.55	1.036	9.422	63.078
6	0.846	7.688	77.238	0.846	7.688	77.238	1.008	9.166	72.243
7	0.756	6.87	84.108	0.756	6.87	84.108	1.002	9.109	81.352
8	**0.698**	**6.341**	**90.449**	**0.698**	**6.341**	**90.449**	**1.001**	**9.097**	**90.449**
9	0.642	5.836	96.285						
10	0.275	2.499	98.784						
11	0.134	1.216	100						

Extraction Method: Principal Component Analysis.

Appendix 2: Component Score Coefficient Matrix

Component	1	2	3	4	5	6	7	8
Owner age	0.2	0.019	**0.526**	-0.01	-0.413	-0.067	0.106	-0.106
Gender	0	0.046	-0.06	0.012	0.002	0.018	-0.011	**1.008**
BSM groups	**0.47**	-0.022	0.023	-0.041	0.089	0.003	-0.009	-0.039
Highest Level of Education	-0.023	-0.033	0.058	-0.061	**0.886**	-0.081	0.029	-0.009
Accessed formal credit	-0.064	-0.008	-0.029	-0.03	-0.075	**1.025**	-0.078	0.019
Accessed informal credit	-0.019	0.001	0.036	0.017	0.018	-0.079	**1.006**	-0.011
Turnover of business	-0.043	**0.432**	-0.012	0.176	-0.066	0.03	0.001	0.028
Labor productivity	-0.029	-0.22	-0.019	**0.983**	-0.057	-0.034	0.015	0.012
Net profit	-0.059	**0.725**	-0.034	-0.369	-0.003	-0.031	-0.001	0.044
Keeps financial records	**0.61**	-0.075	-0.118	-0.016	-0.165	-0.092	-0.021	0.035
Business premise status	-0.214	-0.052	**0.723**	-0.014	0.328	0.015	-0.031	0

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Appendix 3: Diagnostic test results

A. Access to formal credit by sole proprietors and licensed firms

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
Variables	Tolerance	VIF	Tolerance	VIF	Tolerance	VIF	Tolerance	VIF	Tolerance	VIF	Tolerance	VIF
Accessed formal credit	0.914	1.094	0.896	1.116	0.903	1.107	0.912	1.096	0.893	1.12	0.826	1.21
Highest Level of Education	0.8	1.25	0.823	1.215	0.796	1.256	0.738	1.355	0.762	1.312	0.749	1.335
Owner Age	0.831	1.203	0.826	1.21	0.77	1.299	0.752	1.331	0.737	1.356	0.74	1.352
Gender	0.972	1.029	0.944	1.059	0.883	1.132	0.961	1.041	0.934	1.07	0.86	1.163
Turnover	0.839	1.192	0.35	2.858	0.708	1.412	0.83	1.206	0.346	2.89	0.665	1.504
SME age	0.885	1.13	0.873	1.145	0.895	1.117	0.873	1.145	0.859	1.164	0.879	1.138
BSM groups	0.575	1.738	0.58	1.723	0.479	2.089	0.516	1.939	0.509	1.963	0.428	2.334
Keeps financial records	0.715	1.398	0.707	1.414	0.634	1.577	0.701	1.427	0.697	1.436	0.628	1.592
Business premise status	0.878	1.139	0.882	1.133	0.825	1.212	0.849	1.178	0.85	1.176	0.768	1.303
Labor productivity			0.364	2.747	0.703	1.423			0.36	2.775	0.687	1.456
Start up capital					0.543	1.841					0.512	1.954
Black							0.338	2.954	0.38	2.634	0.37	2.703
Colored							0.441	2.266	0.484	2.065	0.408	2.45
White							0.39	2.566	0.39	2.565	0.452	2.211

B. Access to informal credit by sole proprietors and licensed firms

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	Tolerance	VIF	Tolerance	VIF	Tolerance	VIF	Tolerance	VIF	Tolerance	VIF	Tolerance	VIF
Accessed informal credit	0.983	1.018	0.954	1.048	0.885	1.129	0.951	1.051	0.917	1.09	0.829	1.206
Highest Level of Education	0.809	1.236	0.836	1.196	0.786	1.272	0.747	1.339	0.775	1.29	0.735	1.36
Owner Age	0.828	1.207	0.826	1.211	0.777	1.286	0.752	1.331	0.737	1.357	0.738	1.355
Gender	0.975	1.026	0.949	1.054	0.9	1.111	0.963	1.038	0.938	1.066	0.882	1.133
Turnover	0.84	1.191	0.35	2.858	0.712	1.405	0.83	1.205	0.346	2.891	0.662	1.512
SME age	0.886	1.128	0.874	1.144	0.899	1.113	0.875	1.143	0.861	1.162	0.883	1.132
BSM groups	0.593	1.688	0.605	1.653	0.487	2.055	0.528	1.893	0.528	1.895	0.44	2.27
Keeps financial records	0.714	1.4	0.705	1.418	0.63	1.587	0.699	1.431	0.693	1.443	0.622	1.607
Business premise status	0.875	1.143	0.859	1.164	0.765	1.307	0.844	1.185	0.825	1.212	0.698	1.432
Labor productivity			0.364	2.744	0.704	1.421			0.36	2.775	0.689	1.452
Startup capital					0.547	1.827					0.516	1.937
Black							0.338	2.962	0.378	2.643	0.377	2.653
Colored							0.441	2.268	0.484	2.066	0.411	2.434
White							0.387	2.584	0.386	2.589	0.452	2.214

Tables

Table 1. OLS Regression output for Sole proprietors and licensed firms: formal credit

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Accessed formal credit	0.133**	0.145	0.141	0.146	0.141	0.184*
Owner's education	-0.022	-0.087	-0.088	-0.125	-0.083	-0.101
Owner age	0.039	-0.093	-0.09	-0.091	-0.092	-0.132
Gender	0.007	0.142	0.139	0.131	0.142	0.165*
Turnover	0.151**	0.038	0.039	0.026	0.036	-0.019
SME age	0.101	0.1	0.101	0.113	0.102	0.124
BSM groups	0.384***	0.4***	0.405***	0.41***	0.4***	0.317**
Keeps records	-0.007	-0.031	-0.033	-0.046	-0.031	-0.028
Business premise	-0.033	-0.095	-0.097	-0.074	-0.102	-0.086
Labor productivity		-0.215*	-0.216*	-0.201*	-0.219*	-0.215*
Startup capital		0.06	0.06	0.042	0.067	0.09
Black			0.016			
Colored				-0.155		
Asian					-0.027	
White						0.22**
F-stat	8.194 (0.00)	2.706 (0.00)	2.454 (0.00)	2.735 (0.00)	2.459 (0.008)	2.925 (0.00)
DW	1.881	2.159	2.156	2.147	2.145	2.087
Adjusted R^2	0.228	0.162	0.152	0.177	0.153	0.192

**** significant at the 0.01 level, ** significant at the 0.05 level, * significant at the 0.1 level*

Table 2: OLS Regression output for Sole proprietors and licensed firms (informal credit)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Accessed informal credit	0.001	0.08	0.073	0.082	0.075	0.115
Owner's level of education	-0.007	-0.098	-0.100	-0.137	-0.093	-0.117
Owner Age	0.039	-0.11	-0.103	-0.108	-0.108	-0.15
Gender	0.000	0.124	0.120	0.113	0.125	0.142
Turnover	0.146**	0.024	0.028	0.012	0.022	-0.033
SME age	0.095	0.093	0.094	0.105	0.095	0.113
BSM groups	0.414***	0.422***	0.432***	0.432***	0.420***	0.349**
Keeps financial records	-0.006	-0.019	-0.023	-0.034	-0.020	-0.012
Business premise status	-0.037	-0.073	-0.079	-0.052	-0.085	-0.055
Labor productivity		-0.221*	-0.222*	-0.207*	-0.227**	-0.222**
Startup capital		0.082	.080	0.064	0.092	0.116
Black			.036			

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Colored				-0.155		
Asian					-0.041	
White						0.204*
F-stat	7.522 (0.00)	2.52 (0.00)	2.297 (0.01)	2.557 (0.00)	2.301 (0.01)	2.674 (0.00)
DW	1.857	2.196	2.188	2.184	2.175	2.141
Adjusted R^2	0.211	0.147	0.138	0.162	0.139	0.172

**** significant at the 0.01 level, ** significant at the 0.05 level, * significant at the 0.1 level*

Table 3: OLS Regression output for Close corporations

	Model 1	Model 2	Model 3	Model 4	Model 5
Accessed formal credit	-0.001	-0.003	0.008	0.004	0.043
Owner's education	-0.001	-0.015**	-0.002	0.006	-0.003
Owner age	0.261**	0.241	0.256**	0.26**	0.184
Gender	-0.12	-0.111	-0.131	-0.127	-0.156
Turnover	0.187	0.182	0.182	0.181	0.127
SME age	-0.078	-0.069	-0.081	-0.083	-0.088
BSM groups	0.203	0.153	0.213	0.219	0.165
Keeps records	-0.223**	-0.218*	-0.238**	-0.218*	-0.223**
Business premise	0.038	0.033	0.04	0.042	0.054
Labor productivity	-0.292**	-0.32**	-0.299**	-0.286**	-0.36***
Startup capital	0.047	0.055	0.053	0.04	0.048
Black		-0.121			
Colored			-0.081		
Asian				-0.049	
White					0.287**
F-stat	2.603 (0.007)	2.475 (0.009)	1.824 (0.01)	2.378 (0.012)	3.069 (0.002)
DW	2.159	1.824	1.824	1.754	1.685
Adjusted R^2	0.172	0.167	0.167	0.163	0.226

**** significant at the 0.01 level, ** significant at the 0.05 level, * significant at the 0.1 level*

Table 4: OLS Regression output for Close corporations: informal finance

	Model 1	Model 2	Model 3	Model 4	Model 5
Accessed informal credit	-0.015	-0.008	-0.024	-0.021	-0.043
Owner's level of education	0.001	-0.014	0.000	0.009	-0.001
Owner age	0.259**	0.24*	0.252**	0.257**	0.177
Gender	-0.121	-0.111	-0.132	-0.128	-0.158
Turnover	0.185	0.181	0.178	0.177	0.117
SME age	-0.079	-0.07	-0.082	-0.085	-0.092
BSM groups	0.205	0.155	0.216	0.222	0.168
Keeps financial records	-0.221**	-0.217**	-0.238**	-0.217*	-0.228**
Business premise status	0.040	0.034	0.044	0.045	0.065
Labor productivity	-0.292**	-0.32**	-0.297**	-0.285**	-0.355***
Startup capital	.046	0.053	0.053	0.04	0.058
Black		-0.121			
Colored			-0.083		
Asian				-0.051	
White					0.284**
F-stat	2.606 (0.007)	2.475 (0.009)	2.43 (0.01)	2.382 (0.012)	3.071 (0.001)
DW	1.757	1.675	1.828	1.756	1.694
Adjusted R^2	0.172	0.172	0.168	0.163	0.226

**** significant at the 0.01 level, ** significant at the 0.05 level, * significant at the 0.1 level*