The Determinants and Impact of Short-Term Business Insurance on SMEs in South Africa

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Abstract

South Africa is a developing country riddled with high levels of unemployment. SMEs hire more than 50% of the workforce, and therefore adequate protection and support of these firms is crucial. The goal of this research is twofold: Firstly, to identify the determinants of business insurance take-up by SME owners. Secondly, to determine whether business insurance and firm performance are positively and significantly related. A probit model is used to determine the probability of business insurance take-up and a multiple regression is run to identify the effect of business insurance on firm performance. An IV is also run to control for potential endogeneity. Race, funeral and life insurance, education, personal income and size of the firm are key factors determining insurance take-up. Business insurance is found to be positive and statistically significant in both the OLS and IV regressions suggesting that business insurance improves the performance of SMEs.

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Introduction

A key challenge facing the South African economy is the high level of unemployment. The government views small and medium enterprises (SMEs) as key to economic growth and development. SMEs contribute to around 40% of the country's gross domestic product and employ more than half of the private sector workforce (Department of Trade and Industry- DTI, 2011). Therefore these enterprises need to be supported in order for them to grow and boost the economy where possible. The provision of business insurance to this sector is a possible measure of protection.

Insurance can be used to protect firms and individuals against adverse shocks. Data from a FinScope survey on SMEs in South Africa, conducted in 2010, is used. This paper attempts to identify the factors that determine whether an SME has business insurance and, if it does, what impact does this have on the firm's performance. There is a limited amount of literature and empirical research examining SMEs and business insurance. Whilst there is literature on risk mitigation strategies (Barr (1993), Alderman and Paxson (1994), Morduch (1999), Dercon, Bold and Calvo (2002)) and research has been conducted to test the theory in the informal sector (Udry (1994), and Gine, Townsend and Vickery (2008))- the research in this area is nascent.

The work here focuses on the demand side factors of business insurance to SMEs but the supply side factors should not be overlooked. Many business owners have limited knowledge about what insurance is let alone what is available to them. The lack of education plays a significant role in the low take-up of business insurance. Gollier (2002) noted in his paper that the lack of understanding of insurance by a large portion of vulnerable individuals and households in developing countries has an important negative impact on their welfare. The largest challenge identified by potential insurers, in research conducted for FinMark Trust (2007), is to come to grips with the fact that they may pay for the rest of their lives to protect themselves from adverse shocks but may never have to claim- essentially "paying for nothing". These individuals may also be considered high-risk for insurance companies, hence, it may be insurance companies who are unwilling to provide insurance to this segment and this may be the reason for the low take up rate.

The rest of the paper is structured as follows. Section 1 provides a summary of literature on insurance and risk mitigation. It focuses on giving a brief overview of SMEs in South Africa. The South African insurance industry is also discussed, explaining the current industry and introducing the future of micro-insurance. The underlying theory regarding risk and insurance is set out. Risk mitigation strategies and empirical research are also discussed in this section. Section 2 describes the data and methodology used in this research. Section 3 presents the descriptive statistics on the data and Section 4 analyses the results. The paper is concluded in Section 5.

1. Literature Review

1.1 SMEs in South Africa

The focus of this research is on SMEs (small and medium enterprises) and determining what the probability of these firms purchasing business insurance is and what impact this purchase has on firm performance. It is thus important to understand what SMEs are, what role they play in the economy and why insurance could play a crucial role in protecting them. There is no generally agreed or universally accepted definition of SMEs. For example, the Organisation of Economic Co-Operation and Development (OECD) define them as firms with less than 500 employees while according to Standard Bank of South Africa they are firms with turnover of between R150 000 and R5 million. (Falkena, Abedian, Blottnitz, Coovadia, Davel, Madungandaba, Masilela, and Rees, 2001). For the purpose of this study the definition from the FinScope 2010 Survey will be used where SMEs are businesses in South Africa whose owners are 16 years and older and which have less than 200 employees.

The South African government views SMEs as a major promoter of economic growth and development (DTI, 2011). As well as being a driver of economic growth, SMEs are a source of innovation and new ideas as they are spread over many sectors in the economy (Small Business Project, 2008). SMEs have proved successful in employing more than half of the private sector's workforce and contributing to roughly 40% of the country's gross domestic product (Falkena *et al,* 2001). There is thus an important place for SMEs in the South African economy. It has been estimated that around 80% of job creation in

economies worldwide is carried out by SMEs. This highlights another reason why the government places an increasing amount of attention on and provides support for SMEs as they are seen as a gateway to increased job creation. The Department of Trade and Industry (DTI) implements SME related policies, ensuring that sufficient financial and non-financial assistance is awarded. (DTI, 2011).

Despite the importance of SMEs in South Africa and globally, SMEs face risks ranging from theft and fire to employee liability and therefore need protection (Standard Bank, 2012). Business insurance is a potential measure that can be put in place to protect these firms from adverse shocks and increase their long-term sustainability and firm performance. There is a strong insurance market in South Africa, with the four largest players in the industry being: Mutual & Federal, Zurich, Sanlam and Hollard- with a combined market share of 59.2% in 2010. (KPMG, 2011).

1.2 Insurance

A clear understanding of how insurance works is of course relevant here. Individuals take out insurance policies to protect themselves or their property against potential loss or damage. Insurance companies pay individuals for losses incurred in exchange for periodic premium payments. (Insurance Bureau of Canda- IBC, 2012). The total amount of claims is usually lower than the level of premiums therefore claims should always be paid out. However, when a large portion of policyholders make claims at the same time- perhaps after a natural disaster- an insurance company may have insufficient funds to pay out all its policyholders (IBC, 2012). To protect themselves from these situations insurance companies purchase reinsurance (insurance for insurance companies), which acts as additional protection against large losses. (Mossin, 1968).

The underlying theoretical model of insurance is explained clearly in Mas-Colelle *et al* (1995) and Raviv (1979) and shows how insurance helps to protect individuals from potential loss. The problem is set out as follows: An individual has a certain level of initial wealth, w, but could face a loss, D, with a given probability, π. The individual can purchase insurance to protect himself or herself against potential loss. Every unit of insurance costs a predetermined amount, q. The amount of insurance purchased, say α, is non-negative and cannot exceed the size of loss. If the individual decides to purchase α

units of insurance his wealth will be $w - q\alpha$ should no loss occur and $w - q\alpha - D + \alpha$ should the loss arise. (Mas-Colell *et al*, 1995). With no insurance the individual would have wealth of $w - D$ should the damage occur. In order for the individual to decide in favour of purchasing insurance his wealth with insurance must be at least that of what his wealth would be if no insurance is purchased. The decision maker must choose an optimal level of α so as to maximize his expected utility.[1] (Mas-Colell *et al*, 1995).

The insurer is of course interested in finding the maximum premium the individual is willing to pay. The premium charged increases with the probability of the loss arising and the size of the loss. With general risk aversion the maximum premium the insured is willing to pay is greater than the actuarial value of the loss. (Mossin, 1968). If the premium is actuarially fair/favorable then it is optimal to purchase full cover (Mossin, 1968)[2]. In order for actuarial markets to exist there must be positive demand, it must be technically possible to supply insurance and insurance must be supplied at a price that the individual is willing to pay (Barr, 1993).

One of the main reasons that individuals seek insurance is because they are risk averse and seek to protect themselves against uncertain risky events. A formal explanation of risk aversion is provided. In the study of choice under uncertainty the basic object of choice is a lottery- a probability distribution over a set of possible outcomes (Mas-Colell *et al*, 1995). Individuals tend to be risk-averse and seek protection from uncertainty through the diversification of risk across individuals and firms. A person is said to be risk-averse if they prefer the expected value of a lottery to the lottery itself and have a concave utility function (Mas-Colell *et al*, 1995). A risk-loving individual on the other hand prefers any lottery to its expected value and a risk-neutral individual is indifferent between the two (Mas-Colell *et al*, 1995). The Arrow-Pratt coefficient of absolute risk aversion allows us to determine whether one individual is more risk averse than another.[3] The primary method one can hedge against risk is through an insurance policy (Raviv, 1979).

[1] See Mas-Collel *et al* (1995) for the maximization problem.
[2] See Mas-Collel *et al* (1995) or Mossin (1968) for the proof.
[3] Risk aversion is calculated taking the first derivative of the individual's utility function, dividing it by its second derivative and multiplying it by negative 1. The more risk-averse an individual is the larger the coefficient will be. (Mas-Colell *et al*, 1995).

1.2.1 Insurance in South Africa

With the understanding of how insurance works, investigating the insurance industry in South Africa is relevant. This will highlight where the insurance market for SMEs lies, how the micro-insurance industry is to be developed and what products are currently available to these firms. Insurance provision in South Africa is divided into 2 groups, short-term and long-term insurance. Long-term insurance consists primarily of life, death and disability insurance. On the other hand short-term insurance, which is of interest in this research, includes for example motor, property, accident and health insurance. (Financial Services Board- FSB, 2009). There are two relevant Acts, the Long-Term Insurance Act 52 of 1998 and the Short-Term Insurance Act 53 of 1998, governing the insurance industry in South Africa. The Financial Services Board (FSB) is the primary regulatory body responsible for the supervision of non-banking financial services. The Ombudsman for Short-Term and the Ombudsman for Long-Term Insurance were setup to mediate disputes that may arise between insurance companies and policyholders regarding insurance contracts (Ombudsman for Short- and Long Term Insurance, 2012).

In February 2011 the National Treasury was quoted as saying: "To promote sustained economic growth and development, South Africa needs a stable financial services sector that is accessible to all." Although, there has been a great deal of success in the credit industry for the informal sector, inclusion into the insurance industry has proved more difficult. Until recently the main focus was on short-term and long-term insurance and little attention was paid to the lower income bracket through the provision of micro-insurance. According to the National Treasury (2011) there are three areas that need to be addressed: better access to affordable insurance products to meet individuals' risks; ensuring that consumers match the products they buy with the insurance they need; and stronger consumer protection (National Treasury, 2011). The National Treasury forthcoming Micro-Insurance Act will rest on 5 pillars; financial stability, consumer protection, better access to financial services, improved regulation and coordination and greater understanding. (National Treasury, 2011).

The new Micro-Insurance Act is to be introduced to achieve the above objectives of the National Treasury, which will allow for the licensing of new categories of insurers that can provide only micro-insurance. (National Treasury, 2011). There are two goals that should be achieved by micro-insurance. Firstly, it should reflect features of products that

are demanded by the low-income market. Secondly, it should enable a larger range of micro-insurers to enter the market with straightforward distribution methods and simplified regulation requirements. (National Treasury, 2011).

It is clear that there is a lack of insurance for lower income households and businesses. However, insuring small businesses for unforeseen risk is seen as crucial for its success (Standard Bank, 2012). Some insurance providers that have identified this gap in the market have designed policies aimed at small and medium business owners. Two policies provided by South African insurance institutions are discussed. Standard Bank together with Standard Insurance Limited has released a new product called Business Insurance which is designed for SMEs. This is a packaged insurance policy aimed at SMEs with a maximum turnover of R10 million. The policy cover includes a range of covers- for example: fire, business interruption, accidental damage, electronic equipment, theft and others. It eliminates the need to take out individual policies for different areas of the business. (Standard Bank, 2012). The second example is Mutual & Federal. They offer SMEs protection against large liabilities with Umbrella Liability, which is an optional extra available under some of their main policies. They too offer a wide range of cover from fire and theft to motor insurance and employer liability. (Mutual & Federal, 2010).

1.3 Risk Mitigation Strategies

A number of reasons are suggested for the lack of insurance provided to the poor, Dercon *et al* (2007) highlight some of the important factors. Asymmetric information, which occurs when one party to an agreement is better informed than the other, is seen as one of the main obstacles. Two problems arise due to information asymmetry namely: adverse selection and moral hazard (Barr, 1993). Adverse selection, ex ante, arises before the financial transaction takes place because risky individuals are more likely to seek insurance. On the other hand, moral hazard, ex poste, occurs after the financial transaction takes place. Individuals engage in risky behaviour if the gains are potentially high after they have received the insurance. (Barr, 1993).

There are also enforcement problems, as the poor are not usually participants in the formal economy. Transaction costs are high for the poor because they usually prefer frequent payments of small instalments to pay their premium. (Dercon *et al*, 2007*)*. Poor individuals are often unable to understand their rights in insurance contracts. Covariate

risk- risk that is correlated across many individuals- is another hindering factor in the provision of insurance to the poor. (Dercon *et al*, 2007*)*. Barr (1993) adds to the list of reasons for difficulties in providing insurance to the poor, stating that the poor have less access to insurance markets, savings and credit and a lot of risk faced by the poor cannot be actuarially priced because of the lack of data on the individual or because the risks they are faced with are unknown (Barr, 1993).

It is clear that insurance could be used to protect SMEs from unfavorable risky situations but there are valid reasons for the limited supply. Therefore if these firms are not offered formal insurance they must adopt alternative risk mitigation strategies. A highly topical area in development economics is related to how well these individuals are able to mitigate the adverse effects of income risk (Alderman *et al*, 1994). There are two primary strategies employed to deal with risk- risk management and risk coping. Risk management involves the diversification of income across a portfolio of occupations. (Alderman *et al*, 1994). Risk coping on the other hand relates to consumption smoothing given income fluctuations. Risk-averse individuals may combine the above methods in an attempt to diversify against risk. (Alderman *et al*, 1994).

The informal sector is able to develop coping strategies that are not provided by the market or the state through private mechanisms. Several examples of these strategies are mentioned. Informal insurance involves the reciprocal exchanges of gifts and loans. Asset management includes drawing down on savings and selling physical assets when needed. (Morduch, 1999). The management of risk associated with changes in income is another strategy that is adopted- examples of which are diversification of occupation, migration of some members of the household and increasing income-generating activities. (Morduch, 1999). Despite these being some of the main sources of protection against risk research has shown, according to Morduch (1999), that they are weak and provide inadequate protection for the poor. The disadvantages associated with these strategies are that they involve the sacrifice of expected income, they render incomplete protection and these individuals have insufficient suitable assets and are vulnerable to covariate risk. (Dercon *et al*, 2007).

1.4 Empirical Research

There is limited empirical research on how business insurance affects the informal sector or SMEs. However, two prominent economists, Udry and Townsend, have done research on insurance provision in developing countries. Udry (1994) conducted a year long study in Zaria Nigeria primarily investigating ex ante mechanisms used by risk-averse households to minimize the variance in their income. The primary focus was to determine how state-contingent loans affect risk-pooling strategies. Udry (1994) found that borrowers and lenders engaged in risk pooling through state-contingent loan repayments. He found that one of the primary incentives to borrowing in agricultural societies was to smooth consumption when faced with fluctuating income. It was shown that individuals borrow more when they are faced with adverse shocks and lend more when they are in a more favorable position. (Udry, 1994).

A more recent study conducted by Townsend, Gine and Vickery (2008) centered on rainfall insurance in India. With the apparent increase in insurance markets in the developing world there is a need for mechanisms for smallholder farmers to hedge against agricultural risk such as drought, disease and commodity price fluctuations. Extreme weather patterns tend to affect all households in a community thus rendering risk-sharing activities ineffective. Townsend *et al's* (2008) research focused on a rainfall insurance product that was offered to smallholder farmers in Andhra Pradesh, southern India.

Townsend *et al* (2008) attempted to identify the determinants of household insurance take-up and investigate the reasons why some households were unable to participate in this insurance market. The results showed that households that planted a large amount of the crops on which the contracts were based were more likely to purchase the insurance policy. Take-up rates were higher in wealthier households and lower in households that were credit constrained. The results suggest the lack of take-up was due to individuals being uncertain or lacking understanding of the insurance product therefore lowering their trust in the vendor and purchasing less insurance. (Townsend *et al*, 2008).

FinMark Trust conducted a study in 2007 assessing risk management amongst the poor. The aim was to identify the underlying principles of micro-insurance in the lower income segment in South Africa. A third of the respondents stated that they had some form of

insurance. Those with no formal insurance had alternatives they used when faced with loss such as buying new items with their own money, taking out loans or buying on the second hand market. Others stated they would have to start over if they experienced loss. (FinMark Trust, 2007). FinMark Trust's (2007) research is interesting as it gives a clear picture of the perceptions of people regarding insurance. Respondents appeared to understand the concept of insurance and had the opinion that if you can afford insurance "it would make life easy" (FinMark Trust, 2007).

The primary reasons stated for taking out insurance for those who had it was mainly because it was offered to them by the sales assistant at the retail store where they purchased the item, it was a requirement of the bank (for example when taking out a home loan) and because some were aware of the risk and products available to protect themselves. (FinMark Trust, 2007). On the other hand, where people did not have insurance it was because they were unaware of the benefits, it was seen as unaffordable, they viewed their possessions as not being of significant value, it was not seen as the norm or culture and because of a lack of general knowledge related to insurance (FinMark Trust, 2007).

1.5 Concluding Remarks on the Literature

The literature presented above highlights the importance of SMEs in the South African economy, contributing significantly to GDP and employment. Insurance is suggested to be a possible measure to protect SMEs and ensure sustainable development. The theoretical background on how insurance works is provided to understand the benefits of insurance. Individuals purchase insurance because they are risk averse and use it to deal with uncertainty. Research suggests that low-income markets are under-insured. Several explanations are provided from the demand- and supply-side; examples include lack of knowledge about insurance and asymmetric information respectively. Risk mitigation strategies are implemented when insurance is not available. The South African government has acknowledged the growing market for micro-insurance and is formulating appropriate regulation to support it.

There is limited empirical research on insurance provision to the informal and low-income markets. From the limited empirical research discussed above three conclusions can be drawn. Firstly, risk averse households in developing countries have adopted their

own risk mitigation strategies. To minimize income variance individuals engage in risk pooling exercises through borrowing and lending (Udry, 1994). Secondly, the factors that determine insurance take-up were identified and conclusions about the lack of take-up (due to uncertainty, lack of understanding and lack of trust) and which individuals are more likely to purchase insurance (wealthier households) were made (Townsend *et al*, 2008). Lastly, the perception of lower income households regarding insurance is identified (FinMark Trust, 2007).

The question that remains is how does insurance affect a firm's performance and what are the factors that affect a person's decision to take up business insurance. The literature highlighted several reasons for individuals taking out insurance. Most importantly it is because individuals are risk averse. Individuals purchase insurance if their wealth is at least that of what it would be if no insurance is purchased (Mas-Colell *et al*, 1995). Individual risk-mitigation strategies can and are adopted by lower income households, however it has been found that they provide inadequate protection and are weak (Morduch, 1999). The literature thus shows that there should be a demand for business insurance by SMEs. This research is therefore relevant as it attempts to gain insight on the provision of business insurance to SMEs in South Africa. Two questions are addressed in the paper: Firstly, what are the determinants of business insurance take-up by SMEs, and secondly, to examine the effect that business insurance has on firm performance. Through answering these two questions one is able to identify the market for business insurance and determine whether it impacts firm performance and growth.

2. Data and Methodology

2.1 Data

The data for the study was obtained from the FinScope Small Business Survey conducted in 2010. FinScope was setup by FinMark Trust to study how consumers view financial services on a sample in South Africa. It studies the roles of both the informal and formal sector in financial markets. The objectives of the survey were to describe the size and scope of the small business sector and to identify development and financial needs of different segments to use as a baseline for later intervention (FinScope, 2010). It also

aimed at looking into the levels of financial inclusion and to determine what barriers existed in this sector (FinScope, 2010).

FinScope conducted 5676 face-to-face interviews with business owners. The sample of businesses interviewed was representative at the national, provincial and urban-rural level (FinScope, 2010). Sampling was conducted on a primary and secondary basis. The former selected 1000 businesses using a probability proportional to size approach identifying the enumerator area, while the latter chose households within the enumerator area matching the selection criteria (FinScope, 2010). Respondents were then selected at random from the qualifying sample and six interviews on average were conducted in each enumerator area (FinScope, 2010). Data from the survey however does not include weights. Data is usually weighted to make statistics from the data set more representative of the true population; it helps to compensate for potential over-sampling or under-sampling and disproportionate stratification (Population Research Institute, 2008). Unfortunately no weights were made available or constructed for the survey.

Business insurance is the key variable of interest, consisting of both business and portable insurance. Business insurance includes insurance for: business contents such as office equipment, specialized tools and machinery, property/structure of business premise, accidental damage of goods in transit, legal assistance, crop insurance, loss of earnings insurance, professional indemnity cover and liability. Portable effects insurance includes: cell phone insurance and jewelry, camera and watch insurance. Portable insurance is included in business insurance as it covers cellphone insurance, which is likely to play a significant role in business operations.

To investigate the SME sector in South Africa the data is manipulated in three distinct ways. Firstly, cross-tabulations are used to generate the summary statistics. The second approach is to determine what factors determine the probability of business insurance take-up in this sector. This was done using a probit model. Lastly, the effects of business insurance on firm performance are investigated. The firm's monthly turnover is used as a measure of firm performance.

2.2 Methodological Approach

Probit models are appropriate to use when one is dealing with the probability of an event occurring- in this case the probability of SMEs in South Africa purchasing business insurance. The decision to take up insurance depends on an unobservable utility index, known as a latent variable, determined by one or more explanatory variables (Gujarati *et al*, 2009). The explanatory variables used here include both individual (the owner of the SME) and firm characteristics that may influence whether an SME has business insurance or not. If the SME has business insurance the dependent variable will equal 1, if not it will equal 0. What is of interest in this research is to determine what factors affect business insurance take-up in order to establish the market for business insurance and to identify issues that need to be dealt with in order to promote insurance to SMEs.

In this research a probit model is used to examine the effect of individual- and firm-specific characteristics on the probability of having business insurance. The probit model is setup as follows:

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$INSUR^*_i$ will equal 1 if $INSUR_i^* > 0$, indicating that the business owner holds some business insurance and will equal 0 if $INSUR_i^* = 0$. Individual and firm characteristics are used to determine the likelihood of taking up business insurance. The individual characteristics are captured in and include: gender, race, age, marital status, education, income[4] and life and funeral insurance. The firm characteristics are represented by and include: size of the firm (using number of full-time paid employees as the measure for firm size), how the firms' premises were acquired, year the firm began (as a measure of the firm's age), province, area, net profit, turnover[5] and business function[6]. The disturbance term is , where ~N $(0, \sigma^2)$.[7]

[4] 30% of the sample refused to answer or did not know what their personal income was. Income was a categorical variable where respondents were asked what bracket their personal income fell in, thus in order to form a continuous variable the mid-point of each income bracket was taken. The levels of personal income are the owner's monthly personal income.

[5] Net profit and turnover are the SME's monthly rates.

[6] The referent variables for the dummies were as follows: gender- female, race- African, marital status- married, education- degree, how the premises were used- owned, province- Gauteng, area- urban formal and business activity- selling something in the same form it was bought.

[7] Multicollinearity may be present in the probit model, independent variables may be correlated with one another. This may be used to explain any differences in coefficients of the variables across different specifications.

From the literature review it is clear that low-income individuals and firms- including SMEs- face serious adverse shocks that may affect their business dramatically. It is suggested that taking out insurance cover would allow these firms to mitigate the risk they are faced with and in the event of a negative shock the firm will not necessarily lose everything and will continue to perform its key functions. This however, is mere speculation and in order for firms to be interested in purchasing business insurance they will want to know if it would in fact improve their business performance.

In an attempt to determine whether business insurance improves firms' performance, a general multiple regression was used with the log of turnover as the dependent variable measuring firm performance.

The performance regression is:

The above regression attempts to identify what are the key factors that affect the performance of SMEs in the sample. The log of turnover is used as the measure of firm i's performance. The key variable of interest in this research is , the coefficient of business insurance of firm i (BUS_i), to determine how take-up of business insurance affects turnover, if it does at all. The other explanatory variables are controlling for individual and firm characteristics that may affect firm performance. The individual characteristics include: gender ($GEND_i$), race ($RACE_i$), education (EDU_i) and income (INC_i); and the firm characteristics include: number of employees ($EMPL_i$), whether the premises used are owned, rented or used for free ($PREM_i$), year the firm began ($YEAR_i$) the province ($PROV_i$) and area ($AREA_i$) the firm operates in and what the primary business activity is ($SELL_{ji}$ and $SERV_{ji}$)[8].

The level of education of the SME owner is included because one would expect that with a higher level of education would positively impact firm performance measured by

[8] The referent variables are the same as they are in the probit model.

turnover because of the skills and expertise acquired through education. The year the firm began is used as a measure of the age of the SME, it is expected that older firms, being more established in the industry thus having more knowledge and understanding about the market, perform better than new firms and would have a positive impact on turnover. The number of full-time paid employees is included as a measure of firm size in an attempt to identify whether larger or smaller firms are likely to perform better. How the premises are acquired (owned, rented or used for free) may impact the firm's operations and consequently affect performance- for example if the premises are rented there may be restrictions of trade placed on the firm. Business activities are divided into sale and service activities. Sale activities include selling products: in the same form they are bought, after adding value, from nature, grown, received for free, from livestock and from animal by-products. Services include: professional, skilled, construction, tourism and other services. Depending on the firm's business activity the level of turnover may differ.

There is of course the potential problem of endogeneity in the above formulation. The problem arises because of the potential simultaneous relationship between turnover and business insurance. On the one hand, turnover is likely to increase the probability of an SME owner purchasing business insurance. Firms with higher turnover perform better and have more to lose if faced with an unfavourable shock and have the means to purchase business insurance to protect their firm. On the other hand, business insurance is likely to increase turnover because insurance acts as an added security and the firm will not necessary face large setbacks if adverse situations arise. Therefore business insurance is potentially correlated with the error term, violating a key assumption of ordinary least squares (OLS) that explanatory variables must be exogenous or uncorrelated with the error term. This renders OLS results inconsistent and the coefficient of interest is no longer unbiased. (Greene, 2008).

A strategy that can be employed to deal with the problem of endogeneity is instrumental variables (IV)- a valid instrument for business insurance must be identified. From the data set two potential instruments that could be used are identified. Marital status is the first instrument using it as a measure of risk aversion, if a person is married they are likely to be more risk averse than someone who is not and would thus have a higher probability of purchasing business insurance. A person's marital status will not affect a

firm's turnover. This however does not appear to be a fully plausible instrument as risk aversion is not necessarily the primary reason behind a person getting married.

The other instrument identified, and preferred, is whether a person has funeral cover or not. Individuals with funeral cover are likely to have a similar risk-averse utility function to those with business insurance. Funeral cover is used a proxy for risk aversion and risk aversion is a good instrument for the take-up of business insurance. In South Africa funeral cover is the most common form of insurance policy held by low-income individuals and may be the gateway into the insurance market for this segment. Demand for funeral cover is pronounced in the lower income population and SME owners are likely to fall into this segment with the average personal income of SME owners being R4432.56 per month. Individuals with lower levels of income are often very risk-averse because they have very little and if they are faced with unfavorable situations they stand to loose everything and seek to protect themselves from uncertainty. Individuals hedge themselves against adverse shocks through purchasing insurance. Funeral cover is purchased because of the uncertainty of the timing of death, while business insurance is purchased because of the uncertainty of being faced with adverse situations that may be detrimental to the operations of the SME. Correlation between funeral cover and business insurance is therefore expected. Funeral insurance has no effect on a firm's turnover. Therefore both instruments satisfy the two requirements of instrumental variables: correlation between the explanatory variable and the instrument and no correlation between the instrument and the error term (Greene, 2008).

The process of instrumental variables occurs in two stages and is known as two stage least squares (2 SLS). In the first stage part of the explanatory variable, business insurance, that is uncorrelated with the error term is isolated- business insurance is regressed on the identified instruments and other individual and firm characteristics from the main regression and a predicted value for BUS_i is calculated, $_i$. In the second stage $_i$ replaces BUS_i in the regression of interest and the dependent variable is then regressed on $_i$ and the other explanatory variables using OLS. The resulting estimate of the coefficient of $_i$ is known as the two stage least squares estimator and is a consistent estimator of the coefficient of BUS_i. (Greene, 2008).

The 2 SLS model is setup as follows:

FIRST STAGE

SECOND STAGE

The dependent variable in the first stage regression is business insurance and in the second stage it is the log of turnover (the measure for firm performance). The explanatory variables are the same as in the general regression, except $INSTR_i$ is included as the instrument for business insurance- martial status and funeral cover- in the first stage regression. Funeral cover is the main instrument of interest.[9]

3. Descriptive Statistics

The descriptive statistics are used to draw a clear picture of the sample and identify any trends that may be present. SMEs were defined in the survey as businesses whose owner was 16 years or older and with no more than 200 employees. A total of 5676 individuals were interviewed- see Appendix 1. From the sample, females were more likely to own an SME, as they represented 55% of the respondents. The majority of the sample was classified as African- 69%, 13% white, 11% Coloured and 7% Asian. The average age of the business owners in the sample was 42. The majority of the sample had either a Matric or some form of high school education, 39% and 29% respectively. 18% of the sample had an education lower than high school and 14% had higher than a Matric.

[9] There are several problems associated with IVs that should be acknowledged when using it. Examples of the downfalls of this method include high standard errors, the finite sample properties of IVs are problematic and weak instruments may also cause problems in the estimation. (Green, 2008)

The geographical location of respondents was relatively well spread with 20% from Gauteng, 16% from KZN, 13% from the Eastern Cape, 12% from the Western Cape, 9% from Limpopo and the North West, 8% from Mpumalanga and the Free State and 5% from the Northern Cape. The areas where the businesses were located were classified as follows: urban formal (60%), urban informal (8%), tribal (24%) and rural formal (8%).

On average the businesses were started 32 years before the survey was conducted- in 1978. This suggests that the SMEs that were surveyed are well established. Business activity in the sample population is dominated by three primary activities- selling something in the form it is bought (44%), selling something that the owner has added value to (11%) and rendering a skilled service (16%). The manner in which the SME uses the premises it operates from is also looked at. The majority of businesses, 60%, own the premises where they operate, 20% use the premise but pay no rent and 16% rent. The remaining 4% did not operate from specific premises.

3.1 Comparison of Individuals with and without Insurance

From the SMEs surveyed a quarter of respondents were noted to have some form of insurance. Of these 40% purchased business insurance. Tables 1 and 2 summarise the characteristics of the SME owners and the firms, comparing the baseline statistics of SMEs with business insurance to those without to give an indication of how the two groups differ from one another.

There appears to be no gender variation in the preference for insurance, as an equal share of women relative to men purchase business insurance. With regard to race, the findings are more interesting; 62% of the sample population that takes out business insurance is White, 21% African, whilst Asians accounted for 10% of the take up rate and 7% was attributed to Coloureds. What is most interesting is that approximately half of the White individuals surveyed have business insurance, only 3% of Africans, 15% of Asian and 7% of Coloureds. What accounts for this extreme race differential? Demand- and supply-side factors could account for it. A potential explanation could be that insurance companies' marketing strategies are not targeting or reaching the African population, therefore there is a limited supply to this segment. Additionally, insurance may not be widely accepted in African culture or understood, resulting in a low demand from this segment. Marketing

strategies may be targeting Whites or Whites may be more exposed to insurance and therefore have a greater understanding of the industry.

On average business owners taking out business insurance are older- 46 years old compared to the average age of individuals without insurance at 41 years old. Although the difference in age between the two is not substantial, it confirms the general perception that older people tend to be more risk averse. The vast majority of individuals who take out business insurance are married- 79%. This, in turn, could be due to the fact that people who are married tend to be more risk averse, they have at least one other person that depends on them and potentially more if they have children. Therefore they need to protect their business to ensure a steady income is made to support their family and taking-up business insurance serves as this protection.

36% of individuals with business insurance had a Matric, a quarter had a post-Matric qualification and 20% had a university degree. When looking at these figures one must keep in mind that from the total population surveyed only 4% said they had a university degree, while approximately 30% said they had a Matric. Thus, more than half of the individuals with a university degree had business insurance, whereas only 15% of Matriculants did. This suggests that more educated individuals are more likely to take out insurance for their business. Individuals with a university degree are more likely to be able to understand the technicalities of insurance contracts, have greater exposure to insurance and are likely to be aware of the benefits insurance renders.

The average monthly turnover and monthly net profit for a firm having business insurance is R59 415.89 and R24 103.95 respectively, compared to R7 634.32 and R2 699.10 for firms that have none. This is a massive difference and helps to show that insurance is not necessarily affordable to everyone and firms with business insurance are more likely to be successful ones in terms of net profit and turnover. It is apparent that business insurance varies depending on the firm's business activity. Reselling a product in the same form that it was bought is the dominant business activity in the sample, accounting for 44% of the sample surveyed. However, only 4% of firms selling goods in the form they were bought have business insurance. On the other hand a quarter of the sample insuring against business related issues was attributed to firms rendering a skilled service.

Of the individuals with business insurance 64% own the premises which they operate from while 29% rent their premises. If the individual owns the premises they have a vested self-interest to ensure their business, the premises and its assets are adequately protected because the cost of any loss or damage will be borne by them. On the other hand, if the place of business is rented, a legal obligation may exist requiring the lessee to maintain the premises or an altruistic motive may induce people to protect their work place even if it does not belong to them. Businesses categorized as urban formal were most likely to hold business insurance, with those denoted as urban informal, tribal and rural formal registering a mere 8%. This result is not surprising and could be expected.

Funeral and life insurance are the most common types of insurance policies taken out by the lower income population in South Africa. Thus, it is a good idea to distinguish between business insurance and funeral and life insurance. As mentioned above, 40% of individuals who had any type of insurance had business insurance. The data indicates that 82% of the sample population with business insurance had funeral and life insurance too, suggesting a strong correlation between the two forms of insurance.

Kernel density functions are used to see the distribution of the log of turnover, the measure of firm performance. Refer to the Appendix 2 for several examples. It is clear from the graphs that turnover follows a bimodal distribution, having two local maxima. The distribution peaks first where the log of turnover is around four and then at a higher level of turnover. The first peak is a lot higher than the second peak in all the examples. A possible explanation for the bimodal distribution is that a large number of SMEs are clustered around a relatively lower level of turnover and then another group, the more successful in terms of performance, at a higher level of turnover. It is interesting to note that the level of turnover where the second peak occurs is higher for SMEs with business insurance than those without. There is no obvious explanation for the sudden and sharp decrease after the first peak; it could be attributed to an external error in the sampling.

The key findings from the descriptive statistics can be summarised as follows. No gender differentials are apparent; both are equally as likely to take out business insurance. Whites have the highest proportion of individuals with business insurance compared to the other races. Older and married individuals are most likely to hold business insurance, as are

individuals with a higher level of education. Firms with a higher net profit or turnover are more likely to have business insurance. Depending on what the firm's business activity is will determine whether they hold business insurance and firms rendering a skilled service are the most likely to have business insurance. If the premises where the firm operates are owned or rented then there is a higher likelihood of those firms holding business insurance. The last point to be highlighted is that high percentage of people who have both funeral and life insurance and business insurance.

4. Results

4.1 The Determinants of Insurance Take-Up

The results from the probit model, found in Table 3, show what factors determine whether a business owner had business insurance or not. Three specifications are used; the first (column 1) is a probit model with all firm and individual characteristics included, the second (column 2) looks at African owned SMEs only and the third (column 3) looks at individuals with a Matric and above as their level of education only. The results show a number of individual and firm characteristics that impact on the probability of taking-up business insurance.

The first specification shows race as a prominent factor in the determination of the probability of business insurance take-up. Whites and Asians have a positive coefficient and are statistically significant, suggesting a higher probability that White and Asian SME owners will purchase business insurance relative to their African counterparts. The coefficient for Coloureds is insignificant, making them no more or less likely to purchase business insurance. Funeral and life insurance are positive and statistically significant at 1%, which suggests that individuals with funeral and life insurance have a higher probability of having business insurance than those without.

Education is another variable that appears to have an impact on business insurance take-up. The results show that business owners with a level of education of a Matric or below have a significantly lower probability of having business insurance than their counterparts with a degree. The results are statistically significant at 1% if the individual has completed

primary school or if they have some high school and it was statistically significant at the 10% level for individuals with Matric. Owners who had no schooling or some primary schooling are omitted because they predict failure perfectly. Results were statistically insignificant for individuals with an apprenticeship or a post-Matric diploma, suggesting that they were not more or less likely to have business insurance than their counterparts with degrees.

The coefficient for personal income of the business owner is positive and statistically significant, implying that individuals with higher personal income levels have a higher probability of purchasing business insurance. The number of employees is statistically significant at 1% and net profit at 10% suggesting that the probability of having business insurance is higher for larger firms or firms with higher net profit. An interesting result is owners who use the premises they operate from without paying rent have a higher probability of having business insurance than their counterparts who own the premises they work from.

KZN and the North West are the only provinces that are statistically significant, both at 5%, they have a lower probability of holding business insurance compared to their counterparts in Gauteng. The other provinces showed statistically insignificant results. None of the business activities performed by SMEs in the sample are statistically significant, suggesting that irrespective of the nature of the firm's operations they were not more or less likely to hold business insurance.

The two other specifications are used as a comparison to the first, in order to verify the results from the first specification- looking at Africans only and individuals with Matric level education and above only. Columns 2 and 3 in Table 3 show that most of the results are unchanged but there are a few factors that are now statistically significant in the light of the different specifications that were not apparent in the first case.

With regard to the specification dealing with Africans only two variables become statistically significant. Firms that do not use the premises they work from in a conventional manner (for example rent or own) represented by 'not applicable' is now statistically significant at the 10% level. Firms operating in rural formal area are now statistically significant at the 5% level. A number of variables are no longer statistically

significant in this specification namely: certain levels of education (primary school completed, some high school and Matric), net profit, the North West province and tribal area.

The last specification (individuals with Matric or above) renders the same results as the first specification, although some levels of significance may differ. The only difference between the two specifications is that firms operating in rural formal areas are now statistically significant at 10%. Therefore the last specification reinforces the results found in the first specification.

The above highlights key individual and firm characteristics that determine the purchase of business insurance. Firstly, race is a significant factor determining business insurance. Whites and Asians are significantly more likely to purchase business insurance than Africans. This suggests that Whites and Asians are likely to have a greater understanding about business insurance or that insurance companies focus their marketing towards them rather than towards Africans. The African segment from this sample was large and therefore it is important for the insurance company to reach them. Education is another contributing factor to business insurance take-up; less educated SME owners are less likely to purchase business insurance than owners with a degree. This supports earlier expectations that higher educated individuals are more likely to be more aware of insurance and be more knowledgeable about the industry. Insurance companies need find a way to educate firm owners about the importance of what business insurance is and how it will benefit the SME. Personal income of the SME owner is another significant determinant of business insurance take-up, owners with higher levels of personal income purchase more business insurance. This suggests that insurance is not necessarily available to everyone and one must have the means to purchase it.

Two prominent firm characteristics of SMEs are: size and net profit. Larger firms purchase more insurance because these firms have potentially more to lose than smaller firms. However, a large number of SMEs only had one worker in the firm and could be an important segment for insurance companies to target. Net profit is a significant determinant of business insurance take-up; higher levels of net profit increase the probability of purchasing insurance.

4.2 Insurance Take-Up and Firm Performance

The OLS regression in Table 4 is used to verify the relationship between turnover and business insurance. The relationship is examined to identify whether more SMEs would benefit, in terms of firm performance, if they were insuring some of their key business assets or not. Thus the most important result lies in examining the coefficient of business insurance. Two specifications are used, the first separates business activities into two groups: sales and services while the second specification looks at the business activities individually. This is done to verify whether there is a difference in results when the activities are grouped or tested individually. The results show a strong positive relationship between turnover and business insurance. Some of the other factors affecting turnover are worthy of noting as well.

The male coefficient is positive and significant, suggesting that male owners earn higher turnover than females. The only race coefficient that is statistically significant is for Coloureds and is positive, suggesting Coloureds earn more turnover than Africans. The coefficients for no schooling and some primary schooling are negative and statistically significant at 1% and 10% respectively, implying that individuals with these levels of education have lower turnover than business owners with degrees. Personal income of the SME owner is also positive and significant- higher personal income renders higher turnover for the firm.

The older and larger the firm the higher its turnover, this result is highlighted in the coefficients for the number of full-time employees and the year the SME started being both positive and significant. Several of the business activities are statistically significant including: selling something the owner has made, selling something from nature, selling something grown, rendering a skilled service and rendering a professional service. All the statistically significant activities are negatively related to turnover compared to selling something in the same form it was bought. When the business activities are grouped into sales and service neither of the variables is statistically significant.

There are statistically significant results found regarding the location of the SME. Five of the coefficients of provinces are significant, with Free State, Western Cape and Limpopo being negative and Northern Cape and KZN being positive- compared to their counterparts in Gauteng. SMEs in rural formal areas have a negative and statistically

significant coefficient, implying that turnover for these firms is lower than for firms in urban formal areas.

As noted above, endogeneity is likely to arise in the OLS regression and 2 SLS approach is used as an attempt to control this endogeneity. Two alternative specifications are used- each with a different instrument. Marriage is used as an instrument in the first specification and funeral cover in the second (see Table 5). The main focus is on the estimation using funeral cover as it is a more appropriate instrument and the results for the first IV are just briefly mentioned. In the first stage of the estimation being married is statistically significant at 5% and is positively related to business insurance. This supports the argument that individuals who are more risk averse and are more likely to hold business insurance. In the second stage of the specification business insurance is not statistically significant, implying that it has no relationship between business insurance and firm turnover.

Now looking at the second estimation, using funeral cover to instrument for business insurance. It is argued that there is no correlation between funeral cover and firm turnover. In the first stage regression the coefficient of funeral cover is positive and statistically significant and the F statistic, 211.676, is above the critical value at the 1% level, therefore confirming that funeral cover is a valid instrument. The positive and significant coefficient of funeral cover suggests that the more funeral cover a business owner has the more business insurance they will purchase.

In the second stage the coefficient for business insurance is positive and significant at 1%, confirming that SMEs with business insurance have higher turnover. The results are fairly consistent with those of the OLS regression; with a few exceptions- some of the exceptions are mentioned (refer to table 5 for all the results). The coefficient for Asians is now statistically significant and positively related to turnover compared to Africans. The coefficient for some primary school is no longer statistically significant. SMEs located in a tribal area are now significant and positively related to turnover compared to firms in urban formal areas.

The above estimations show that business insurance positively impacts firm performance, if business insurance is purchased turnover will be higher. This is a key

result of the paper. The purchase of risk mitigation instruments significantly improves turnover of SMEs in South Africa. This suggests that if SMEs have access to business insurance and are willing and able to purchase it they are likely to perform better than a firm with no business insurance. Business insurance may be one way to support and protect SMEs and boost the economy.

5. Conclusion

Micro-finance is a growing area in development literature with extensive literature available on micro-credit but very little has been done on micro-insurance. This paper attempts to identify the determinants of business insurance take up by SME owners in South Africa. Key determinants of the likelihood of having business insurance obtained from the probit specifications include individual characteristics such as the owner's race, education and personal income, and whether the owner purchased funeral and life insurance. Firm's size and net profit were also found to be determinants of business insurance take-up. The research was extended and looked into how business insurance affects firm performance. The results of the research showed a positive and statistically significant relationship between business insurance and firm turnover. These results suggest that business insurance acts as a good risk mitigation instrument for SMEs, and is a key determinant of firm growth and performance.

There is room for further research. Firstly, because the data set was available for one period only (2010) there is likely to be omitted variable bias in the results. Panel data taken over a longer time period would help control for omitted variable bias and produce more accurate results. One could also look into the supply-side of the story, identifying why many insurance companies do not see SMEs as a large target market and whether insurance companies even regard them as potential customers. Lastly, one could investigate why the take-up rate is low for SMEs. Is it because marketing strategies are wrong or do business owners merely lack adequate education?

6. Tables

6.1 Descriptive Statistics

6.1.1 Table 1: SME Characteristics, by Insurance Preference (A)

		Have Business Insurance	No Business Insurance
Age of Owner	Mean	46	41
	Standard Deviation	13.73	12.34
Personal Income	Mean	18444	3166.58
(Rands per month)	Standard Deviation	16554.70	5252
Turnover	Mean	59415.89	7634.32
(Rands per month)	Standard Deviation	237078.10	53831.75
Net Profit	Mean	24103.95	2699.10
(Rands per month)	Standard Deviation	141750.90	22142.48
Year SME Started	Mean	1917.27	1978.46
	Standard Deviation	233.80	220.50
Size of SME	Mean	5.4	0.5
	Standard Deviation	0.99	1.75

Source: Own Calculations from FinScope Survey 2010

6.1.2 Table 2: SME Characteristics, by Insurance Preference (B)

	NO BUSINESS INSURANCE		HAVE BUSINESS INSURANCE		
	Number of People	Percentage (%)	Number of people	Percentage (%)	T-statistic
TOTAL	5088		588		
GENDER					
Male	2252	44,26	295	50,17	-2.7289
Female	2836	55,74	293	49,83	2.7289
RACE					
Black	3812	74,92	123	20,92	28.7763
Coloured	557	10,95	42	7,14	2.8444
Asian/Coloured	337	6,62	58	9,86	-2.9254
White	382	7,51	365	62,07	-42.5544
MARITAL STATUS					
Married	2423	47,62	466	79,25	-14.8009
Single	1752	34,43	70	11,90	11.1988
Living with someone	406	7,98	12	2,04	4.6097
Divorced	97	1,91	18	3,06	-1.8820
Widowed	368	7,23	17	2,89	3.9688
Seperated	42	0,83	1	0,17	1.7355
EDUCATION					
None	148	2,91	0	0,00	4.1964
Some Primary School	395	7,76	0	0,00	7.0337
Primary Completed Completed	522	10,26	6	1,02	7.3358
Some High School	2136	41,98	71	12,07	14.3348
Matric	1436	28,22	214	36,39	-4.1369
Apprentice	61	1,20	36	6,12	-8.7791
Post Matric	288	5,66	144	24,49	-16.6949
University Degree	102	2,00	117	19,90	-22.2351
PREMISES					
Own	3007	59,10	377	64,12	-2.3477
Rent	751	14,76	171	29,08	-8.9755
Use it (no rent)	1123	22,07	21	3,57	10.6919
Other	3	0,06	1	0,17	-0.9611
Not Applicable	204	4,01	18	3,06	1.1229
PROVINCE					
Eastern Cape	675	13,27	52	8,84	3.0405
Free State	417	8,20	28	4,76	2.9346
Gauteng	949	18,65	188	31,97	-7.6795
KZN	833	16,37	59	10,03	4.0030
Limpopo	497	9,77	38	6,46	2.5984
Mpumalanga	438	8,61	34	5,78	2.3506
Northern Cape	243	4,78	40	6,80	-2.1384
North West	456	8,96	40	6,80	1.7558
Western Cape	580	11,40	109	18,54	-5.0283
AREA					
Urban Formal	2846	55,94	543	92,35	-17.4937
Urban Informal	459	9,02	13	2,21	5.6776
Tribal Area	1362	26,77	8	1,36	13.8584
Rural Formal	421	8,27	24	4,08	3.5845
BUSINESS ACTIVITY					
Sell in same form bought	2405	47,27	92	15,65	14.9067
Sell and add value	601	11,81	32	5,44	4.6540
Sell something made	271	5,33	39	6,63	-1.3199
Sell something from nature	72	1,42	2	0,34	2.1762
Sell something got for free	50	0,98	6	1,02	-0.0876
Sell livestock	137	2,69	9	1,53	1.6853
Sell by-products	114	2,24	5	0,85	2.2284
Sell something grownn	223	4,38	19	3,23	1.3086
Professional Service	33	0,65	77	13,10	-21.5568
Skilled Service	768	15,09	149	25,34	-6.4133
Construction Service	60	1,18	30	5,10	-7.2415
Tourism Service	30	0,59	52	8,84	-16.2431
Render other services	324	6,37	76	12,93	-5.8989
FUNERAL AND LIFE INSURANCE					
No	4308	84,67	106	18,03	42.1585
Yes	780	15,33	482	81,97	-42.1585

Source: Own Calculations from FinScope Survey 2010.
Note: The t-statistics represents the equivalence in means between the individual and firm characteristics in the sample of SMEs with business insurance on the one hand and no business insurance on the other.

6.2 Results

6.2.1 Table 3: Determinants of Insurance Take-Up

		I (Probit)		II (Probit- African-Owned SMEs)		III (Probit- SME owners with a Matric and above)	
	Dependent variable = Insurance take-up	Marginal Effect	Std. Error	Marginal Effect	Std. Error	Marginal Effect	Std. Error
INDIVIDUAL	Male	-0.0026	0.0041	0.0002	0.0017	-0.0084	0.0149
	Coloured	-0.0010	0.0068			0.0317	0.0363
	White	0.0594***	0.0172			0.1494***	0.0365
	Asian/Coloured	0.0470***	0.0182			0.1537***	0.0462
	Age of owner	-0.0003	0.0002	0.0001	0.0001	-.0011	0.0007
	Single	-0.0077	0.0051	-0.0007	0.0019	-0.0299	0.0185
	Living with someone	0.0139***	0.0049	-0.0030*	0.0018	-0.0460**	0.0209
	Divorced	-0.0089	0.0066	-0.0005	0.0039	-0.0215	0.0308
	Widowed	-0.0028	0.0077	0.0029	0.0048	-0.0381	0.0249
	Seperated	0.0093	0.0139	0.0111	0.0253	0.0434	0.1576
	Primary Completed Completed	-0.0172***	0.0052	-0.0034	0.0023		
	Some High School	-0.0217***	0.0087	-0.0014	0.0036		
	Matric	-0.0122*	0.0065	0.0002	0.0035		
	Apprentice	0.0155	0.0198	0.0139	0.0225		
	Post Matric	0.0059	0.0104	0.0099	0.0116		
	Income	9.72e-07***	0.0000	2.60e-07**	0.0000	3.28e-06***	0.0000
FIRM	Full time employees	0.0025***	0.0007	0.0007*	0.0004	0.0079***	0.0021
	Turnover	9.83e-09	0.0000	-2.68e-08	0.0000	3.67e-08	0.0000
	Net Profit	1.43e-07*	0.0000	8.73e-08	0.0000	3.50e-07	0.0000
	Rent	-0.000642	0.0048	0.0004	0.0022	0.0022	0.0173
	Use it (no rent)	0.0148***	0.0048	-0.0044**	0.0020	-0.0486***	0.0187
	Not Applicable	-0.0044	0.0083	-0.0030*	0.0017	0.0083	0.0402
LOCATION	Eastern Cape	0.0065	0.0062	-0.0019	0.0021	0-.0058	0.0291
	Free State	0.0092	0.0059	0.0038	0.0063	-0.0169	0.0277
	KZN	-0.0097**	0.0047	-0.0033*	0.0018	-0.0304	0.0190
	Limpopo	-0.0025	0.0084	-0.0020	0.0023	0.0142	0.0372
	Mpumalanga	-0.0069	0.0059	0.0006	0.0032	-0.0007	0.0281
	Northern Cape	0.00315	0.0100	0.0059	0.0093	0.0547	0.0518
	North West	-0.0119**	0.0048	-0.0017	0.0023	-0.0390*	0.0201
	Western Cape	0.0078	0.0082	0.0148	0.0105	0.0004	0.0238
	Urban Informal	-0.0017	0.0085	-0.0016	0.0019	0.0090	0.0397
	Tribal Area	-0.0113*	0.0064	-0.0027	0.0022	-0.0620***	0.0206
	Rural Formal	-0.0081	0.0063	-0.0039**	0.0016	-0.0434*	0.0226
BUSIESS ACTIVITY	Sell and add value	0.0078	0.0090	-0.0004	0.0027	0.0265	0.0333
	Sell something made	0.0092	0.0114	0.0071	0.0082	0.0352	0.0395
	Sell something from nature	-0.0033	0.0206			0.0041	0.0660
	Sell something got for free	-0.0072	0.0127	-0.0030	0.0020	0.0183	0.1010
	Sell livestock	0.0100	0.0081	-0.0028	0.0020	-0.0451	0.0313
	Sell by-products	0.0105	0.0079			-.01045	0.0515
	Sell something grownn	0.0019	0.0120	-0.0014	0.0038	-0.0115	0.0444
	Professional Service	0.0408	0.0321	0.0227	0.0331	0.1347	0.0829
	Skilled Service	0.0072	0.0070	0.0010	0.0026	0.0301	0.0240
	Construction Service	0.0111	0.0168	-0.0008	0.0037	0.0119	0.0458
	Tourism Service	0.0528	0.0355	0.0090	0.0175	0.1388	0.0856
	Render other services	0.0059	0.0089	0.0039	0.0051	0.0001	0.0263
	Funeral and life insurance	0.1146***	0.0167	0.0593***	0.0171	0.2203***	0.0290
	Number of Observations	3502		2472		1522	
	LR Chi2	1164.23		328.02		702.82	
	Prob > Chi2	0.0000		0.000		0.0000	
	Pseudo R2	0.5380		0.4557		0.4887	

Source: FinScope Survey Data 2010.
Notes: 1) * significant 10%, ** significant 5%, *** significant 1%.
2) The table reports probit results on the probability of business insurance take-up on a set of individual and firm characteristics.
3) Three specifications are used: the first with all the individual and firm characteristics, the second looking at African only and the last with individuals with a Matric and above only.

6.2.2 Table 4: Insurance Take-Up and Firm Turnover, OLS

	Dependent Variable=	I (OLS) Log Turnover Coefficient	Std. Error	II (OLS) Log Turnover Coefficient	Std. Error
	Constant	5.795872***	.6028437	6.037328***	0.513253
	Business Insurance	0.8466693***	.1559714	0.8820449***	0.1563711
	Male	0.1831345***	.0706721	0.2008428***	0.071807
	Coloured	0.3297336***	.130566	0.3013457**	0.1307468
INDIVIDUAL	White	0.4616956	.1481068	0.459186	0.1479311
	Asian/Coloured	-0.1711167	.1482097	-0.1182028	0.1489493
	Age of owner	0.0075463	.0129894	0.0073823	0.0130346
	Age of owner squared	-0.0000746	.0001416	-0.0000613	0.000142
	No Schooling	-0.8074659***	.3059358	-0.8329304***	0.3106718
	Some Primary School	-0.4380813*	.2532621	-0.4943314*	0.258752
	Primary Completed Completed	-0.3353995	.2438929	-0.4178525*	0.2500034
	Some High School	-0.2286403	.221204	-0.3162064	0.2281202
	Matric	-0.0650352	.216577	-0.1517079	0.2246336
	Apprentice	-0.3254418	.3335936	-0.41301	0.337112
	Post Matric	0.1555971	.2388435	0.06139	0.2463593
	Income	0.0000578***	5.44e-06	0.0000598***	5.55e-06
	Full time employees	0.0102983*	.0059877	0.0102372*	0.0060227
	Rent	0.0409279	.1024556	0.0498295	0.1024992
FIRM	Use it (no rent)	0.1322909	.0894105	0.1798917**	0.0905557
	Other use	-0.525052	1.224096	-0.4393568	1.221941
	Not Applicable	-0.0970573	.1841465	-0.0484973	0.1848887
	Year Started	0.0003991**	.0001817	0.0003678**	0.0001817
	Eastern Cape	-0.0339767	.1266215	-0.030418	0.1266299
	Free State	-0.7569744***	.1625808	-0.7322095***	0.1631688
	KZN	0-.3915832***	.1208064	-0.3731531***	0.1208582
LOCATION	Limpopo	-0.2372461*	.1457746	-0.2613723*	0.1459769
	Mpumalanga	0.1857076	.1391631	0.1916257	0.1392121
	Northern Cape	0.5112828***	.1824884	0.5408392***	0.1825708
	North West	0.1275313	.1429052	0.0789698	0.1433399
	Western Cape	-0.2337907*	.1340695	-0.2271701*	0.1340007
	Urban Informal	-0.0545454	.1310744	-0.0456034	0.1309811
	Tribal Area	0.1547989	.097306	0.2051842**	0.0979908
	Rural Formal	-0.2714788**	.1345409	-0.2457715*	0.1345042
	Sell and add value			0.0803149	0.113939
	Sell something made			-0.4011669***	0.1529279
	Sell something from nature			-0.1849238**	0.326154
	Sell something got for free			-0.6456865	0.3081339
BUSINESS	Sell livestock			-0.2324484	0.2137528
ACTIVITY	Sell by-products			0.2912856	0.2388007
	Sell something grownn			-0.6266256***	0.1750118
	Professional Service			-0.6315487*	0.3288042
	Skilled Service			-0.1829943*	0.1032209
	Construction Service			-0.3574067	0.2842362
	Tourism Service			-0.4858703	0.3574563
	Render other services			-0.1912425	0.147703
	Sales	0.0987754	.3250242		
	Service	-0.0503496	.329287		
	Number of Observations	3922		3922	
TEST STATISTICS	F-Statistic	(34, 3857) = 15.8		(44, 3877) = 12.92	
	R-squared	0.1214		0.1259	
	Adjusted R-squared	0.1137		0.1180	

Source: FinScope Survey Data 2010.
Notes: 1) * significant 10%, ** significant 5%, *** significant 1%.
2) The table reports results from ordinary least squares on the probability on a set of individual and firm characteristics to identify the effect of business insurance on firm performance.
3) The dependent variable is the log of turnover.

6.2.3 Table 5: Insurance Take-Up and Turnover, IV Estimates

	Dependent Variable =	III (IV- married) First Stage Business Insurance Coefficient	Std. Error	Second Stage Log Turnover Coefficient	Std. Error	IV (IV- Funeral Cover) First Stage Business Insurance Coefficient	Std. Error	Second Stage Log Turnover Coefficient	Std. Error
	Constant	0.0584269	0.0530514	5.900493***	0.573867	0.0289893	0.0513381	6.013977***	0.5119012
	Business Insurance			3.943768	4.651718			1.40455**	0.6842748
	Male	-0.0153615**	0.0073789	0.2450533**	0.1005352	-0.0112676	0.0071813	0.2083876***	0.0721411
	Coloured	0.0043721	0.0134322	0.2841163**	0.1387586	-0.0051439	0.0130969	0.2984054**	0.1302356
	Asian/Coloured	0.0604151***	0.0152791	0.2608847	0.3382764	0.0754548***	0.0147784	0.4253444***	0.1534839
	White	0.237809***	0.0148564	-0.8555504	1.130286	0.2253358***	0.014452	-0.2440366	0.21850650
	Age of owner	0.0042045***	0.0013939	-0.0081604	0.0272307	0.0037386***	0.0013044	0.0047298	0.0134119
	Age of owner squared	-0.0000478***	0.000015	0.0001088	0.0002978	-0.000046***	0.0000142	-0.0000323	0.0001461
INDIVIDUAL	No Schooling	-0.1444663***	0.0318189	-0.3834986	0.7553315	-0.112472***	0.0310757	-0.7562315**	0.3244244
	Some Primary School	-0.154069***	0.0264436	-0.0224958	0.7655033	-0.1249702***	0.0258436	-0.4138092	0.2773435
	Primary Completed Completed	-0.148111***	0.0255506	0.036213	0.7370399	-0.1126876***	0.0250156	-0.3403629	0.2678202
	Some High School	-0.1481594***	0.0232939	0.1386386	0.7304078	-0.1217967***	0.0227706	-0.2385837	0.2477673
	Matric	-0.1372769***	0.0229515	0.2687761	0.6800284	-0.114833***	0.0224166	-0.0799492	0.2416591
	Apprentice	0.0041898	0.0346034	-0.4278454	0.3520747	0.0173544	0.0337261	-0.4155418	0.3356703
	Post Matric	-0.0337199	0.0252982	0.1585608	0.2961384	-0.0165531	0.024656	0.0779729	0.2462043
	Income	8.60e-06***	05.53e-07	0.0000332	0.0000407	7.78e-06***	5.41e-07	0.0000552***	07.99e-06
	Full time employees	0.0045552***	0.0006139	-0.0037109	0.0220892	0.0045649***	0.0005981	0.0078568	0.0067212
	Rent	-0.0005029	0.0105264	0.0536725	0.10698860	-0.000155	0.0102514	0.0504853	0.1020596
FIRM	Use it (no rent)	-0.0188592**	0.0093305	0.2435159*	0.1350573	-0.0149247*	0.0090598	0.1907496**	0.0912213
	Other use	-0.0737865	0.1254558	-0.1925805	1.32754	-0.0577484	0.1222124	-0.3972426	1.217844
	Not Applicable	-0.0127755	0.0189806	-0.0066815	0.2028899	-0.0136868	0.0184899	-0.0413611	0.1843143
	Year Started	3.20e-06	0.0000187	0.0003579*	0.00019	4.80e-06	0.0000182	0.0003661**	0.0001809
	Eastern Cape	-0.0127253	0.0130004	0.0108486	0.1460981	-0.0107846	0.0126641	-0.0233756	0.1264019
	Free State	-0.0197228	0.0167459	-0.6728294***	0.1924842	-0.0145808	0.0163194	-0.7220759***	0.1629766
	KZN	-0.0276331**	0.0124005	-0.2865569	0.1820864	-0.0226062*	0.0120855	-0.3583748***	0.1218026
	Limpopo	-0.0068803	0.0149957	-0.2443992	0.154311	0.001483	0.0146072	-0.2584757*	0.1453928
LOCATION	Mpumalanga	-0.0206153	0.0142896	0.2571711	0.1759455	-0.0123962	0.0139326	0.2028115	0.1393424
	Northern Cape	0.0237702	0.0187404	0.4707646**	0.2180109	0.0005045	0.0183205	0.5288804***	0.1824201
	North West	-0.0330319**	0.0147041	0.1812891	0.2155356	-0.025542*	0.0143364	0.0964314	0.1444469
	Western Cape	0.0035087	0.0137562	-0.2395411*	0.1409191	0.0094591	0.0134067	-0.2292813*	0.1334486
	Urban Informal	0.0038831	0.0134444	-0.0569226	0.1375921	0.0034051	0.0130996	-0.0475351	0.1304382
	Tribal Area	-0.0050699	0.0100585	0.2215575**	0.1051128	0.0029082	0.0098163	0.2079784**	0.0976323
	Rural Formal	-0.0030277	0.013806	-0.2359973*	0.1409698	0.0028986	0.0134585	-0.2441035*	0.1339397
	Sell and add value	0.0108557	0.0116943	0.0462818	0.1295086	0.0130932	0.0113948	0.0745069	0.113688
	Sell something made	0.0216083	0.0156936	-0.4682401***	0.189147	0.0166424	0.0152951	-0.4126134***	0.1529649
	Sell something from nature	-0.0034887	0.0334786	-0.6007557	0.3283174	-0.0117422	0.0308169	-0.6380187**	0.3069577
	Sell something got for free	-0.015499	0.0316291	-0.1722924*	0.3404731	-0.0069055	0.0326198	-0.1827681	0.3247558
	Sell livestock	0.0091527	0.0219537	-0.2657438	0.228447	0.004208	0.0213821	-0.2381305	0.2129522
BUSINESS	Sell by-products	-0.0243965	0.0245133	0.3626747	0.2714689	-0.0293018	0.0238837	0.3034687	0.2382755
ACTIVITY	Sell something grownn	0.0150487	0.0179763	-0.6775288***	0.1981047	0.0154701	0.0175015	-0.6353126***	0.1746071
	Professional Service	0.1676557***	0.0336429	-1.143722	0.8498332	0.1704213***	0.0327809	-0.7189549**	0.3458381
	Skilled Service	0.025651**	0.0105873	-0.2610318*	0.1600431	0.0227332**	0.0103174	-0.196312*	0.1041685
	Construction Service	0.0699372**	0.029162	-0.5765829	0.4455463	0.0582113**	0.0284199	-0.3948107	0.2869991
	Tourism Service	0.1889788***	0.0365731	-1.059917	0.9479049	0.1734913***	0.0356425	-0.5838356	0.3772007
	Render other services	0.0266857*	0.0151546	-0.2728257	0.1975936	0.0177085	0.014779	-0.2051653	0.1481324
	IV- Married	0.0171202**	0.007843						
INSTRUMENTS	IV- Funeral Cover					.1462486***	.0100521		
	Number of Observations	3922		3992		3922		3922	
TEST STATISTICS	F-Statistic (44, 3877)	58.09				65.88			
	R squared	0.3973		0.0416		0.04278		0.1253	
	Adjusted R squared	0.3905				0.4213			
	Wald Chi2 (44)			494.64				545.41	

Source: FinScope Survey Data 2010.
Notes: 1) * significant 10%, ** significant 5%, *** significant 1%.
2) The table reports results from two-stage IV regression- using funeral cover as an instrument for business insurance.
3) The dependent variable is the log of turnover.

7. Appendices

7.1 Appendix 1: Total Sample Characteristics

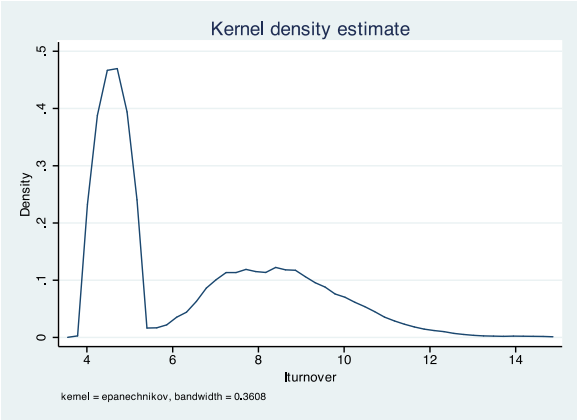
Characteristic	Number of People	Percentage (%)
Gender		
Male	2547	44,87
Female	3129	55,13
Race		
Black	3935	69,33
Coloured	599	10,55
Asian/Indian	395	6,96
White	747	13,16
Education		
None	148	2,61
Some Primary School	395	6,96
Primary School Completed	528	9,30
Some High School	2207	38,88
Matric	1650	29,07
Apprenticeship	97	1,71
Post Matric	432	7,61
Degree	219	3,86
Business Activity		
Sell in same form bought	2497	43,99
Sell and add value	633	11,15
Sell something made	310	5,46
Sell something from nature	74	1,30
Sell something got for free	56	0,99
Sell livestock	146	2,57
Sell by-products	119	2,10
Sell something grownn	242	4,26
Professional Service	110	1,94
Skilled Service	917	16,16
Construction Service	90	1,59
Tourism Service	82	1,44
Render other services	400	7,05
Province		
Eastern Cape	727	12,81
Free State	445	7,84
Gauteng	1137	20,03
KZN	892	15,72
Limpopo	535	9,43
Mpumalanga	472	8,32
Northern Cape	283	4,99
North West	496	8,74
Western Cape	689	12,14

Source: FinScope Survey Data 2010.

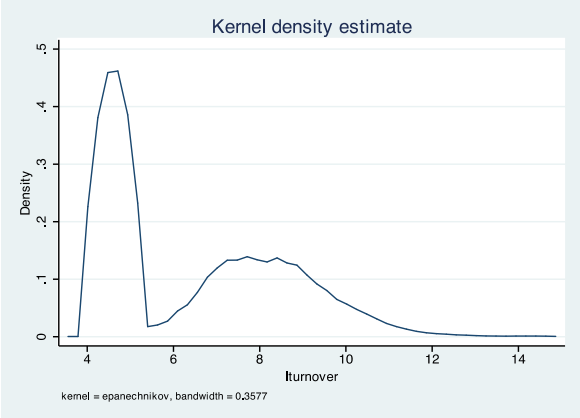
7.2 Appendix 2: Kernel Densities

7.2.1 Log of Turnover

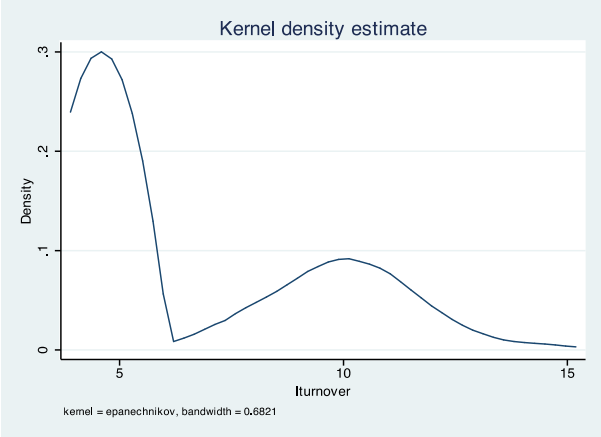
Log of Turnover



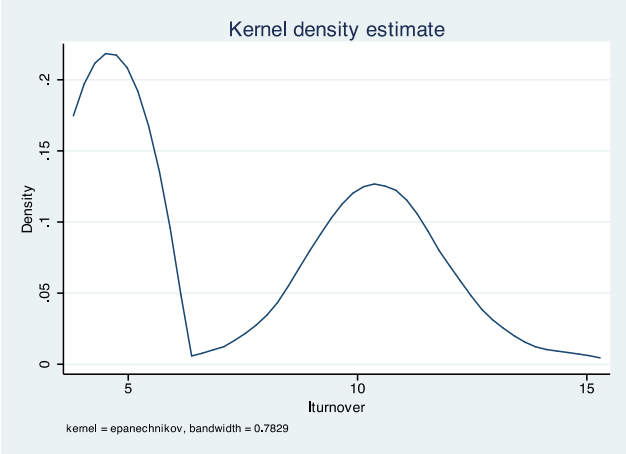
Log of Turnover for African Owned SMEs



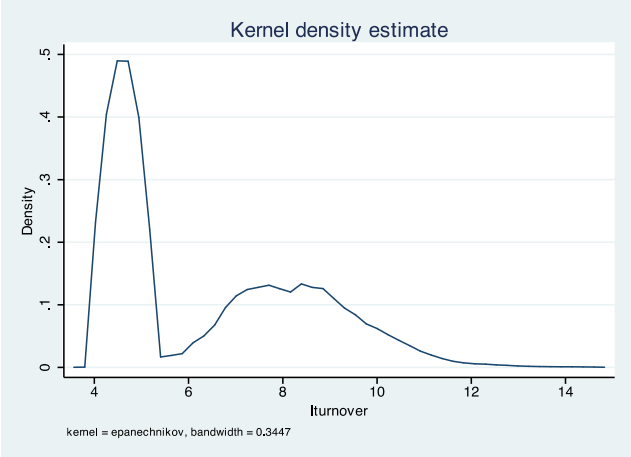
Log of Turnover for White-Owned SMEs



Log of Turnover for Business Insurance



Log of Turnover for no Business Insurance



Source: FinScope Survey Data 2010.

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