UNIVERSITY OF CAPE TOWN

FACULTY OF COMMERCE

The Determinants of Microinsurance Demand in South Africa.

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A Minor dissertation submitted in partial fulfilment of the

requirements for the degree of Master of Commerce

In the School of Economics

University of Cape Town

2023

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Acknowledgement

I would like to extend my gratitude to my supervisor Prof. Lukasz Grzybowski for his continued guidance and support as I wrote this dissertation. My appreciation also goes to FinMark Trust for providing the data that made this research possible.

Abstract

Low-income households face significant risk that influence their financial decisions and perpetuate poverty. This population group is adversely affected by illnesses, natural disasters, unemployment, and accidents than other groups because, among other things, they lack proper insurance. Microinsurance was introduced as a revolutionary tool with the potential to prevent poverty traps and offer reliable and affordable risk mitigation options to the poor. By providing replacement revenues in the event of insured losses and boosting positive outcomes, microinsurance can significantly reduce the welfare costs related to uninsured risks. Over the years, the take up rate of microinsurance have been low and declining. The study seeks to shed light on the determinants of microinsurance demand in South Africa.

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1.0 INTRODUCTION

People experiencing poverty face significant risks, influencing their financial decisions and perpetuating poverty (Banerjee et al., 2014). Low-income households are particularly vulnerable to losses incurred in the wake of adverse events. This population group is more severely impacted by adverse events such as unemployment, accidents, and illnesses than other groups because, among other things, they lack proper insurance. Eling et al. (2014) note that low-income individuals often rely on financial assistance from friends, family, and relatives. However, these transfers are often insufficient to meet their needs. In the context of developing countries, microinsurance is acknowledged as a vital instrument for social protection, aiming to mitigate poverty (Arun et al., 2012). According to Dercon et al. (2012) the provision of microinsurance can yield substantial reductions in the welfare costs associated with uninsured risks. It achieves this by offering substitute income in cases of insured losses, thereby fostering favorable socioeconomic outcomes.

Microinsurance was introduced as a revolutionary tool with the potential to prevent poverty traps and offer reliable and affordable risk mitigation options to the poor (Dercon et al. 2012). Although microinsurance is a component of the larger insurance market, it stands out due to its emphasis on the low-income market, which frequently requires specialized distribution channels and products (Bester et al., 2009). Microinsurance reduces the need for expensive coping mechanisms for low-income individuals when an insured risk occurs.

While there is no generally accepted definition of microinsurance, according to Churchill (2002), microinsurance refers to insurance specifically designed for individuals from low-income backgrounds who have limited access to traditional insurance options and lack other ways of managing risk. However, Bester et al. (2009) note that microinsurance is not exclusive to individuals living below the poverty line. The definition of low-income individuals should encompass individuals above the national or global poverty line who are just as much excluded from the formal financial sector. Giesbert et al. (2011) state that microinsurance is meant to provide coverage for individuals with limited savings and is specifically tailored to protect lower-value assets and provide compensation in case of illness, injury, or death.

Microinsurance has made progress over the years in solving challenges such as limited coverage and difficulty meeting the needs of specific populations, that are present in the traditional insurance market (Dror & Eling, 2021). However, microinsurance is not just about making traditional services more affordable for low-income individuals; it focuses on developing customized solutions that meet a target population's specific coverage needs and financial resources. According to Churchill (2002) microinsurance is insurance that targets groups of people not covered by traditional insurance systems due to a lack of knowledge, resources, or financial means. It provides specialized products that cater to these individuals and allows them to obtain insurance against various risks, based on their ability to pay premiums.

Finscope survey data in 2014 and 2015 indicates that funeral policies are the most widely adopted microinsurance scheme in South Africa. The social norm that necessitates extravagant funerals fuels the demand for funeral microinsurance, which is why it dominates the industry. The unexpected expenses associated with funerals can place a significant financial burden on households, especially during periods of hardship. A study by Case et al. (2013) using data from South Africa revealed that the cost of an adult funeral can reach the equivalent of a year's income for some households.

Funeral insurance in South Africa is geared towards individuals and families with lower incomes and may be exploited due to their lack of financial knowledge. Additionally, the industry is largely unregulated, it includes organizations such as burial societies and funeral homes (Dercon et al., 2006);(Case et al., 2013);(Berg, 2018) . This type of insurance is popular in the country because funerals can be costly, and many people may not have the means to pay for them. Funeral insurance can provide financial assistance in the event of a death and help cover the funeral expenses without having to dip into savings or take out loans.

Another reason funeral insurance is popular in South Africa is that it is often easier to obtain than other types of insurance, such as life insurance. Furthermore, funeral insurance policies generally have fewer exclusions and less stringent eligibility requirements, making them more accessible to a broader range of people (Berg, 2018). In addition, funeral insurance may be particularly appealing to people who are worried about leaving their loved ones with a financial burden after they pass away. By purchasing funeral insurance, individuals can help ensure that their funeral expenses are taken care of, and their families will not have to bear the financial burden of arranging and paying for the funeral.

1.1 Problem Statement

South Africa faces a significant disparity in access to financial products and services, with the high-income segment well served and the low-income demographic often excluded. A study conducted by True South Actuaries and Consultants in 2019 revealed that roughly 60% of low-income households in South Africa lack life insurance, leaving their families financially vulnerable in the event of their demise. Despite the introduction of microinsurance products tailored for low-income households, the adoption of non-life and non-funeral life insurance among this population remains limited. According to the Financial Sector Conduct Authority (2022), only 42% of South African adults report having some form of microinsurance. However, these statistics are somewhat deceptive, as funeral cover constitutes the majority of microinsurance product uptake. Excluding funeral cover, the coverage dwindles to a mere 19% of the South African population.

The low demand for microinsurance has prompted researchers to conduct empirical investigations to untangle the myriad factors influencing this demand. Existing literature has delved into critical factors, including, pricing, credit constraints, trust, financial literacy, and the effects of informational campaigns, as elucidated by Clarke (2016). However, a notable gap exists in empirical research concerning the determinants of microinsurance within the South African context. Most prior studies on microinsurance in South Africa primarily revolve around its impact on household welfare. Notably, Alhassan & Magazi (2021) find that microinsurance contributes to the improvement of welfare in South Africa, reinforcing the need for a comprehensive examination of the determinants of microinsurance demand in this setting. This study seeks to enrich the literature by focusing on the demand-side determinants of microinsurance in South Africa, a critical endeavor for fostering greater adoption and coverage within this segment.

1.2 Research Question

This study seeks to provide answers to the following research question:

- What are the determinants of microinsurance demand in South Africa?

1.3 Research Objectives:

The primary objective of this study is to examine the cross-sectional determinants of microinsurance demand among individuals in South Africa. Specifically, the study aims to:

1. Determine the effect of economic factors on the demand for microinsurance in South Africa.
2. Determine the effect of personal and demographic factors on the demand for microinsurance in South Africa.
3. Determine the effect of structural factors on the demand for microinsurance in South Africa.

The hypotheses of this study posit that various influential factors are associated with microinsurance demand in South Africa. These determinants encompass a range of socio-economic variables, such as income and educational levels, alongside cultural factors like societal attitudes and norms, particularly concerning funeral practices. Additionally, the study suggests that the accessibility of alternative financial services may wield substantial influence over the patterns of microinsurance demand. Through empirical analysis, this research endeavors to shed light on the precise determinants and their respective significance in shaping the landscape of microinsurance demand within the South African context. The study will use the Finscope Surveys conducted in 2014 and 2015 for the empirical analysis (FinScope, 2014, 2015).

The rest of the paper is organized as follows. Section two presents the history and an overview of the microinsurance market in South Africa. Section three provides an in-depth theoretical and empirical review of the literature on the determinants of microinsurance demand. Section four provides a discussion of the data, econometric model, descriptive statistics, and a discussion of the results from the probit regressions. Finally, section five is the conclusion and policy recommendations.

2.0 MICROINSURANCE INDUSTRY

2.1Nature of and Trends of the Insurance Industry in South Africa

Microinsurance has a long history in South Africa, even before it became widespread globally. Despite insurance companies not officially basing their policies on race during apartheid, their

advertising and marketing practices often excluded black people and other minorities. To fill this gap, informal financial markets emerged, with burial societies and funeral homes being the most notable examples. These informal systems offered coverage and benefits, usually in the form of funeral services, in case of the death of their members without any guarantee.

With the end of apartheid in 1994, the South African government and civil society organizations pressured the financial sector to extend its services to the previously underserved low-income population. Subsequently, informal sector workers and lower-ranking government employees gained better access to alternative risk management methods, starting in the early 2000s.

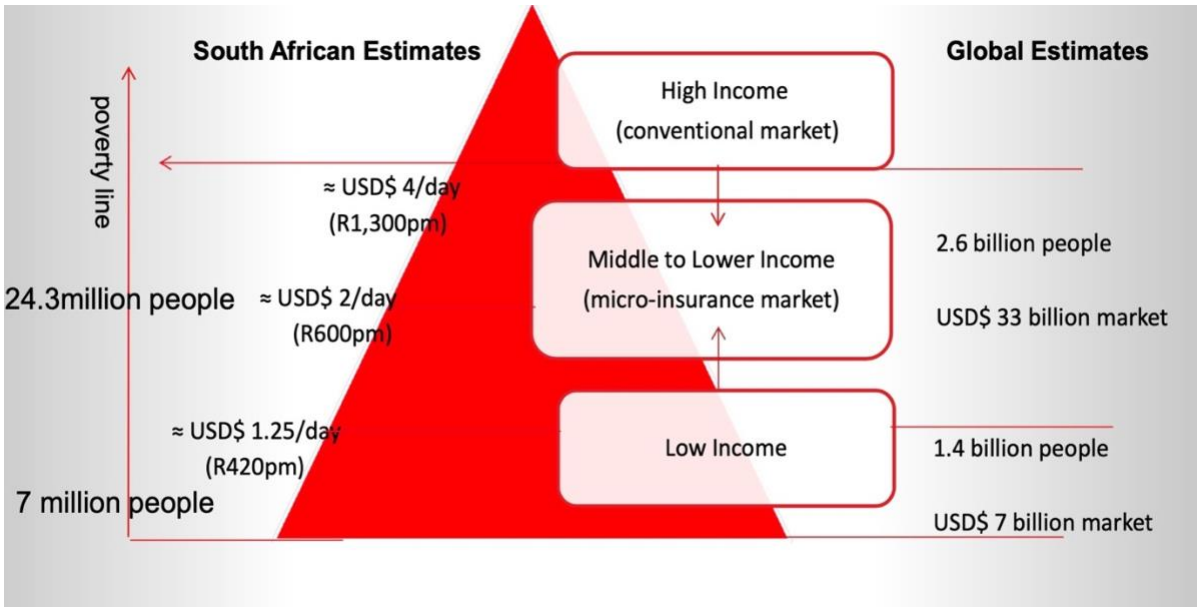
In 2004, the Financial Sector Charter (FSC) was introduced in South Africa to transform the financial sector into a more diverse and equitable industry aligned with the nation's demographics. The charter set specific targets for the financial sector to ensure greater accessibility of insurance products for low-income individuals. By 2014, insurance companies were mandated to provide access to short-term (non-life) insurance for 6% of the low-income population and long-term (life) insurance for 23%, in line with the FSC's access targets.

Responding to the FSC's principles of appropriateness, affordability, fair value, physical access, and simplicity, the insurance industry introduced product standards named Mzansi and Zimele for short-term and long-term products, respectively. Mzansi standards primarily offered coverage for home and personal property for those in the LSM1-5 category. On the other hand, the Zimele standards were geared toward long-term insurance, providing standardized offerings for life cover, funeral insurance, credit life, personal disability, and pure life (Chamberlain et al., 2011). In recent years, key legislation has been passed to encourage the adoption of microinsurance. For example, the Insurance Act 18 of 2017 established a legal framework for microinsurance intending to promote the establishment of a fair, safe, and stable microinsurance market.

While South Africa exhibits commendably high traditional insurance penetration rates in Africa, it faces the stark reality of elevated poverty and inequality levels (Bester et al., 2009). Microinsurance policies, which currently cover only a small fraction of impoverished individuals, have witnessed a substantial increase in adoption across South Africa in recent years (Microinsurance Network, 2022). Several nations have experienced annual growth rates of over 10% in microinsurance enrollment (Microinsurance Network, 2022). Simplifying

microinsurance accessibility is paramount, with mobile phone technology emerging as a pivotal tool for reaching rural populations (Theo & Abou, 2017). On a global scale, the microinsurance market caters to approximately 2.6 billion economically active individuals, with 24.3 million situated in South Africa (World Bank, 2012). Figure 1 below shows the global microinsurance estimates compared with South African estimates.

Figure 1:Global Microinsurance estimates compared to South Africa.



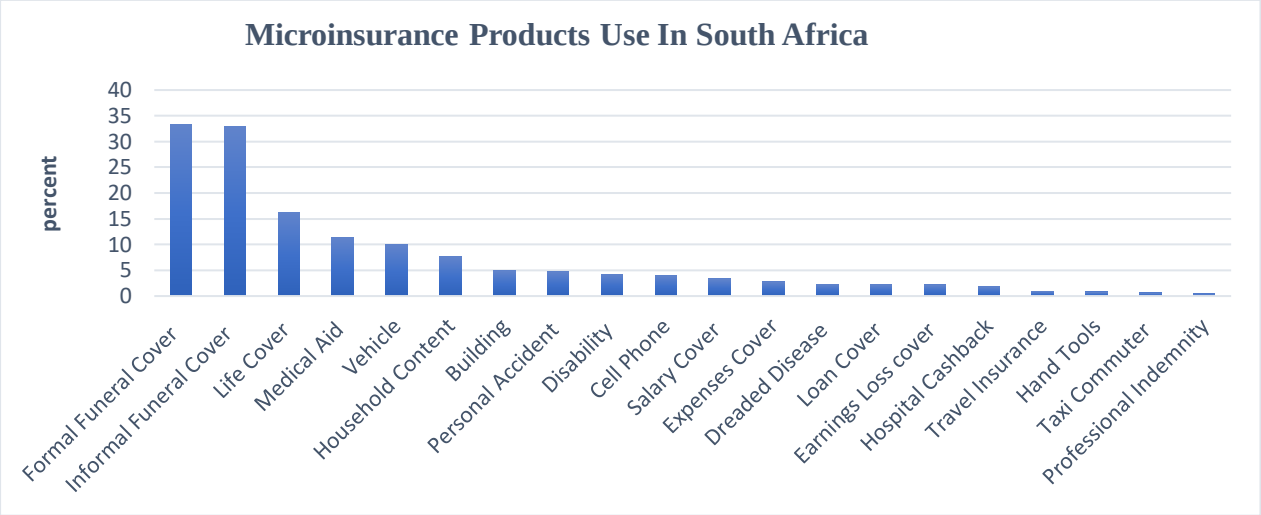
Source: (Oyekan, O. 2014)

Despite South African residents' awareness of the significance of insurance, their actions often do not align with this understanding. National Treasury data reveals a notable disparity between the perceived importance of insurance and the actual steps taken by individuals to protect themselves from various risks (Theo & Abou, 2017). Furthermore, a mismatch exists between the risks considered most important to insure against, such as income loss or job insecurity, and the prevalent types of insurance policies in the market, particularly funeral coverage (Theo & Abou, 2017).

In South Africa, several insurance companies have introduced microinsurance products specifically designed to be affordable and accessible to low-income individuals and households. These microinsurance offerings encompass a variety of essential coverage options, including funeral cover, life insurance, medical aid, as well as vehicle and household content microinsurance policies.

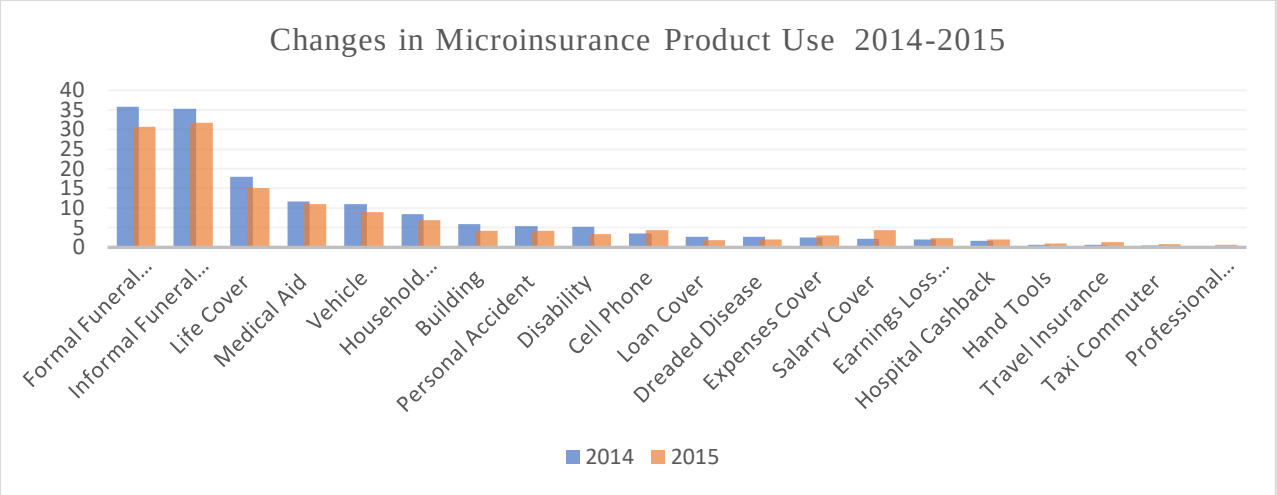
Figure 2 below shows the use of the different microinsurance products in South Africa. By far for informal and informal funeral cover are the most popular microinsurance products in South Africa with 35% and 33% of respondents in both the 2014 and 2015 Finscope surveys reporting having used funeral cover at one point. Figure 3 tracks the changes in microinsurance use between 2014 and 2015. It is noticeable that there was a decrease in the use of microinsurance across all products. Although this paper primarily examines the determinants of microinsurance demand, it does not aim to extensively investigate the factors contributing to the decrease in microinsurance usage between the two years. It is worth noting that while no definitive explanation for this decline has been identified, it has been suggested by FinScope South Africa, (2015) that issues related to product quality and affordability may have played a role. In addition, their data analysis reveals that up to 10% of survey respondents in 2015 considered cancelling their policies citing credit constraints as a major reason. The finding brings to question what role liquidity constraints have on the demand for microinsurance in South Africa.

Figure 2: Microinsurance Product use in South Africa



Source: Author's computation from Finscope 2014 and 2015 Survey Data

Figure 3: Changes in Microinsurance use 2014-2015



Source: Author's computation from Finscope 2014 and 2015 Survey Data

2.2 Characteristics of the Microinsurance Market in South Africa

A key difference between microinsurance and traditional insurance is the size of the insured amount and the premium. For microinsurance, coverage limits and premiums are often low and remitted in instalments considering the lack of regular income streams for those who have been insured. The Policyholder Protection Rules (PPR) Microinsurance Product Standards outline the primary features of microinsurance in South Africa, which include limiting policies to R 100,000 and R300,000 for life and nonlife insurance respectively; contract terms that do not exceed one year; waiting periods of three months; limiting benefits to risk only; and rider benefits that do not exceed 20 percent of the total primary insurance obligation (Ernest & Young, 2021). Other features include finalizing claims within two business days; no exclusions permitted except for non-funeral products; and uncapped commissions for all microinsurance products except credit life.

Four delivery modes exist for microinsurance in South Africa, which include the partner-agent, full-service, provider-driven, and community-based (mutual) models. The partner-agent model involves a partnership between the micro-insurer and an intermediary (an agent) wherein the insurer is tasked with designing and developing the insurance product and its underwriting while the agent markets and delivers the product to customers. In the full-service model the micro-insurer designs, develops, markets, and delivers the product. In the provider-driven model, policyholders pay premiums to service providers (such as hospitals) who design develop and deliver the service (Ernest & Young, 2021).

2.3 Regulatory Framework for Microinsurance

The Insurance Act, No. 18 of 2017 formalized microinsurance as a class of business in the country. Microinsurance in South Africa is regulated in the same way as Non-Life and Life Insurance, which occurs via the Long-term Insurance Act (LTIA), the Short-term Insurance Act (STIA) and the Insurance Act. The supervision of microinsurance providers is done by the Prudential Authority, who have also formulated standards for microinsurance. The Financial Sector Conduct Authority (FSCA) supervises microinsurance providers with respect to their conduct (Ernest & Young, 2021).

2.4 Distribution Channels of Microinsurance in South Africa

Brokers and agents play an important role in the delivery model, and mobile network operators (MNO) can sell microinsurance via USSD technology, making it available to low-income people (Ernest & Young, 2021). However, one key challenge distributors face is accessing new markets and innovative distribution strategies best adapted to the local contexts. Apart from agents and brokers, mass market channels such as MNOs, retailers, and funeral homes accounted for 44 percent of microinsurance product distribution in Africa and generated more premiums than any other channel type (Microinsurance Network, 2022). Further, South African insurance companies, including Sanlam, Old Mutual, Metropolitan, Liberty Life, ABSA, and Hollard, have expanded their operations to include microinsurance products tailored to the poor and lower-middle class (Microinsurance Network, 2022)

2.5 Need for and Evolution of Microinsurance

South Africa faces an alarming reality that many of its citizens lack access to the benefits offered by the financial service sector. As a result, the National Treasury embarked on an initiative to reform the financial services sector through prioritizing financial inclusion, especially in the insurance sector (Alhassan & Magazi, 2021). While South Africans appreciate the significance of personal risk insurance, this understanding is not reflected in their behavior in terms of the uptake of insurance. The low uptake indicates the need for affordable insurance products in the country. Providing affordable and better insurance products is essential for helping South Africans live a more fulfilling and safer life by increasing their wealth as well as being protected against unforeseeable risks (Ackerman, 2020). While banking focuses on transaction products, savings and credit, microinsurance focuses on risk management to address the need of low-income South Africans.

The majority of South Africans, particularly those having low incomes, are often excluded from the formal financial products and services market (Ackerman, 2020). This is ironic considering that low-income households have a higher exposure to unforeseen economic shocks. Additionally, low-income households have a higher likelihood of not recovering from the unexpected financial impacts of these economic shocks (Alhassan & Magazi, 2021). Low-income people also live in riskier environments; as a result, they are more susceptible to several threats in the form of illness, disability, accidental death, and fire in comparison to middle- and high-income persons (Ackerman, 2020). Furthermore, low-income persons have the least ability to cope when hit with a crisis and are least likely to have savings to cushion them against crises.

Microinsurance is deemed an ideal tool for addressing the risk and vulnerability of low-income households in South Africa. Microinsurance can provide financial security to these households, which can in turn break the poverty cycle (Alhassan & Magazi, 2021). Presently, low-income households use informal burial societies and stokvels as a way of mitigating financial risk in the event they experience an economic shock. However, these informal burial societies and stokvels leaves low-income households susceptible to unregulated financing schemes (Ackerman, 2020). Therefore, South Africans need to enjoy the benefits offered by a regulated, stable and inclusive financial services market.

3.0 LITERATURE REVIEW

3.1 Theoretical Models of Insurance Demand

3.1.1 Expected Utility

Expected utility theory is the standard and dominant theory of explaining choice under uncertainty. This theory is utilized as an analysis tool in situations where people need to decide without knowledge of outcomes that might occur as a result of the decision (Zamir & Teichman, 2014). The expected utility theory holds that people will select an action that yields the highest expected utility, which denotes the sum of the products of utility and probability over all the potential outcomes (Quiggin, 2012). The choice of the decision will also be influenced by the utility of other agents as well as the agent's own risk aversion.

The expected utility theory can be employed to explain the uptake of microinsurance. This theory likens the demand for insurance to the demand for certainty since insurance buyers

prefer certain losses to those that are equivalently uncertain (Zamir & Teichman, 2014). The expected utility theory posits that insurance is considered most valuable if it offers a mechanism for many people to each part with a small amount such that a large sum is available for few individuals who might need it. The alternative to insurance – savings – is inefficient since the money is shifted to the future whether or not one will need it (Quiggin, 2012). On the contrast, insurance offers people with money in the future when it is only needed, which makes it more efficient compared to savings. The expected utility theory also posits that risk averse agents are expected to purchase full insurance if and only if they are offered fair premiums that are equal to their expected losses.

According to the expected utility theory, individuals maximize their expected utility when purchasing an insurance product. A unique feature of this theory is the concept of risk aversion, which arises due to the concave nature of the utility function (Zamir & Teichman, 2014). A concave utility function simply implies diminishing marginal utility. Under the expected utility theory, risk-averse agents are willing to pay to receive a certain amount if the insured event occurs (Quiggin, 2012). The willingness to pay is what allows for the emergence of insurance markets. A shortcoming of the expected utility theory is that it does explain the anomalies in the demand-side of the insurance market. Platteau et al. (2017) argue that low-income households are more risk averse; therefore, one would expect a higher demand for insurance among poor households as predicted by the expected utility theory. However, Yan & Faure (2021) show that this is not the case since uptake and demand for microinsurance products remain low even after subsidization.

This is a key shortcoming of the expected utility theory since its prediction does not hold true when it comes to then uptake of microinsurance products by low-income households. Other anomalies that cannot be explained by the expected utility theory include increased likelihood of buying a disaster insurance following a disaster even if they wrongly believe that the current disaster lowered the probability of the next one, and people choosing low deductibles and failing to file a claim unless the loss incurred exceeds the deductible (Quiggin, 2012). These anomalies conflict with the propositions of the expected utility theory.

3.1.2 **Ambiguity Aversion**

The theory of ambiguity aversion was subsequently developed to address some of the shortcomings of the expected utility theory. Ambiguity aversion refers to agents' preference

for certain risks to uncertain/unknown risks (Koufopoulos & Kozhan, 2016). People who are ambiguity averse are more likely to select an alternative with a known probability distribution of outcomes than an alternative with unknown probabilities. This theory argues that individuals have a tendency of avoiding unknown situations in favor of what they know. While people might take risks, this theory argues that people do not like uncertainty; hence, are more likely to avoid decisions with uncertain outcomes or attempt to gather more information about the uncertain options (Bajtelsmit et al., 2015).

Ambiguity-averse agents dislike the uncertainty about the likelihood of events occurring and the distribution of outcomes (Ellsberg, 1961). Researchers such as Eling et al. (2014) claim that ambiguity aversion may lead to low demand for insurance. They argue that agents are faced with much ambiguity when purchasing insurance, such as the exact risk coverage of the insurance contract and whether the insurance company will pay claims. As a result, ambiguity-averse agents evaluate insurance contracts with little confidence in the possibility of insurers paying claims, thereby deciding against buying an insurance policy. While trustworthiness does lead to an increase in demand for insurance in the expected utility framework, it adversely affects demand under ambiguity aversion due to the very nature of ambiguity-averse agents.

3.2 Empirical Literature on the Determinants of Microinsurance Demand.

With the development of microinsurance markets, there has been an increase in the empirical literature on this market segment. However, many questions about the determinants of microinsurance demand remain unanswered. In the literature, four major categories of characteristics can affect the demand for insurance. Price, income/wealth, and credit availability are examples of economic factors. Sociocultural factors include risk aversion. Structural factors relate mainly to market structures. Personal and demographic factors, for example, bequest motives, age, gender, education, and household size. These elements can be used to describe how the microinsurance market operates using empirical research.

3.2.1 **Economic Factors**

Price: Several studies have been conducted to estimate the price elasticity of microinsurance in developing countries. Evidence from most studies show the negative effect of price on the demand of microinsurance. For instance, Bonan et al. (2014) conducted a field experiment to examine the determinants of willingness to pay (WTP) for health micro-insurance in Senegal. They gathered data from 360 randomly chosen households and analyzed it using ordinary least

squares (OLS) estimation and probit techniques. Bonan et al. (2014) reported that the proportion of individuals willing to pay for the health microinsurance increased as the bidding price reduced, which is consistent with downward sloping demand curve.

Similar negative effects of price on the demand of microinsurance was also demonstrated by Asmare & Worku (2018), who investigated the determinants of demand for microinsurance using cross sectional data collected from households in Jimma Zone, Ethiopia. The study employed a multinomial logistic regression model to analyze this data, which revealed that premium has a significant effect on the demand for microinsurance products including credit life, property, health, livestock and crop micro-insurance products. The findings showed a negative marginal effect of premium on the subscription of credit life and property micro-insurance. Surprisingly, the data showed that premium had a positive effect on the subscription of crop and livestock microinsurance, suggesting that low-income individuals purchase microinsurance products if they are fairly priced and meets their needs.

The negative effects of price on the uptake of microinsurance was also reported in a study conducted by Ndurukia et al. (2017), who examined the determinants of microinsurance demand in Kenya. The authors used cross sectional data and performed a regression and correlation analysis with OLS to assess the relationships between microinsurance demand and structural and economic factors. The findings showed that price had a significant negative coefficient as a determinant for microinsurance service. Like Bonan et al. (2014) and Asmare & Worku (2018), Ndurukia et al. (2017) demonstrated the negative impact of price/premium on the uptake of microinsurance services. An inference derived from the findings of Ndurukia et al. (2017) is that higher prices lessen the demand for microinsurance services. These findings underscore the need for balancing prices and affordability of microinsurance products.

In a study focusing on rural areas of two Indian states, Clarke (2016) investigated the significance of different obstacles to rainfall microinsurance demand. This research employed a randomized control trial involving discounts in microinsurance purchases. Their study finds that high microinsurance prices contribute to India's low demand for rainfall microinsurance. In a similar randomized evaluation of the effect of price and information campaigns on demand for life microinsurance, Bauchet (2014) finds that participants in life microinsurance are price sensitive. Specifically, they found that participants without the price subsidy were 11 percentage points less likely to demand life microinsurance. The subsidy used in this experiment was the addition of a free module in the insurance package.

In another study, Oberländer et al. (2014) studied health microinsurance demand in Burkina Faso by offering poor households a micro health insurance product at half the usual price. Their empirical results show that a fifty percent premium discount increased the probability of enrolment by approximately 10 percentage points. The authors, however, established that subsidization has only a limited effect on demand among poor households. Over time, there was limited uptake in rural areas, even with a fifty-percent subsidy. Hillebrecht et al. (2021) examined the effect of transaction costs on microinsurance demand. These authors investigated the properties of demand for micro health insurance in Burkina Faso after offering households the insurance product for half the normal price. Hillebrecht et al. (2021) used the fuzzy regression discontinuity design to determine the price elasticity of demand for micro health insurance. Their findings showed large price elasticities in urban households; however, demand for this insurance was found to be price inelastic in rural households. Taken together, it is evident that price exerts a significant influence on the uptake of microinsurance products. High prices appear to have a negative effect while lower prices can increase the uptake of these products.

Wealth/Income: Literature on microinsurance and level of wealth reveals a positive relationship based on the theoretical assumption that wealth provides higher levels of credit access, allowing for microinsurance purchases (Eling et al., 2014). The positive impact of income on the demand for health micro-insurance was demonstrated in a study by Bonan et al. (2014) who found that income and household wealth are positively linked to willingness to purchase health microinsurance. Data from this study showed that willingness to purchase health microinsurance is significantly higher in the fifth quintile and significantly lower in the first quintile. Moreover, the data showed a positive significant association between willingness to purchase health microinsurance and the degree of household wealth. The overall conclusion from Bonan's study was that wealthier and richer persons have a higher willingness to pay for health micro insurance.

The significant effect of wealth on the demand for micro-insurance was also established in a study by Asmare & Worku (2018). Results from this research showed that the level of monthly household income had a significant positive impact on the demand for microinsurance products in Jimma Zone, Ethiopia. The findings from this research showed that low-income households have a lower likelihood of subscribing to microinsurance products. Asmare & Worku (2018)

also reported that the majority of those who had not subscribed to microinsurance products had lower monthly income.

The positive impact of income on the demand of microinsurance was also reported by Bendig & Arun (2016) in Sri Lanka. Using a household survey data and analysis by multivariate probit models, Bendig & Arun (2016) showed that being unemployed or under-employed was negatively related to the uptake to micro health insurance but positively related to the demand of other forms of microinsurance. This relationship was explained by the lower income earning opportunities for those who are unemployed or under-employed, which translates to a lower willingness and ability to pay for microinsurance products. Moreover, Bendig & Arun (2016) reported that a higher asset endowment is positively associated with the likelihood of using micro health and life insurance. Households in the poorest quantile were reported to have a significantly lower likelihood of buying micro health and life insurance in comparison to those in the richest quantile.

Evidence on the positive effect of income on microinsurance uptake was provided by Segodi & Sibindi (2022), who sought to investigate the determinants micro life insurance in Brazil, India, China and South Africa (BRICS). The authors performed an econometric analysis of panel data for the 1999-2020 period. Their panel regression results indicated a statistically significant positive association between income level and the density of micro life insurance. The inference from this finding was that a higher level of income increases the demand for micro life insurance products. Moreover, the estimation results from their study showed that unemployment had a negative effect on the demand for micro life insurance (Segodi & Sibindi, 2022).

Another study by Dror et al. (2018) reported the positive effect of income on the uptake of micro health insurance in rural India. Dror et al. (2018) utilized household survey data and logistic regression to compare the estimated likelihood of a household joining a micro health insurance scheme. Their results showed that the likelihood of enrolling in the micro insurance scheme was lower in households found in the poorest quantile compared to the middle expenditure quintile households. Households in the rich quintile reported a higher likelihood of enrolling in the micro insurance scheme in comparison to the middle quantile.

Access to credit*:* Access to credit is another determinant that has gained attention in the literature. Ndurukia et al. (2017) provided evidence showing the positive effect of access to

credit on the uptake of microinsurance products. Access to credit had a positive regression coefficient as a predictor of the demand for microinsurance products. The findings indicates that the demand for microinsurance services was higher in respondents who had higher levels of access to credit in comparison to those with low levels of access to credit. Credit accessibility is associated with an increase in household wealth, which in turn is positively associated with increased uptake of microinsurance. Ndurukia et al. (2017) also highlighted the positive impact of income level on the uptake of microinsurance products in Kenya. Income level had a significant positive regression coefficient in the model.

Less wealthy households are credit and financially constrained at the onset of the agricultural season, which coincides with the ideal time to purchase rainfall microinsurance (Cole et al., 2013). Financially constrained households can choose between purchasing farming inputs and rainfall microinsurance at the start of the agricultural season. Therefore, even though the households may wish to purchase rainfall microinsurance, they cannot, due partly to credit constraints. Compared to the traditional insurance market, where insurance purchase is directly proportional to the level of wealth, in the microinsurance market, Cole et al. (2013) show that wealth acts as a signal of access to credit.

The question of whether access to credit affects microinsurance demand lacks a clear answer in both theory and empirical studies. Two slightly similar strands of thought exist; on the one hand, the theoretical model by Gollier (2003) posits that without access to credit, households are less able to smooth consumption in the event of a shock, and they may therefore place more weight on insurance to smooth income. Hence, theoretically, credit constraints should increase demand for microinsurance. On the other hand, it is reasonable to assume that shocks are more damaging to credit-constrained households because they lack sufficient funds to purchase insurance. Hence, if these households could afford to purchase insurance, they would.

Evidence from a randomized evaluation in India by Cole et al. (2013) supports the second strand of thought. They reported that the uptake of microinsurance policies increased by 140% in the experimental group that received cash incentives before making the decision to purchase microinsurance, suggesting that easing liquidity constraints can increase microinsurance uptake. It should be noted that the literature on access to credit and demand for microinsurance is divergent. Other studies have found little to no significant effect of credit constraints on the take up of microinsurance (Ito & Kono, 2010) (Karlan et al., 2014).

Savings: Savings, whether in cash or marketable assets, enable risk management like credit. Platteau et al. (2017) argue that savings are bounded by the amount saved and the opportunity cost of investment in relation to risk mitigation. Savings can play a role in the demand for microinsurance since they can enable households to cope with unexpected expenses or losses without needing insurance. Savings can, therefore, negatively impact the demand for microinsurance, as people may feel that they do not need the additional protection provided by the insurance. This is what Stein and Tobacman (2012) found in their study on the complementarity of savings and insurance; people preferred either pure insurance or pure savings products over a combination of the two. This points to the fact that complementarities between savings and microinsurance may not be important.

While having savings theoretically has the potential to boost the demand for microinsurance by providing individuals with the necessary financial resources, an empirical study conducted by Clarke et al. (2012) introduced an interesting twist. When investigating the demand for index insurance and health microinsurance alongside a group savings scheme, they discovered that participants in their experiment allocated a larger portion of their funds to the group savings scheme and reduced their investments in microinsurance.

3.2.2 **Structural Factors**

Premium Flexibility: Several studies have investigated whether offering flexible premium payments would encourage informal sector workers to buy microinsurance. In a randomized evaluation, Casaburi & Willis (2018) tested an insurance product that allowed farmers to pay at harvest in Kenya and found much higher take-up rates when farmers had this option. The results showed that demand was usually low at the beginning of the farming season because paying upfront was not feasible for farmers given their expected return. It is important to note that one of the challenges with pay-at-harvest insurance products may be enforcing the contracts, as default rates may be high.

Supply of Microinsurance Products: The supply of microinsurance products constitutes another structural determinant of the demand for these products. Asmare & Worku (2018) provided evidence showing the positive effect of the adequacy of microinsurance products and subscriptions to crop and property microinsurance products by Ethiopian households. The supply of microinsurance products is closely related to the delivery channel. The adequacy of

delivery channels for microinsurance products was positively associated with their uptake, especially for property, livestock, and credit microinsurance (Asmare & Worku, 2018).

Asymmetric Information in Microinsurance Markets: Just like traditional insurance, microinsurance is affected by the problem of asymmetric information. People who are at higher risk of making claims are more likely to buy insurance, this is known as the Rothschild & Stiglitz (1978) model of insurance with private information. As a result, there is a link between the likelihood of a risk occurring and the level of insurance coverage. Microinsurance is still a relatively new market and insurers may find it hard to evaluate risks, gather necessary data, and keep track of policyholders. Yan & Faure (2021) highlighted that this contrasts well-established insurance markets, where insurers use advanced contracts and risk management techniques to operate.

Microinsurance is often characterized by simple and standardized contracts, which helps to lower costs and makes microinsurance products appealing to low-income households. While contract standardization and simplification are essential for increasing uptake rates, Bauchet, Damon, & Hunter (2019) argue that it allows individuals to use private information to their advantage when getting into contractual relations with microinsurance providers. The contract standardization and simplification create a situation of asymmetric information. Two main challenges emanate from asymmetric information – adverse selection and moral hazard. The first involves ex-ante hidden information, where individuals seeking microinsurance products have private information about their risk propensity, which is unobserved by the insurance company. Therefore, the insurance company cannot calculate insurance premiums that reflect the accurate distribution of losses among the insureds. Moral hazard involves ex-post hidden information where the insurance company has no control over the behavior of the insured, which increases the probability of loss among the insured. Moral hazard persists in health microinsurance because the target customers have little experience with or understanding of formal healthcare services and insurance mechanisms (Zhang et al., 2021).

The effects of adverse selection and moral hazard may differ in microinsurance compared to traditional insurance markets. Customers buying health microinsurance may have less knowledge about their health risks than customers in more developed health insurance markets. People in developed markets may have regular medical check-ups and a good understanding of their health. In contrast, customers in health microinsurance programs may not be aware of their risk category and may not have received formal medical care. When someone with health

microinsurance claims inpatient care, the data will be updated, and the doctor will inform the insured if any future treatment options are available. Zhang et al. (2021) pointed out that while adverse selection may not be present during the first year of enrollment, it may occur in subsequent years, particularly in households where someone has a chronic illness.

3.2.3 **Demographic Factors**

Age and Marital Status: Inconsistent findings in the literature exist with respect to the impact of demographic factors on the demand for microinsurance services. On the one hand, demographic factors have been reported to be insignificant predictors of microinsurance demand. For instance, The impact of demographic factors on the uptake of microinsurance products. A study by Asmare & Worku (2018) reported that age and gender did not have a significant influence on the demand for microinsurance products in Ethiopia. While age had negative coefficients in the demand for credit life, property, health, livestock and crop microinsurance products, it was not a significant determinant. Similar insignificant findings were reported for gender. This study provided evidence show that gender and age are not significant determinants of microinsurance demand.

On the other hand, other studies show that demographic factors are significant determinants of microinsurance demand. A study conducted by Ndurukia et al. (2017) in Kenya showed that the age and gender have a positive impact on the demand for microinsurance. Age and gender had positive coefficients as predictors for the uptake of microinsurance. Another study by Bendig & Arun (2016) provided evidence that supported the significant effect of gender on the uptake of microinsurance products. The findings of Bendig & Arun (2016) showed that female leadership in a household has a positive impact on micro health insurance uptake in Sri Lanka. Households led by females were more likely to subscribe to micro health insurance compared to those led by males, which was attributed to the traditional roles of women that focuses on caregiving for the family. As a result, women tend to put more priority on health-related expenditure in comparison to men. Moreover, Bendig & Arun (2016) showed that marital status is a significant predictor of the uptake of micro health insurance. The authors reported a positive relationship between being married and subscription of micro health insurance. However, being married was found to have a negative effect on the uptake of other microinsurance forms.

Level of Formal Education and Financial Literacy: There is mixed evidence in the extant literature regarding the effect of education and financial literacy on microinsurance uptake.

Some studies demonstrate the positive effect of education on microinsurance uptake. Asmare & Worku (2018) showed the positive impact of financial literacy on the demand for microinsurance products. Data from this study indicated a positive relationship between financial literacy and subscription to crop, property, credit life, health and livestock micro insurance products. The same study showed similar significant positive effects of the level of education on subscription to microinsurance products. A higher level of education implies that individuals can comprehend the benefits of savings and risk administration, which increases their likelihood of purchasing microinsurance products. Similar findings showing the positive effect of education on the uptake of microinsurance were confirmed by Dror et al. (2018), who indicated that formal education of the household head was associated with a higher probability of enrolling in a micro health insurance scheme.

Other authors documented the negative effect of education on microinsurance demand. Further evidence on the positive impact of education on microinsurance uptake was provided by Bendig & Arun (2016), who examined the factors affecting these insurance schemes in Sri Lanka. These authors used household survey data and compared the characteristics of 240 households that had microinsurance subscriptions and 90 households that did not. The authors applied the multivariate probit model. Their findings showed that the level of education is a significant predictor of microinsurance uptake. Surprisingly, their data suggested that household heads who had no formal education or only primary or secondary education were significantly more likely to purchase health and life insurance compared to household heads who had tertiary or higher education. The implication of this finding is that heads having lower educational levels are not excluded from taking up microinsurance and are not less willing to pay for these products in comparison to highly educated heads. The results of Bendig & Arun (2016) contradict with the findings of Asmare & Worku (2018) who suggested that the concept of microinsurance is not well-understood by those having lower levels of education. Additionally, Bendig & Arun (2016) argued that people with lower education levels are more likely to have less income earning opportunities; as a result, they might be more incentivized to safeguard their families against risks like sickness or death.

The insignificant effect of education on microinsurance demand was reported by Savitha & Banerjee (2020). These authors conducted a cross sectional descriptive survey to determine the factors influencing the uptake of micro health insurance using the Three-stage least squares (3SLS) regression technique. Their findings indicated that the level of education did not have

a significant effect in influencing new purchases of micro health insurance. Instead, this decision was primarily influenced by experiencing illnesses. The inference was the decision to purchase micro health insurance was not influenced simply by being educated.

Koloma (2015) conducted a study in Burkina Faso examining crop microinsurance for farmers and found a positive correlation between education level and microinsurance uptake. The author suggests that the insured sample group was more likely to have taken up microinsurance because they quickly understood the microinsurance product and the risk of going uninsured. Similar to Savitha & Banerjee (2020) the findings from Mohammed & Mukhtar (2012) indicate that the level of formal education is statistically insignificant in a cross-sectional study conducted to assess the prospects of microinsurance in rural Nigeria. This result suggests that a person's education level is insufficient to motivate them to purchase microinsurance products.

Building upon studies that have looked at the level of education and demand for microinsurance, other studies have sought to examine whether financial literacy, i.e., knowledge of microinsurance, in this case, is a relevant factor in the demand for microinsurance. Bonan et al. (2014) conducted a randomized study in Senegal and found a positive correlation between the level of insurance knowledge and microinsurance demand. Without a proper understanding of fundamental risk management concepts, individuals cannot evaluate the value of microinsurance services and distinguish between the tools available to protect themselves and their families from uninsured events.

Peer Influence and Social Networks: Peer effects can play a role in the demand for microinsurance, meaning that an individual's behavior and choices can influence others' decisions within the same social network. For example, suppose a person in a community sees that their friends or neighbors have purchased microinsurance and have benefited from it. In that case, they may be more likely to purchase the microinsurance themselves. Following this line of thought, Karlan et al. (2014) find that among farmers, microinsurance demand increases when the insurance pays claims, but also when others in the farmer’s social network have made claims that have been subsequently paid.

The demand for microinsurance can be influenced by social groups and networks, as they provide a sense of community and support for individuals who purchase insurance. Social groups can also serve as a way for individuals to share information and experiences with microinsurance, which can help raise awareness and understanding of the product among

potential policyholders. Studies have shown that a combination of financial education and peers' experiences with insurance payouts significantly impact insurance demand in the short and medium term (Cai et al., 2015). Additionally, research has found that financial literacy materials are more effective in encouraging take-up when farmers' social contacts are involved (Gine et al., 2013). However, a study by Dercon et al. (2012) found that the referral incentive had a negative effect on health microinsurance participation in Kenya compared to basic marketing. The authors suggest that this negative impact may be due to mistrust of insurance sales staff, indicating that trust in one's peers appears to be a crucial factor in their influence on insurance demand.

3.3 Overview of Literature Review

This section provided a discussion of the literature on microinsurance demand. Notable inconsistencies exist in the literature regarding the effect of some determinants on the uptake of micro insurance products. While the effects of factors like price and income are clear, the effects of other variables like age and education level are unclear. These inconsistencies necessitate further research to better understand the effects of these determinants on the uptake of insurance. Contextual gaps have also been identified in the literature. In particular, there is insufficient scholarly attention on the uptake of micro insurance in the South African context, which rationalized the need for this research. In South Africa, social networks such as burial/funeral groups and stokvels exist; thus, examining how the demand for microinsurance varies among members of the different social networks is worthwhile. This study will attempt to fill the identified gap in the literature by disaggregating the various types of credit, savings, and social networks.

4.0 METHODOLOGY

4.1 Data

To critically examine the determinants of microinsurance demand in South Africa, we require a comprehensive dataset on microinsurance use. This study uses the 2014 and 2015 FinScope cross-sectional surveys conducted by FINMARK Trust, an independent non-profit organization. FINMARK works to promote financial inclusion and integration in Africa. FinScope is a nationally representative survey of the usage and access to financial services with an overall aim of better understanding key challenges and opportunities to deepen financial inclusion across credit, insurance, savings, and payment systems. The objectives of the survey

are measuring the proportion of the population using financial services – financial inclusion, describing the types of products and services used by the financially included population, identifying barriers to the use of financial products, and aiding effective public and private sector interventions to increase levels of financial inclusion through insights generated from the survey.

The FinScope (2014,2015) surveys obtained information from 8900 households using a combination of stratified multi-stage random sampling method. The samples were selected based on probability proportional to size (PPS) sampling, and respondents were chosen randomly from each sample enumeration area and each household (FinScope South Africa, 2015). The survey collected a significant amount of data on various aspects such as demographic characteristics, economic conditions, access to public infrastructure, and utilization of financial products and remittances of households. The dataset includes information on overall access to financial services, divided into four categories: (1) access to formal financial services; (2) access to other formal non-bank financial services; (3) access to only informal financial services; and (4) those who are financially excluded, who do not use any financial products or services, both formal and informal.

4.**1.1** Description and Construction of Variables used in the Study.

Variable	***Description***
Microinsurance	Dummy variable created from the different microinsurance products in the FinScope 2014 and 2015 datasets. It takes the value of 1 if an individual responded that they currently have or had a microinsurance product in the past; zero otherwise.
Credit	Access to credit has been broken down into dummy variables representing the different sources of credit that individuals have at their disposal. The dummy variables take the value of 1 if the individual has credit from the bank, other formal non-bank institutions, informal sources and from friends.
Savings	Access to savings is similarly broken down into dummy variables that take the value of 1 if an individual has savings at the bank, other formal non-bank institutions, informal institutions and at home, zero otherwise.
Social Networks	Social networks are dummy variables that take the value of 1 if an individual is a member of a particular social group such as burial groups and stokvels, zero otherwise.
Gender	Dummy variable for the respondent's gender.
Dependents	This is the number of dependent's living in the household that the respondent has. Dummy variables have been created that take the value of 1 if the individual has no dependents, between 1 and 2 dependents, 3 and 4 dependents and over 5 dependents, zero otherwise.

Age Category	The self-reported respondent's age that has been categorized and dummy variables for the different categories created.
Level of Income	The respondent's reported range of the level of monthly income from which dummy variables representing the different rages have been created.
Race	Dummy variables for the self-reported race of the individual.
Province	Dummy variables representing the province the respondent lives in.
Working Status	Dummy variables that take the value of 1 for the different categories of personal working status and, zero otherwise.
Level of Education	These are dummy variables that also take the value of 1 for the different categories of the self-reported level of education.
Marital Status	These are dummy variables that represent the self-reported marital status of the individual.
Microinsurance count	Count of the different microinsurance policies an individual has or used to have.

4.2 Econometric Model

The empirical framework utilized in this research paper borrows from the methodology introduced by Arun et al. (2012), which are grounded in the theoretical foundations presented by Giné et al. (2008). According to Arun et al. (2012), an individual's decision to take-up microinsurance in contingent upon various factors, including economic, structural and demographic factors. Previous research on the demand for microinsurance has often employed the use of probit regression models, as evidenced in studies such as those by Giné et al. (2008), Giesbert et al. (2011), and Bendig & Arun, (2016). In line with literature, this paper estimates the likelihood of an individual's demand for microinsurance, modeled as a discrete choice, through a probit model as follows:

$$Microinsurance_i = \begin{cases} 1 \; if \; individual \; i \; has \; microinsurance \\ 0 \; if \; individual \; i \; has \; no \; microinsurance \end{cases} \quad (1)$$

We can construct a latent variable y* that captures the underlying decision as follows:

$$y_i^* = x_i\beta + \varepsilon_i \quad (2)$$

$$y_i = 1(y_i^* > 0) \quad (3)$$

Which states that an individual will have microinsurance if the latent variable is greater than zero. The dependent variable is a binary variable that takes the value 1 if the individual has

microinsurance and zero otherwise. Since the dependent variable is a binary choice variable, estimating the determinants of microinsurance demand through Ordinary Least Squares will yield biased estimates and is not considered for this analysis. The vector Xi includes exogenous covariates that determine whether an individual has microinsurance, such as access to credit, savings, social networks, age, number of dependents, level of education, marital status, working status and level of personal monthly income. An error term is also included, as shown in equation 2. In a probit model it is assumed that error terms are independent and normally distributed. The probit estimation is based on a standard normal distribution of observations follow the standard normal distribution.

Through an iterative maximum likelihood procedure, binomial probit regression computes the coefficients β, in a way that maximizes the likelihood of observing the provided sample. It is essential to note that probit regression does not assume a linear relationship between the dependent variable and the explanatory variables. Consequently, the estimated coefficients β do not offer a direct quantification of a variable's impact. While the direction of the effect can be inferred from the sign of the coefficient, the magnitude of the effect remains unspecified. This research paper shall focus on interpreting the signs on the coefficients after probit estimation.

4.2.1 ***Data Issues***

The income variable in our dataset has a significant amount of missing data, with 31% of respondents either refusing to answer or reporting that they do not know their level of income. Similarly, the number of dependents has 450 missing observations from the 2014 sample. To address the missing observations, the paper has recoded these missing values as a dummy variable and included them in the regression analysis. We are aware that there is a potential for endogeneity in some of our variables, such as income and level of education. Unfortunately, our dataset lacks suitable instrumental variables to account for this endogeneity. Therefore, the findings of our paper should be interpreted with caution. Similarly, level of income is highly correlated with the employment status of an individual. The paper will compute VIF of the variables in the model to check for multicollinearity. Additionally, self-selection is potentially a major concern in the microinsurance market. To address this issue, we will use Heckman selection models to compare the results with the main probit specification. This will allow us to see if there are any significant differences between the two models. Finally all regressions presented in the next section use robust standard errors to account for heteroskedasticity.

4.3 Descriptive Statistics

This section provides a comprehensive summary of descriptive statistics for the Microinsurance dummy variable, stratified by the respective years, as part of the empirical analysis. The data, sourced from the FinScope datasets of 2014 and 2015, aims to capture nuanced insights into the evolving landscape of microinsurance utilization. Table 1 below shows the proportion of South African adults with microinsurance. Across the combined dataset encompassing both years, the mean proportion of South African adults with microinsurance stands at 57% exhibiting a standard deviation of 0.4945 based on 8900 observations. These statistical insights illuminate dynamic trends and shifts in microinsurance usage, contributing to the broader discourse on financial inclusion and risk mitigation strategies.

Table 1: Descriptive Statistics of Microinsurance Dummy Variable.

Microinsurance	Mean	Std. Deviation	Observations
Pooled	0.5737	0.4945	8900
2014	0.5947	0.4910	3900
2015	0.5536	0.4972	5000

Source: Author's computation from FinScope 2014 and 2015 survey data

In table 2, we analyse descriptively the interaction of microinsurance and other microfinance products, specifically credit and savings. In column 1 and 2 we have proportion of insured and uninsured individuals i.e., individuals with microinsurance and those without microinsurance. Under credit, 54% of individuals with microinsurance have access to credit from non-bank institutions, and this number increased between 2014 and 2015 indicating growth of microcredit. Access to savings reveals that individuals with microinsurance generally save with non-bank institutions followed by formal banks. Between 2014 and 2015 there was a growing number of individuals saving at informal institutions and home. The data also shows that adults that use microinsurance have better access to credit and savings when we compare the insured and uninsured.

Social networks have been studied in literature as a way of increasing financial inclusion for low income individual. From the data we note that all individuals that belong to burial groups have microinsurance. Table 7 in appendix 2 show a statistically significant and strong positive

correlation between members of burial groups and microinsurance than any other social network. The strong correlation is largely driven by informal funeral policies with 42% of individuals in burial groups having both formal and informal funeral covers.

Table 2: Descriptive Statistics.

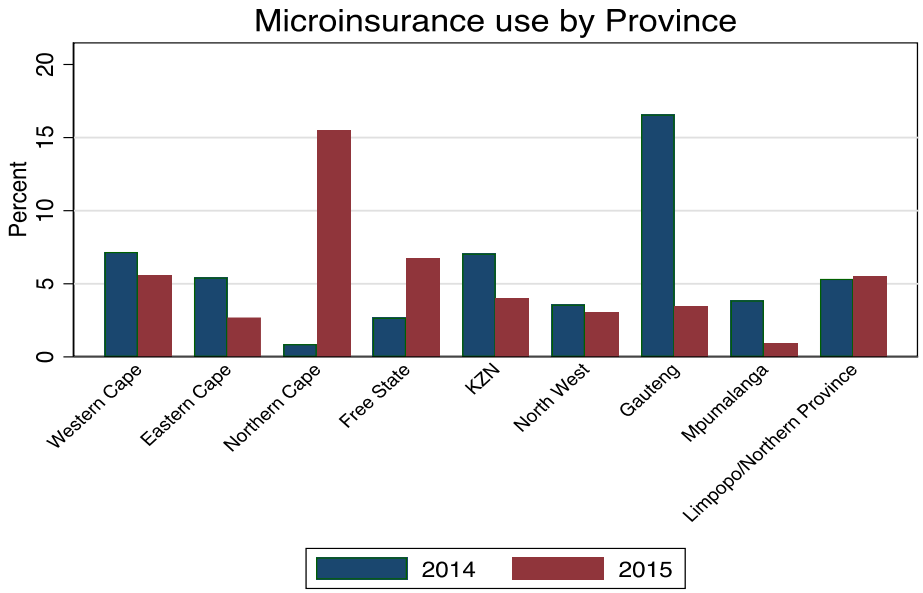
Year	**Pooled**	**Sample**	**2014**		**2015**	
Variable	**Insured**	**Uninsured**	**Insured**	**Uninsured**	**Insured**	**Uninsured**
Credit						
Bank	0.2232	0.0281	0.2207	0.0157	0.2260	0.0380
Non-bank	0.5439	0.2399	0.5059	0.1709	0.5861	0.2950
Informal	0.0599	0.0271	0.0616	0.0325	0.0580	0.0228
Family	0.0857	0.0604	0.1027	0.0986	0.0668	0.0299
Saving						
Bank	0.2071	0.0468	0.1726	0.0156	0.2453	0.0717
Non-bank	0.2407	0.0216	0.2343	0.0171	0.2478	0.0252
Informal	0.1509	0.0628	0.1206	0.0297	0.1845	0.0893
At home	0.1442	0.0660	0.1395	0.0614	0.1496	0.0697
Social Groups						
Saving	0.0596	0.0144	0.0485	0.0111	0.0720	0.0170
Stokvel	0.0890	0.0453	0.0887	0.0208	0.0893	0.0649
Burial society	0.5157	0	0.5260	0	0.5043	0
Observations	5099	3801	2388	1512	2711	2289

Source: Author's computation from FinScope 2014 and 2015 survey data

Figure 4 shows the percentage of individuals using microinsurance across the provinces in South Africa. Across the provinces, microinsurance use dropped between 2014 and 2015 except for the Northern Cape and Free State. In 2015 the percentage of adults in the Northern Cape with microinsurance was 22.02% up from 5.61% in 2014, which is a significant increase. The largest decrease happened in Gauteng province with a 55% drop in percentage of adults with microinsurance. The other provinces had moderate declines in users between 2014 and 2015. A report by FinScope South Africa, (2015) attributes this decline to quality and

affordability issues. They note that in 2015, 10% of the respondents who had microinsurance considered cancelling their policies to pay back money they had borrowed. Nevertheless, the observed decrease in microinsurance demand could potentially be attributed to variations in provincial samples between the two years, notably in the Northern Cape and Gauteng. Specifically, the sample size expanded from 6% of the total sample in 2014 to 18% in 2015 for the Northern Cape, while it contracted from 17% in 2014 to 8% in Gauteng.

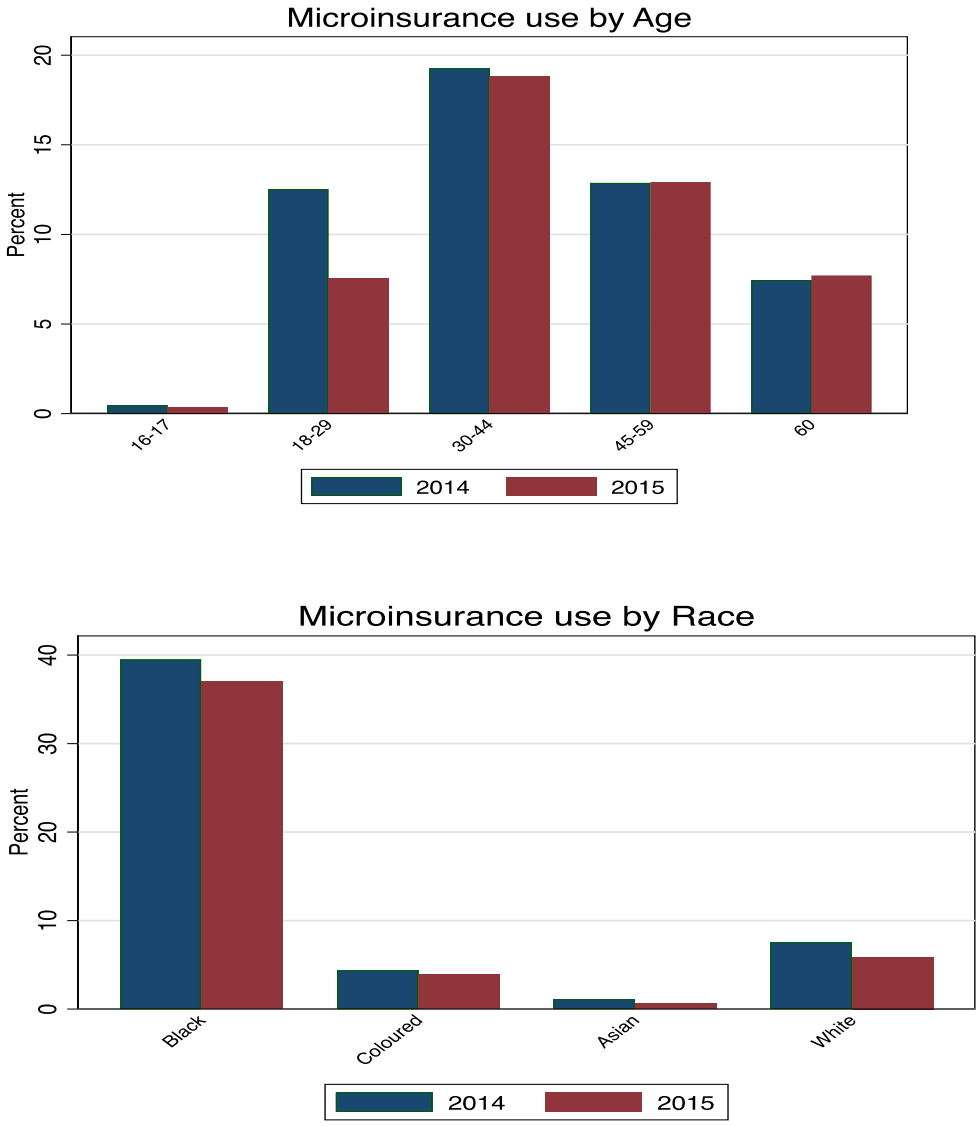
Figure 4:Microinsurance use by Province.



Source: Author's computation from finscope 2014 and 2015 survey data

In figure 5, a clear picture emerges on the age category that has largest number of microinsurance users. The 16-17 age category has the least users and this is expected as one can argue that they are still under parental care and may not afford microinsurance on their own. We see that the middle age category i.e., 30-44 has the highest percentage of microinsurance users. Further, we note that individuals who identify as black have the largest percentage of microinsurance users. These figures are however largely driven by funeral microinsurance. A report by FinScope South Africa, (2015) indicates that in 2015, of the total 18.5 million adults that were insured, 6.6 million had non-funeral insurance while 5.5 million had more than 2 funeral covers.

Figure 5:Microinsurance use by Age and Race



Source: Author's computation from finscope 2014 and 2015 survey data

4.4 Results

In this section, the paper delves into the outcomes derived from our econometric model, examining the nuanced patterns that emerge when scrutinizing the data across distinct years. This disaggregation facilitates a comprehensive exploration of the evolving dynamics in the demand for microinsurance over the span of two years. Additionally, the paper presents the findings concerning the determinants of prevalent microinsurance products in South Africa. This analysis aims to discern potential differentials in demand patterns between these common microinsurance products and other offerings within the microinsurance landscape. Through this detailed examination, the paper aims to contribute nuanced insights into the intricacies of

microinsurance demand, shedding light on variations in consumer preferences across different product categories.

Table 3: Probit regression results

	(1) Pooled		(2) 2014		(3) 2015	
	Coef.	**SE**	**Coef.**	**SE**	**Coef.**	**SE**
Credit						
Bank	0.4358***	0.0834	0.5955***	0.1363	0.2911**	0.1095
Other formal	0.2886***	0.0439	0.3237***	0.0727	0.3012***	0.0561
Informal	0.1144	0.1086	0.1738	0.1609	0.0496	0.145
Family	0.1672*	0.0771	0.0538	0.1028	0.3016*	0.1234
Savings						
Bank	0.3277***	0.0726	0.5671***	0.1508	0.2638**	0.0874
Other formal	0.8457***	0.0816	0.8142***	0.1302	0.9450***	0.1041
Informal	0.4999***	0.1439	0.4479	0.2816	0.6113***	0.1801
At Home	0.3597***	0.0676	0.3314**	0.1071	0.4206***	0.0888
Social Networks						
Savings Group	-0.075	0.1591	-0.1494	0.2578	-0.1782	0.2209
Stokvel	-0.2045	0.1517	0.244	0.2676	-0.4986*	0.1965
Gender (male=1)	0.0163	0.0381	-0.0467	0.0656	0.1618**	0.0546
Number of Dependents						
1-2 dependents	0.1877***	0.049	0.1589*	0.075	0.2215***	0.0669
3-4 dependents	0.2923***	0.0596	0.3036***	0.0894	0.2833***	0.0824
5 and above	0.3861***	0.082	0.4603***	0.1191	0.3011**	0.1163
Missing	-0.6252***	0.1637	0	.	-1.2663*	0.6427
Age Category						
16 – 17	-0.7343***	0.1755	-0.8054**	0.2689	-0.6161**	0.2367

18 – 29	-0.5453***	0.115	-0.4319*	0.191	-0.7041***	0.1445
30 – 44	-0.2007	0.1102	-0.1531	0.1813	-0.2836*	0.1392
45 – 59	-0.0373	0.1053	0.037	0.1704	-0.0953	0.1351
Level of Income						
R1 - R999	-0.0437	0.1285	-0.0156	0.1411	-0.9027	0.6435
R1,000 - R1,999	0.1826	0.1341	0.2607	0.1496	-0.7706	0.6428
R2,000 - R2,999	0.2466	0.1437	0.3503*	0.1675	-0.7055	0.651
R3,000 - R5,999	0.2768	0.144	0.3605*	0.1773	-0.6374	0.65
R6,000 - R7,999	0.4126*	0.1755	0.7094*	0.2878	-0.6796	0.6595
R8,000 - R9,999	0.284	0.2064	0.4951	0.2969	-0.7323	0.6827
R10,000 - R11,999	0.4341	0.2978	0.6953	0.4782	-0.6441	0.7293
R12,000 - R16,999	0.3205	0.2172	0.2606	0.3256	-0.5454	0.6799
R17,000 - R24,999	0.6299*	0.2681	0.9517*	0.3724	-0.2296	0.6997
R25,000 and above	0.5703*	0.2488	0.6524*	0.3194	-0.2245	0.7073
Refused/Don't Know	0.1501	0.1305	0.2147	0.1437	-0.7755	0.6452
Race						
Black	0.1968**	0.0713	0.1488	0.1092	0.2341*	0.0964
Coloured	0.0088	0.082	0.1167	0.1252	0.0648	0.1113
Asian	-0.7225***	0.0997	-0.7636***	0.1598	-0.6798***	0.1384
Province						
Eastern Cape	-0.121	0.075	-0.2102	0.1096	-0.0742	0.1038
Northern Cape	-0.3103***	0.0727	-0.3442**	0.1179	-0.1813*	0.0914
Free State	-0.5023***	0.0759	-0.5095***	0.1205	-0.3578***	0.1016
KZN	-0.3311***	0.0738	-0.5462***	0.1137	-0.0667	0.1034
Northwest	-0.2474**	0.0799	-0.2481*	0.1226	-0.1727	0.1085
Gauteng	-0.1389	0.0772	-0.2817*	0.1099	-0.0321	0.1111
Mpumalanga	-0.091	0.0871	-0.1802	0.1245	0.0323	0.1137

Limpopo/Northern Province	0.0638	0.0731	0.2927*	0.1242	-0.1518	0.0967
Work Status						
Work part-time or less than 30 hours a week	-0.378	0.2027	-0.5885	0.3313	-0.259	0.2518
Student or learner	-0.5251*	0.204	-0.5856	0.3318	-0.5082*	0.2553
Housewife or househusband	-0.6182**	0.2153	-0.7784*	0.3465	-0.7164**	0.2765
Pensioner or retired	-0.5132*	0.2172	-0.4926	0.3577	-0.6396*	0.2709
Unemployed and looking for a job	-0.0056	0.2244	-0.1222	0.3679	0.0634	0.2796
Unemployed and not looking for a job	-0.5423**	0.2039	-0.7516*	0.3336	-0.4969	0.2545
Other (SPECIFY)	-0.5509*	0.2229	-0.8610*	0.3625	-0.4181	0.2776
Level of Education						
Primary school	0.4847***	0.1297	0.5338**	0.1973	0.4652**	0.1695
Some high school	0.5405***	0.1243	0.5859**	0.1892	0.5210**	0.1616
Matric	0.6461***	0.1283	0.5610**	0.1958	0.7690***	0.1673
Apprenticeship	0.9066***	0.194	0.6507*	0.2764	1.2275***	0.2634
Diploma	0.8829***	0.1572	0.6242**	0.2346	1.1755***	0.2069
University degree	0.9477***	0.1692	0.9811***	0.2859	0.9904***	0.2184
Other	0.5829	0.3434	0.5645	0.444	0.6068	0.5128
Marital Status						
Separated	-0.2882	0.1723	-0.3489	0.2876	-0.284	0.2079
Divorced	0.2319	0.1649	0.7760**	0.2968	-0.0507	0.2065
Other	0.1227	0.5528	0	.	0.1125	0.6477
Married	-0.1188	0.0798	-0.1574	0.1239	-0.0731	0.1064
Single and not living with a partner	-0.3283***	0.0836	-0.2065	0.133	-0.4059***	0.1092

Single and living with a partner	-0.4992***	0.0987	-0.4527**	0.1557	-0.4838***	0.1311
Constant	0.3324	0.3023	0.5516	0.465	0.8959	0.7296
Pseudo R-squared	0.263		0.272		0.2857	
Observations	8900		3899		5000	

Notes: Column 1 presents regression results from the pooled sample—columns 2 and 3 present results from the 2014 and 2015 sub-samples, respectively. The base category for the number of dependents is individuals with no dependents; those over 60 are the reference category for age. Individuals who identify as white are the base category for the race dummy variable, while individuals with no income are the base category for the level of income dummy. Western Cape province, no education, individuals who work full-time, and widowed are the base categories for the province dummy, level of education dummy, working status dummy, and marital status dummy, respectively. The reported standard errors are robust, and all regressions are weighted.

* p<0.05, ** p<0.01, *** p<0.001

Source: Author's computation from FinScope 2014 and 2015 survey data

The outcomes depicted in the credit section of Table 3 are consistent with the assertions posited by Giesbert et al. (2011), underscoring the interrelated nature of diverse microfinance products. On average, individuals with access to credit from banks and formal financial institutions are more likely to have microinsurance. This substantiates the notion that microfinance products, including microinsurance, mutually reinforce each other. Giesbert et al. (2011) contend that users of microcredit may benefit from informational advantages, acquiring knowledge about additional microfinance products, such as microinsurance, either through interactions with bank agents or purely by chance during their visits to financial institutions. These findings underscore the potential synergies within the realm of microfinance services, emphasizing the interconnectedness that may augment client awareness and adoption of various financial offerings.

In the literature, social networks have been shown to increase demand for insurance since they increase group member's trust in insurance (Gine et al., 2013) (Cai et al., 2015). The results show that the social networks under study do not significantly impact the demand for microinsurance in south Africa. Table 7 in the appendix 2 shows a strong correlation between members of burial groups and microinsurance. However, the observed lack of perfect correlation highlights the nuanced reality within the data. This disparity could stem from variations in the types of microinsurance products covered under the broader category, suggesting that while burial insurance might be a component, other microinsurance products might not be uniformly represented within burial groups.

From the literature review, the level of income is a significant determinant of microinsurance demand (Bonan et al., 2014); (Asmare & Worku, 2018). However, Eling et al. (2014) note that often self-reported income is unreliable and may bias our estimates. Notwithstanding, similar to the paper finds that individuals with incomes above R25,000 are more likely to have microinsurance. For robustness, the paper presents findings from a probit regression using the living standard measures as a proxy for income. Personal and demographic characteristics such as gender impact microinsurance demand among individuals (Bendig & Arun, (2016); Ndurukia et al. (2017). Specifically, in the 2015 sub-sample, males were more likely to have microinsurance than females on average, contrasting the findings of Bendig & Arun, (2016) who found that female household heads were more likely to have micro-life insurance. Similar to Asmare & Worku. (2018), the study also finds insignificant gender effects on microinsurance demand in the pooled sample and the 2014 sample.

Bequest motives as evidenced by Arun et al., (2012) highlight that dependents are a factor influencing the demand for micro-life insurance. From table 3, across the years, individuals with dependents in the household are more likely to have microinsurance compared to those with no dependents. As in Arun et al. (2012), the paper finds support for bequest motives as a determinant of microinsurance demand through the significance of the coefficient on the number of dependents. The results also show that pensioners and retired individuals are more likely to have microinsurance than those working full-time. Contrary to the findings of Bendig & Arun, (2016) , the coefficient on married individuals is not statistically significant, indicating that married individuals are neither more or less likely to have microinsurance. However, single individuals are less likely to have microinsurance than widowed individuals.

In empirical literature on microinsurance demand, race and geographic location have rarely been studied. Therefore, studying these variables in a racially diverse and expansive country such as South Africa is important. The analysis indicates that on average, individuals who identify as Asian are less likely to have microinsurance compared to individuals who identify as White. Individuals who identify as Black are more likely to have microinsurance compared to White South Africans. In terms of geographic location, individuals living in the Northern Cape, Free state and KwaZulu Natal provinces are less likely to have microinsurance compared to individuals from the Western Cape, on average.

In terms of the level of education, the literature discussed shows that an individual's level of education is a positive predictor of microinsurance demand (Bonan et al., 2014) ;(Dror et al.

2018). Other studies show that the level of education does not significantly impact microinsurance demand (Savitha & Banerjee, 2020). The results in table 3 shows the statistical significance of education as a determinant of microinsurance demand. Specifically, we note that on average, individuals that have attained primary education, some high school, matric, diploma and a university degree are more likely to have microinsurance when compared to those individuals with no formal education. While Savitha & Banerjee (2020) and Cole et al. (2013) find no significant impact of the level of education on insurance demand, the findings in this paper support those of Bonan et al., (2014) and Dror et al. (2018)

4.4.1 Determinants of Demand for Selected Microinsurance Products.

The paper further presents the determinants of selected microinsurance products, namely: formal funeral cover, informal funeral cover and life cover. These are the top three microinsurance products held by individuals in South Africa based on the pooled 2014 and 2015 Finscope surveys. The results are presented in table 4 below. To summarize the main findings, individuals with access to credit from the formal financial sector are more likely to have all 3 microinsurance products on average compared to individuals that do not have access to credit from the formal sector. We also note that on average, savings from formal sector are a significant determinant of demand for formal funeral cover and life cover, while individuals who save via informal channels and at home are more likely to have informal funeral cover.

Arun et al. (2012) and Alhassan & Magazi (2021) found that individuals with dependents are more likely to have life cover. Similarly, the paper finds that individuals with dependents are more likely to have life cover, formal and informal funeral cover compared to individuals with no dependents. Black South Africans are more likely to have both formal and informal funeral cover compared to White South Africans. However, the results also indicate that Black South Africans are less likely to have Life Cover compared to White South Africans. The result indicates that individuals of a certain race may demand some microinsurance products more than others.

The results also show that individuals with some levels of education are more likely to have formal funeral cover and life cover when compared to the base category, those with no education. However, individuals with primary education, some high school education and matric are likely to possess informal funeral cover compared to those individuals with no education.

Table 4: Regression Results of Selected Microinsurance Products

	(1) Formal Funeral Cover		(2) Informal Funeral Cover		(3) Life Cover	
	Coef.	**SE**	**Coef.**	**SE**	**Coef.**	**SE**
Credit						
Bank	0.1323*	0.0645	-0.0605	0.0766	0.2634***	0.0699
Other formal	0.2850***	0.0453	0.1369**	0.0456	0.3563***	0.0616
Informal	0.1993*	0.0949	0.0489	0.0943	0.043	0.1129
Family	0.1818*	0.0743	-0.0304	0.0748	0.2201*	0.0973
Savings						
Bank	0.2491***	0.0578	0.0892	0.0631	0.3863***	0.0633
Other formal	0.6064***	0.0618	0.1587*	0.0718	0.6108***	0.0668
Informal	0.1084	0.1365	0.4496***	0.128	-0.1183	0.1744
At Home	0.0561	0.0635	0.3208***	0.0606	0.1273	0.0714
Social Networks						
Savings Group	0.3372*	0.1507	0.0946	0.1373	0.2599	0.1852
Stokvel	0.0443	0.1445	-0.0397	0.1331	0.2673	0.1803
Gender (male=1)	0.0324	0.0387	0.0578	0.0381	0.1317**	0.0508
Number of Dependents						
1-2 dependents	0.2127***	0.0502	0.1524**	0.0507	0.2184**	0.0687
3-4 dependents	0.2197***	0.0608	0.3149***	0.0595	0.1813*	0.0851
5 and above	0.3300***	0.0828	0.3027***	0.0781	0.2359	0.133
Missing	-0.3963	0.2322	-0.6079***	0.1684	-0.0461	0.2787
Age Category						
16 – 17	-1.1709***	0.2537	-0.6225***	0.175	-0.9401**	0.3586
18 – 29	-0.3614**	0.1099	-0.4272***	0.1095	-0.4868***	0.1311
30 – 44	-0.0377	0.1035	-0.2585*	0.1036	-0.3055*	0.1201

45 – 59	0.0254	0.0986	-0.1154	0.0987	-0.0754	0.116
Level of Income						
R1 - R999	0.2659	0.187	-0.0761	0.133	0.0928	0.2272
R1,000 - R1,999	0.4907**	0.1901	0.1748	0.1383	-0.1129	0.23
R2,000 - R2,999	0.6366**	0.1978	0.0592	0.1496	-0.0276	0.2339
R3,000 - R5,999	0.7672***	0.1958	0.1444	0.1486	0.3649	0.2287
R6,000 - R7,999	0.5784**	0.2169	0.3184	0.1712	0.2311	0.2425
R8,000 - R9,999	0.4418	0.2263	-0.1159	0.1972	0.6530**	0.249
R10,000 - R11,999	0.7347**	0.2496	-0.0371	0.2316	0.6325*	0.2685
R12,000 - R16,999	0.8210***	0.2218	0.1284	0.1977	0.5515*	0.25
R17,000 - R24,999	0.7888**	0.2579	0.0494	0.2282	0.3642	0.2641
R25,000 and above	0.8224***	0.2285	-0.4321	0.2414	0.8716***	0.2612
Refused/Don't Know	0.6079**	0.1879	-0.0562	0.1363	0.4044	0.2174
Race						
Black	0.3082***	0.0672	1.5127***	0.0852	-0.4794***	0.0754
Coloured	0.3381***	0.0798	0.9523***	0.0955	-0.3243***	0.091
Asian	-0.4186***	0.1147	0.0109	0.1943	-0.4502***	0.1133
Province						
Eastern Cape	-0.148	0.0755	-0.1322	0.0757	-0.1835	0.1046
Northern Cape	-0.0577	0.0714	-0.1751*	0.0732	-0.0418	0.093
Free State	-0.2620***	0.0753	-0.4449***	0.0782	-0.0987	0.0972
KZN	-0.0618	0.0756	-0.2858***	0.075	-0.1654	0.1064
Northwest	-0.0505	0.0798	-0.1268	0.0804	-0.1468	0.111
Gauteng	-0.0189	0.0751	-0.0644	0.0753	0.0966	0.0964
Mpumalanga	0.1615	0.0861	-0.0514	0.0883	0.02	0.1309
Limpopo/Northern Province	-0.1948**	0.0753	0.3407***	0.0724	-0.1088	0.0971
Work Status						

Work part-time or less than 30 hours a week	-0.0562	0.2025	-0.4603*	0.2105	0.473	0.3149
Student or learner	-0.2849	0.2056	-0.3772	0.2122	0.4401	0.3211
Housewife or househusband	-0.7331**	0.2356	-0.2867	0.2249	-0.253	0.3915
Pensioner or retired	-0.2633	0.2219	-0.0869	0.2258	-0.1533	0.3508
Unemployed and looking for a job	0.1534	0.2214	-0.1547	0.2281	0.4711	0.3336
Unemployed and not looking for a job	-0.4068*	0.2053	-0.2876	0.2113	0.0196	0.3285
Other (SPECIFY)	-0.3592	0.2265	-0.3555	0.2309	-0.0053	0.3522
Level of Education						
Primary school	0.2923*	0.1364	0.3987**	0.1281	-1.1349	0.6685
Some high school	0.4239**	0.1306	0.3206**	0.123	-1.0232	0.659
Matric	0.5249***	0.1352	0.3257*	0.128	-0.7014	0.6579
Apprenticeship	0.3747	0.1975	-0.0764	0.2135	-0.1508	0.6666
Diploma	0.5339***	0.1518	0.2124	0.153	-0.3017	0.6626
University degree	0.5513***	0.1608	0.177	0.1702	-0.1718	0.6654
Other	1.2454***	0.3384	-0.0185	0.4713	0	.
Marital Status						
Separated	-0.1626	0.1559	-0.2154	0.1686	0.2622	0.204
Divorced	0.1103	0.1478	0.3005	0.1542	-0.0322	0.1837
Other	-0.2397	0.4865	0.0392	0.5509	-0.2845	0.3803
Married	-0.1367	0.0725	-0.0886	0.0746	-0.0893	0.106
Single and not living with a partner	-0.2988***	0.078	-0.2602***	0.0786	-0.1621	0.1162
Single and living with a partner	-0.3074**	0.097	-0.3981***	0.0986	-0.189	0.141
Constant	-1.6178***	0.3197	-1.6493***	0.3006	-0.8729	0.7559
Pseudo R-squared	0.2397		0.1473		0.4406	

Observations	8900	8900	8739

Notes: The base category for the number of dependents is individuals with no dependents; those over 60 are the reference category for age. Individuals who identify as white are the base category for the race dummy variable, while individuals with no income are the base category for the level of income dummy. Western Cape province, no education, individuals who work full-time, and widowed are the base categories for the province dummy, level of education dummy, working status dummy, and marital status dummy, respectively. In column 3, the "other" category under level of education predicts outcome perfectly and 161 observations are dropped, which accounts for the 8739 observations. The reported standard errors are robust, and all regressions are weighted.

* p<0.05, ** p<0.01, *** p<0.001

Source: Author's computation from FinScope 2014 and 2015 data

4.5 Robustness Checks

Due to the large number of missing income observations for individuals, we have attempted to run various probit regressions to check for consistency of the results in table 3. The probit regressions are presented on the appendix. Table 7 has results from the probit regression where the income variable has been excluded. The results are by and large consistent with those in table 3. The noteworthy difference is the significance of the level of education in the 2015 sub-sample that was previously not significant. Dropping the income variable may introduce omitted variable bias since income is a significant predictor of microinsurance demand. Dropping the income variable reduces the multicollinearity of income with variables like level of education, working status, savings and credit. The dataset contains information on the living standards measure categorization of the different households. In table 8, we use this as a proxy for income and find that all households expect those in LSM group 4 are likely to have microinsurance compared to those in LSM group 1. We note that none of the LSM groups are significant predictors of microinsurance demand in the 2015 subsample.

Table 10 presents results of the Heckman sample selection model. The first stage equation is a probit estimation of equation 2 from which the predicted probabilities are obtained, and the inverse mills ratio constructed. The second stage equation is an OLS estimation with the dependent variable as the number of microinsurance policies an individual has and the same independent variables as the first stage adding the inverse mills ratio to control for sample selection. The coefficient on the inverse mill's ratio is significant and positive indicating that sample selection is an issue. However, the results from the second stage OLS regression are very similar to the results in table 3, which indicates that while sample selection issues are present, they do not pose a significant challenge that warrants a re-evaluation of the econometric methodology.

To check whether multicollinearity is a problem in our model, the paper computes the variance inflation factor by running an OLS model of equation 2. The results reported in table 9 in the appendix indicate that some categories of working status and level of education are highly correlated with some other variables in our model. The overall VIF of 4.864 indicates moderate levels of multicollinearity. Omitting the variables with high levels of multicollinearity will introduce omitted variable bias in our model which may worsen the potential endogeneity that exists. As such, the paper acknowledges that the model suffers from moderate levels of multicollinearity and results should be interpreted with caution.

5.0 CONCLUSION AND POLICY RECOMMENDATIONS

The paper sought to examine the determinants of microinsurance demand in South Africa. A review of the existing literature on microinsurance was conducted to achieve the paper's objectives. Much of the empirical literature was from field experiments and a few using survey data. The empirical literature informed the choice of methodology adopted in the study. A probit regression model was used to obtain the econometric results presented. The study used pooled survey data from the FinScope 2014 and 2015 surveys in South Africa.

From the results, access to credit from formal financial institutions was found to be a significant determinant of microinsurance demand. Access to savings, having dependents and an individual's level of education were also found to be significant determinants of microinsurance demand. The results also show that younger individuals are less likely to demand microinsurance products. When looking at the differences in demand along racial lines, black South Africans are more likely to have microinsurance compared to white, colored and Asian South Africans. The study further examined the demand for three of the most popular microinsurance products based on the Finscope survey data. These products were informal funeral cover, formal funeral cover and life cover. The study found that individuals with access to formal non-bank credit and informal credit were more likely to have funeral policies.

The findings from the study provide a good background for insurance companies in South Africa that would like to extend their product offering to the low-income segment. Firstly, the complementary nature of microfinance products indicates that leveraging microfinance institutions in the supply and promotion of microinsurance could increase demand. These institutions should leverage technology for efficient microinsurance delivery. Mobile-based

platforms have the potential to facilitate product information dissemination, premium collection, and claims processing, making microinsurance more accessible and affordable.

Further Following the findings of Alhassan & Magazi, (2021) on the welfare improving benefits of microinsurance, the government should consider regulatory frameworks that favor the microinsurance market to allow more firms to enter the market. This could help solve some supply side determinants briefly discussed in the paper. To alleviate some supply side challenges the government could consider providing incentives through subsidies to attract more firms in the market. Another possible government intervention is raising risk awareness through public education campaigns and by working with community organizations to stimulate demand for these microinsurance products.

The microinsurance landscape is constantly evolving, with changing demographics, risk profiles, and technological advancements. To remain relevant and effective, microinsurance providers need to continuously adapt their products and services to meet the evolving needs of their customers. Ongoing research plays a crucial role in understanding these changing needs and identifying new opportunities for microinsurance products. By conducting surveys, focus groups, and in-depth interviews, researchers can gain insights into customer preferences, risk perceptions, and financial constraints. Research could also explore the potential of using mobile technology, microfinance platforms, and behavioral economics to enhance microinsurance accessibility, affordability, and effectiveness. This information is invaluable for designing microinsurance products that resonate with customers and address their specific needs. By investing in research and development, stakeholders in the microinsurance sector in South Africa can contribute to a thriving microinsurance market that empowers low-income individuals and communities to manage financial risks and build resilience.

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APPENDIX

Appendix 1: Supplementary Descriptive Statistics

Table 5: Additional Descriptive Statistics

	Pooled Sample		2014		2015	
Variable	**Insured**	**Uninsured**	**Insured**	**Uninsured**	**Insured**	**Uninsured**
Marital Status						
Widowed	0.1153	0.0513	0.1045	0.0512	0.1274	0.1274
Separated	0.0133	0.0116	0.0116	0.0108	0.0153	0.0153
Divorced	0.0229	0.0064	0.0216	0.0028	0.0243	0.0243
Other	0.0011	0.0019	0.0004	0.0000	0.0018	0.0018
Married	0.3784	0.1650	0.3850	0.1599	0.3710	0.3710
Single not living with partner	0.3941	0.6503	0.3994	0.6555	0.3883	0.3883
Single and living with partner	0.0749	0.1135	0.0776	0.1198	0.0720	0.0720
Level of Education						
No schooling	0.0199	0.0273	0.0171	0.0290	0.0230	0.0230
Primary school	0.1000	0.0881	0.0988	0.0883	0.1014	0.1014
Some high school	0.3343	0.4943	0.3671	0.5309	0.2980	0.2980
Matric	0.3604	0.3421	0.3302	0.3097	0.3938	0.3938
Apprenticeship	0.0249	0.0100	0.0282	0.0093	0.0212	0.0212
Diploma	0.0997	0.0265	0.1007	0.0284	0.0986	0.0986
University degree	0.0581	0.0090	0.0540	0.0032	0.0626	0.0626
Other	0.0027	0.0028	0.0039	0.0013	0.0014	0.0014
Work Status						
Full-time	0.4658	0.1992	0.4352	0.1794	0.4996	0.4996
Part-time	0.1241	0.1550	0.1347	0.1584	0.1124	0.1124
Student	0.0409	0.1696	0.0565	0.1840	0.0236	0.0236
Housewife/husband	0.0451	0.0412	0.0498	0.0316	0.0398	0.0398

Pensioner	0.1443	0.0522	0.1374	0.0519	0.1520	0.1520
Unemployed and looking for work	0.1455	0.3381	0.1578	0.3521	0.1319	0.1319
Unemployed and not looking for work	0.0238	0.0391	0.0181	0.0380	0.0300	0.0300
Other	0.0105	0.0055	0.0103	0.0046	0.0106	0.0106
Level of Income						
No Income	0.0306	0.1409	0.0288	0.1205	0.0325	0.1587
R1 - R999	0.1242	0.2998	0.1184	0.3211	0.1302	0.2811
R1,000 - R1,999	0.1835	0.1536	0.1977	0.1713	0.1689	0.1381
R2,000 - R2,999	0.0762	0.0696	0.0874	0.0744	0.0647	0.0653
R3,000 - R5,999	0.1163	0.0649	0.1064	0.0506	0.1266	0.0773
R6,000 - R7,999	0.0515	0.0136	0.0506	0.0071	0.0525	0.0193
R8,000 - R9,999	0.0352	0.0077	0.0377	0.0053	0.0325	0.0097
R10,000 - R11,999	0.0247	0.0037	0.0283	0.0034	0.0210	0.0039
R12,000 - R16,999	0.0300	0.0034	0.0256	0.0029	0.0345	0.0039
R17,000 - R 24,999	0.0195	0.0010	0.0123	0.0003	0.0269	0.0016
R25,000 and above	0.0253	0.0016	0.0238	0.0018	0.0268	0.0015
Refused/Don't Know	0.2829	0.2402	0.2829	0.2411	0.2829	0.2395
Gender						
Male	0.5016	0.5009	0.4166	0.4459	0.5957	0.5957
Observations	5099	3801	2388	1512	2711	2289

Pairwise Correlations

Table 6: Pairwise Correlation

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) microinsurance	1.000											
Credit												
(2) Bank	0.302*	1.000										

(3) Other formal	0.328*	0.417*	1.000									
(4) Informal	0.078*	0.062*	0.152*	1.000								
(5) Family	0.043*	0.001	0.074*	0.193*	1.000							
Savings												
(6) Bank	0.252*	0.382*	0.311*	0.056*	0.007*	1.000						
(7) Other formal	0.324*	0.484*	0.371*	0.090*	-0.011*	0.301*	1.000					
(8) Informal	0.120*	0.078*	0.118*	0.100*	0.045*	0.202*	0.091*	1.000				
(9) At home	0.105*	0.085*	0.109*	0.034*	0.035*	0.111*	0.086*	0.092*	1.000			
Social Network												
(10) Savings group	0.100*	0.121*	0.105*	0.051*	0.017*	0.183*	0.104*	0.608*	0.088*	1.000		
(11) Stokvel	0.065*	0.004	0.053*	0.076*	0.033*	0.114*	0.018*	0.720*	0.035*	0.106*	1.000	
(12) Burial group	0.472*	-0.070*	-0.009*	0.054*	0.036*	0.001	-0.042*	0.134*	0.071*	0.076*	0.105*	1.000

**** p<0.01, ** p<0.05, * p<0.1*

Appendix 2: Robustness checks

Table 7: Probit Regression with Income Variable Excluded

	Pooled		2014		2015	
	Coef.	SE	Coef.	SE	Coef.	SE
Credit						
Bank	0.4474***	0.0834	0.6152***	0.1351	0.3091**	0.1087
Other formal	0.3037***	0.0437	0.3548***	0.0718	0.3049***	0.0559
Informal	0.1149	0.1084	0.1578	0.1606	0.0643	0.1447
Family	0.1598*	0.0765	0.0506	0.1024	0.2940*	0.1218
Savings						
Bank	0.3608***	0.0726	0.6366***	0.1535	0.2837**	0.0872
Other formal	0.8624***	0.0805	0.8314***	0.1292	0.9609***	0.1063
Informal	0.4993***	0.1468	0.3924	0.2805	0.6282***	0.1838
At Home	0.3583***	0.0668	0.3285**	0.1065	0.4150***	0.0876

Social Networks						
Savings Group	-0.0886	0.1615	-0.1081	0.2544	-0.2027	0.2247
Stokvel	-0.1855	0.1542	0.3218	0.2643	-0.5023*	0.2003
Gender (male==1)	0.0083	0.0379	-0.046	0.0651	0.1521**	0.0541
Number of Dependents						
1-2 dependents	0.1899***	0.0486	0.1692*	0.0743	0.2248***	0.0667
3-4 dependents	0.3016***	0.0592	0.3174***	0.0886	0.2924***	0.0819
5 and above	0.4020***	0.0819	0.4903***	0.119	0.3088**	0.1159
Missing	-0.7002***	0.114	0	.	-0.4490**	0.1381
Age Category						
16 – 17	-0.7752***	0.1745	-0.8591**	0.2666	-0.6341**	0.236
18 – 29	-0.5723***	0.115	-0.4502*	0.1916	-0.7196***	0.1439
30 – 44	-0.2223*	0.1102	-0.1499	0.1822	-0.3028*	0.1385
45 – 59	-0.0593	0.1056	0.0312	0.1713	-0.1145	0.1346
Race						
Black	0.1929**	0.0709	0.1433	0.1085	0.2194*	0.0955
Coloured	0.0069	0.0816	0.1195	0.1246	0.0466	0.1106
Asian	-0.7198***	0.1	-0.7425***	0.159	-0.6890***	0.1396
Province						
Eastern Cape	-0.1341	0.0746	-0.2419*	0.1077	-0.0642	0.1035
Northern Cape	-0.3054***	0.0725	-0.3608**	0.1171	-0.1614	0.091
Free State	-0.5101***	0.0757	-0.5084***	0.1206	-0.3567***	0.0995
KZN	-0.3359***	0.0739	-0.5666***	0.1136	-0.0558	0.1032
North West	-0.2415**	0.0799	-0.2600*	0.1226	-0.1547	0.1082
Gauteng	-0.1349	0.0773	-0.2832**	0.1097	-0.0267	0.1107
Mpumalanga	-0.1007	0.0872	-0.2017	0.1243	0.0341	0.1134
Limpopo/Northern Province	0.0668	0.0733	0.2942*	0.1243	-0.1383	0.096

Working Status						
Work part-time or less than 30 hours a week	-0.3147	0.206	-0.5046	0.3401	-0.2061	0.2526
Student or learner	-0.5280*	0.2082	-0.5899	0.3417	-0.5062*	0.2575
Housewife or househusband	-0.7071**	0.2177	-0.8803*	0.3528	-0.7788**	0.2777
Pensioner or retired	-0.5674*	0.2205	-0.5587	0.3654	-0.6723*	0.2727
Unemployed and looking for a job	0.0026	0.2294	-0.0872	0.3793	0.0469	0.2821
Unemployed and not looking for a job	-0.6384**	0.2064	-0.8725*	0.3395	-0.5576*	0.2551
Other(SPECIFY)	-0.6025**	0.2264	-0.9108*	0.3713	-0.4588	0.2793
Level of Education						
Primary school	0.4907***	0.1292	0.5137**	0.1963	0.4777**	0.1686
Some high school	0.5547***	0.1232	0.5816**	0.1876	0.5340***	0.1598
Matric	0.6797***	0.1268	0.5827**	0.1935	0.7940***	0.1647
Apprenticeship	0.9582***	0.193	0.6857*	0.276	1.2555***	0.2612
Diploma	0.9274***	0.1549	0.6620**	0.2326	1.2087***	0.2028
University degree	1.0093***	0.1658	0.9954***	0.282	1.0619***	0.212
Other	0.6358	0.3549	0.6461	0.4705	0.6322	0.5237
Marital Status						
Widower or widow	-0.2698	0.1727	-0.3347	0.2827	-0.2689	0.209
Separated	0.2221	0.1638	0.7570**	0.2886	-0.0474	0.2049
Divorced	0.0323	0.5547	0	.	0.0457	0.6469
Other	-0.1342	0.0798	-0.1886	0.1237	-0.0869	0.1064
Married	-0.3428***	0.0835	-0.2294	0.1327	-0.4167***	0.109
Single and not living with a partner	-0.5153***	0.0985	-0.4698**	0.1544	-0.5008***	0.1309
Constant	0.1139	0.2662	0.3334	0.433	-0.1645	0.3368
Pseudo R-squared	0.2594		0.2659		0.2832	
Observations	8900		3899		5000	

Notes: The base category for the number of dependents is individuals with no dependents; those over 60 are the reference category for age. Individuals who identify as white are the base category for the race dummy variable. Western Cape province, no education, individuals who work full-time, and widowed are the base categories for the province dummy, level of education dummy, working status dummy, and marital status dummy, respectively. The reported standard errors are robust, and all regressions are weighted.

* p<0.05, ** p<0.01, *** p<0.001

Table 8: Probit Regression with Living Standards Measures Categories as Proxy for Income

	Pooled		2014		2015	
	Coef.	SE	Coef.	SE	Coef.	SE
Credit						
Bank	0.4654***	0.0847	0.6539***	0.1376	0.3135**	0.1104
Other formal	0.2881***	0.0443	0.3258***	0.0737	0.2995***	0.0562
Informal	0.1238	0.1094	0.1641	0.1625	0.0662	0.146
Family	0.1652*	0.0768	0.0607	0.1032	0.2997*	0.122
Savings						
Bank	0.3710***	0.0726	0.6396***	0.1543	0.2884***	0.0867
Other formal	0.8618***	0.0806	0.8087***	0.1304	0.9626***	0.1057
Informal	0.4999***	0.1472	0.3809	0.2767	0.6204***	0.1838
At Home	0.3564***	0.0672	0.3102**	0.1067	0.4145***	0.0881
Social Networks						
Savings Group	-0.1102	0.1616	-0.1497	0.2504	-0.1975	0.2249
Stokvel	-0.1796	0.1548	0.3257	0.2601	-0.4868*	0.2007
Gender (male==1)	0.0137	0.038	-0.0341	0.0649	0.1474**	0.0542
Number of Dependents						
1-2 dependents	0.1865***	0.0487	0.1526*	0.0747	0.2277***	0.0673
3-4 dependents	0.2999***	0.0594	0.3056***	0.0895	0.2897***	0.0825
5 and above	0.3982***	0.0823	0.4782***	0.1201	0.3086**	0.1164
Missing	-0.6932***	0.1139	0	.	-0.4523**	0.1382
Age Category						

16 – 17	-0.7655***	0.1746	-0.8646**	0.2687	-0.6370**	0.2359
18 – 29	-0.5729***	0.115	-0.4522*	0.1911	-0.7159***	0.1441
30 – 44	-0.2256*	0.1102	-0.1496	0.1818	-0.3011*	0.1386
45 – 59	-0.0652	0.1053	0.0373	0.1704	-0.1149	0.1346
Living Standards Measure						
LSM 2	0.6680*	0.3066	1.1038**	0.374	-0.0217	0.4727
LSM 3	0.6799*	0.287	0.8920**	0.3451	0.3264	0.4448
LSM 4	0.5883*	0.2817	0.7768*	0.3369	0.2867	0.4372
LSM 5	0.8167**	0.2791	1.0655**	0.3286	0.3738	0.4354
LSM 6	0.8537**	0.278	1.1898***	0.3274	0.4063	0.4337
LSM 7	0.7922**	0.283	1.1424***	0.3414	0.3261	0.438
LSM 8	0.8400**	0.2892	1.1009**	0.3571	0.4856	0.4454
LSM 9	0.8877**	0.2877	1.2559***	0.3461	0.4608	0.4448
LSM 10	0.6235*	0.2941	0.8950*	0.3642	0.261	0.451
Race						
Black	0.1598*	0.0793	0.1199	0.1209	0.206	0.1086
Coloured	-0.0565	0.0867	0.0483	0.1311	0.0186	0.1195
Asian	-0.7792***	0.1	-0.8369***	0.1563	-0.7353***	0.1422
Province						
Eastern Cape	-0.114	0.0751	-0.1562	0.1102	-0.084	0.1042
Northern Cape	-0.3265***	0.0727	-0.3108*	0.121	-0.1835*	0.0926
Free State	-0.5079***	0.0761	-0.5226***	0.1216	-0.3497***	0.1
KZN	-0.3123***	0.0743	-0.4986***	0.1143	-0.0365	0.1042
North West	-0.2259**	0.0805	-0.2364	0.1241	-0.1448	0.1089
Gauteng	-0.1387	0.0776	-0.2720*	0.11	-0.0178	0.1107
Mpumalanga	-0.0974	0.0871	-0.1552	0.1247	0.0196	0.1138
Limpopo/Northern Province	0.0555	0.0733	0.3363**	0.1245	-0.1613	0.0973

Working Status						
Work part-time or less than 30 hours a week	-0.3302	0.2068	-0.5201	0.3464	-0.2033	0.2511
Student or learner	-0.5430**	0.2091	-0.6092	0.3481	-0.5011	0.2562
Housewife or househusband	-0.7474***	0.2183	-0.9599**	0.359	-0.7762**	0.2764
Pensioner or retired	-0.5958**	0.2213	-0.6287	0.3714	-0.6673*	0.2715
Unemployed and looking for a job	-0.0276	0.23	-0.1183	0.3847	0.0417	0.2804
Unemployed and not looking for a job	-0.6564**	0.2072	-0.8966**	0.3456	-0.5546*	0.2538
Other(SPECIFY)	-0.6315**	0.2274	-0.9632*	0.3783	-0.4621	0.2786
Level of Education						
Primary school	0.4647***	0.1289	0.4770*	0.1932	0.4803**	0.1691
Some high school	0.4998***	0.1234	0.4870**	0.1864	0.5264**	0.1601
Matric	0.6041***	0.1278	0.4487*	0.1945	0.7768***	0.1655
Apprenticeship	0.8789***	0.1939	0.5396*	0.2748	1.2201***	0.265
Diploma	0.8549***	0.1564	0.5350*	0.2355	1.1833***	0.2052
University degree	0.9614***	0.167	0.8942**	0.2816	1.0575***	0.2145
Other	0.5712	0.3678	0.5122	0.4817	0.5834	0.538
Marital Status						
Widower or widow	-0.2969	0.174	-0.3987	0.284	-0.2771	0.2104
Separated	0.1964	0.163	0.6694*	0.2807	-0.061	0.205
Divorced	0.035	0.546	0	.	0.0404	0.6379
Other	-0.1452	0.0798	-0.2226	0.1233	-0.0952	0.107
Married	-0.3465***	0.0834	-0.2486	0.1319	-0.4299***	0.1096
Single and not living with a partner	-0.5114***	0.0985	-0.4704**	0.1541	-0.5119***	0.1317
Constant	-0.5468	0.383	-0.5735	0.5434	-0.4888	0.5455
Pseudo R-squared	0.2632		0.274		0.2852	
Observations	8900		3899		5000	

Notes: The base category for the number of dependents is individuals with no dependents; those over 60 are the reference category for age. Individuals who identify as white are the base category for the race dummy variable, while individuals in LSM group 1 are the base category for the LSM dummy. Western Cape province, no education, individuals who work full-time, and widowed are the base categories for the province dummy, level of education dummy, working status dummy, and marital status dummy, respectively. The reported standard errors are robust, and all regressions are weighted.

* p<0.05, ** p<0.01, *** p<0.001

Table 9: ***Variance Inflation Factor***

	VIF	1/VIF
Credit		
Bank	1.742	.574
Other formal	1.482	.675
Informal	1.082	.924
Family	1.072	.933
Savings		
Bank	1.353	.739
Other formal	1.648	.607
Informal	5.213	.192
At Home	1.046	.956
Social Networks		
Savings Group	2.517	.397
Stokvel	3.29	.304
Gender (male=1)	1.017	.984
Number of Dependents		
1-2 dependents	1.65	.606
3-4 dependents	1.614	.62
5 and above	2.173	.46
Missing	3.453	.29
Level of Income		
R1 - R999	5.7	.175
R1,000 - R1,999	6.092	.164
R2,000 - R2,999	3.429	.292
R3,000 - R5,999	4.437	.225
R6,000 - R7,999	2.375	.421
R8,000 - R9,999	2.064	.485
R10,000 - R11,999	1.767	.566
R12,000 - R16,999	2.215	.452
R17,000 - R24,999	1.765	.566
R25,000 and above	2.018	.496

Refused/Don't Know	9.323	.107
Age Category		
16 – 17	2.268	.441
18 – 29	6.941	.144
30 – 44	7.064	.142
45 – 59	4.999	.2
Race		
Black	2.842	.352
Coloured	2.13	.469
Asian	1.45	.69
Province		
Eastern Cape	1.708	.586
Northern Cape	1.881	.532
Free State	1.973	.507
KZN	1.88	.532
Northwest	1.595	.627
Gauteng	1.831	.546
Mpumalanga	1.504	.665
Limpopo/Northern Province	1.718	.582
Work Status		
Work part-time or less than 30 hours a week	35.987	.028
Student or learner	16.281	.061
Housewife or househusband	13.31	.075
Pensioner or retired	8.122	.123
Unemployed and looking for a job	17.314	.058
Unemployed and not looking for a job	24.093	.042
Other (SPECIFY)	5.03	.199
Level of Education		
Primary school	5.166	.194
Some high school	14.397	.069
Matric	15.195	.066
Apprenticeship	2.372	.422
Diploma	6.119	.163
University degree	4.399	.227
Other	1.177	.849
Marital Status		
Separated	1.212	.825
Divorced	1.266	.79

Other	1.033	.968
Married	3.803	.263
Single and not living with a partner	4.901	.204
Single and living with a partner	2.211	.452
Mean VIF	4.864	.

*Table 10:**Heckman Sample Selection Second Stage Regression***

	Coef.	SE
Credit		
Bank	0.4358***	0.0834
Other formal	0.2886***	0.0439
Informal	0.1144	0.1086
Family	0.1672*	0.0771
Savings		
Bank	0.3277***	0.0726
Other formal	0.8457***	0.0816
Informal	0.4999***	0.1439
At Home	0.3597***	0.0676
Social Networks		
Savings Group	-0.075	0.1591
Stokvel	-0.2045	0.1517
Gender (male=1)	0.0163	0.0381
Number of Dependents		
1-2 dependents	0.1877***	0.049
3-4 dependents	0.2923***	0.0596
5 and above	0.3861***	0.082
Missing	-0.6252***	0.1637
Level of Income		
R1 - R999	-0.0437	0.1285
R1,000 - R1,999	0.1826	0.1341
R2,000 - R2,999	0.2466	0.1437
R3,000 - R5,999	0.2768	0.144
R6,000 - R7,999	0.4126*	0.1755
R8,000 - R9,999	0.284	0.2064
R10,000 - R11,999	0.4341	0.2978
R12,000 - R16,999	0.3205	0.2172
R17,000 - R24,999	0.6299*	0.2681
R25,000 and above	0.5703*	0.2488
Refused/Don't Know	0.1501	0.1305
Age Category		
16 – 17	-0.7343***	0.1755
18 – 29	-0.5453***	0.115
30 – 44	-0.2007	0.1102
45 – 59	-0.0373	0.1053
Race		
Black	0.1968**	0.0713
Coloured	0.0088	0.082
Asian	-0.7225***	0.0997

Province		
Eastern Cape	-0.121	0.075
Northern Cape	-0.3103***	0.0727
Free State	-0.5023***	0.0759
KZN	-0.3311***	0.0738
Northwest	-0.2474**	0.0799
Gauteng	-0.1389	0.0772
Mpumalanga	-0.091	0.0871
Limpopo/Northern Province	0.0638	0.0731
Work Status		
Work part-time or less than 30 hours a week	-0.378	0.2027
Student or learner	-0.5251*	0.204
Housewife or househusband	-0.6182**	0.2153
Pensioner or retired	-0.5132*	0.2172
Unemployed and looking for a job	-0.0056	0.2244
Unemployed and not looking for a job	-0.5423**	0.2039
Other (SPECIFY)	-0.5509*	0.2229
Level of Education		
Primary school	0.4847***	0.1297
Some high school	0.5405***	0.1243
Matric	0.6461***	0.1283
Apprenticeship	0.9066***	0.194
Diploma	0.8829***	0.1572
University degree	0.9477***	0.1692
Other	0.5829	0.3434
Marital Status		
Separated	-0.2882	0.1723
Divorced	0.2319	0.1649
Other	0.1227	0.5528
Married	-0.1188	0.0798
Single and not living with a partner	-0.3283***	0.0836
Single and living with a partner	-0.4992***	0.0987
IMR	2.1549***	0.255463
Constant	-0.0537	0.2913
Pseudo R-squared	0.263	
Observations	8900	