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Investigating the relationship between financial inclusion and poverty in South Africa

by

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DECLARATION

I declare that "*Investigating the relationship between financial inclusion and poverty in South Africa"* is my own work, that it has not been submitted for any degree or examination in any university, and that all the sources that I have used or quoted have been indicated and acknowledged by complete references.

Ratema Mahalika

Signature: 

Date: 25 November 2020

ABSTRACT

The literature on financial inclusion and poverty connections has received considerable attention recently. There exist a scarcity of local studies examining the relationship between financial inclusion (FI) and poverty. Precisely, there is a lack of local studies who previously used FinScope data to investigate the mentioned relationship in South Africa. This study is motivated to fill the gap. To achieve the aims, the study will source data from FinScope (a secondary data) for the periods of 2011 and 2016. The Foster-Greer-Thorbecke indices were used to measure the level of poverty, while the lower-bound poverty (LBPL) line was used to differentiate the poor from the non-poor. Principal Component Analysis (PCA) was also applied to derive the financial inclusion index (FII). Probit regressions were run to measure the likelihood of being poor and being financially excluded. Ordinary Least Squares were run to identify the nature of the relationship between the dependent and the independent variables. Lastly, bivariate regression was also run to test the relationship between poverty and financial exclusion.

The empirical findings indicated that the South African financial system is inclusive. Unemployment and financial language restricted financial service access. The frequently used financial services were borrowing and funeral cover. Black African female with low education residing in rural areas and unemployed were poorer. The rich elderly white man from the urban areas of the Western Cape and Gauteng who are highly educated, were more likely to be financially included.

The regression analysis showed that the female was more likely to be financially included yet poor. It is also found that Gauteng residents were less likely to be poor. Also, individuals from a bigger household were less likely to be excluded. The other results showed that individuals with higher real per capita income enjoyed much lower probability of being financially excluded, and they are mainly white individuals living in urban areas.

Keywords: Financial development, financial inclusion, poverty, FinScope South Africa.
JEL Codes: G00, G21

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LIST OF ABBREVIATIONS

ATM	Auto teller machine
FD	Financial development
FE	Financial exclusion
FGT	Foster-Greer-Thorbecke
FI	Financial inclusion
FII	Financial inclusion index
FPL	Food poverty line
GDP	Gross domestic product
IV	Instrumental variable
LBPL	Lower bound poverty line
MFI	Micro-finance institutions
NIDS	National income dynamics study
OLS	Ordinary least squares
OSCAR	Octagonal shrinkage and clustering for regression
PC	Principal Component
PCA	Principal Component Analysis
SA	South Africa
SRMI	Sequential Regression Multiple Imputation
StatsSA	Statistics South Africa
UBPL	Upper bound poverty line

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CHAPTER ONE: INTRODUCTION

1.1 Background and Problem Statement of the Study

Financial development (FD) captures microeconomic factors, structural factors (factors that cannot be altered speedily), and policy-sensitive factors (Alter & Yontcheva, (2015). A developed financial sector expands financial access (financial inclusion) and reduces the costs of that access, thereby broadening economic activity and increasing output (Adeola & Evans, (2017). While the focus of this study is on financial inclusion (FI), this linkage between FD and FI necessitates a brief discussion on FD before that of FI.

FD has become progressively fundamental within development agendas worldwide. Financial systems play a crucial role in facilitating and maintaining economic growth. Moreover, FD is widely recognised to exert valuable contributions on both growth and poverty alleviation. FD, widened financial accessibility, in particular, is an important issue for people's lives as it leads to better living standards. Precisely, greater financial accessibility promotes savings (Allan et al., 2016; Aportela, 1999), decreases income inequality and poverty (Burgess & Panda, 2005) and improves decision making (Mani et al., 2013).

While high levels of FD are associated with low levels of poverty (Agyemang-Badu, 2018; Williams, Adekoge & Dare, 2017) and considered as an essential factor that brands inclusive growth (Cyn-Young, 2015), the general situation of the poor people globally has worsened over the past decades (Kiendrebeogo & Minea, 2016). To make things worse, financial services accessible to disadvantaged social strata are minimal to enable a decent standard of living (Zhang, 2018; Matsebula & Yu, 2020), and most of the essential financial services are skewed in favour towards the more privileged population instead.

Advancing access to financial services to the poor and under-privileged groups is now a global priority. Previous literature focused on the indirect effect of FD on poverty reduction through higher economic growth since the poor do not have access to financial services (e.g. Bencivenga & Smith, 1991; King & Levine, 1993; Levine, 1997; Levine, Loayza & Beck, 2000; Rajan & Zingales, 1998). Most of these studies have similar findings in that there exists a presence of a substantial positive effect of FD on economic growth (Dhrifi, 2013). Academics in this theme propose the notion that a high growth rate, stimulated by FD, contributes substantially to poverty reduction-trickle-down theory (Gondo, 2009; Odhiambo, 2009;

Quartey, 2005). However, given that income distribution in many developing countries is skewed towards the few rich populace (World Bank, 1995), not everyone (particularly those at bottom-end of the income distribution) benefits from improved FD, as emphasised by Beck, Demirguc-Kunt & Levine (2007).

There has been a remarkable development in both the depth and breadth of financial system over the last century. While the literature on FD and economic growth has received a lot of consideration over the last two decades internationally (e.g. Donou-Adonsou & Sylwester, 2016; Honohan, 2004; Jalilian & Kirkpatrick, 2002; Jalilian & Kirkpatrick, 2005; Jeanneney & Kpodar, 2008; Kiendrebeogo & Minea, 2013; Rewilak, 2017), more of the recent studies focused on the impact of FD on poverty alleviation (e.g. Cepparulo, Cuestas & Intartaglia, 2016; Donou-Adonsou & Sylwester, 2016; Jeanneney & Kpodar 2011; Kiendrebeogo & Minea, 2016; Zahongo, 2017).

A well-functioning financial system serves as a pavement along which economic growth travels and thus the financial system must provide necessary supporting transport services to enable a full employment of productive human resources. Well-functioning financial system assist important objective offering multiple services to consumers, such as providing savings, payments and credit facilities to majority of the people. An inclusive financial system is an engine towards benefiting the poor and other marginalised segments of the population. If the financial system is not inclusive, the poor people and small emerging businesses must rely on their small savings and small earnings to maintain their lives and invest in potential opportunities. This can widen income inequality among the rich and the poor even further, and contribute to low economic advancement (Demirguc-Kunt & Levine, 2009).

FI has become a topical issue in recent years and thus has emerged as a significant theme on the worldwide agenda for sustainable long-term economic growth. The expansion of the financial outreach is based on the concept that lack of access to financial services (and sufficiently provided services) significantly affect the poor segments of the population and thus the initiative to extend levels of FI among the poor is considered a prominent solution (Imai, Arun, & Annim, 2010, Imai et al., 2012). Different economies and financial institutions internationally have led key policy initiatives to link the gap between FI and the low-income, disadvantaged groups (Arun, & Kamath, 2015).

Similarly, central banks in advanced and developing economies have initiated various strategies to promote financial sector outreach in their countries. For instance, while the likes of the German Bankers' Association took initiative to ensure every person in the country had a bank account the Reserve Bank of India has introduced 'no-frills' accounts and 'General Credit Cards' for low deposit and credit to widen inclusiveness of their financial system. Similarly, South Africa also initiated a low-cost account called 'Mzansi' in 2004 by the South African Banking Association (Sarma, & Pais, 2011). Moreover, microfinance institutions have been set up in some parts of the world with the intention to extent financial outreach to the poor.

While the significance of FI is well-established, a formal agreement on how it should be measured has yet to be reached. Various approaches have been proposed in the literature including the use of a variety of FI dimensions to econometric estimations. Additionally, there is no consensus on what source of data should be used to measure FI between supply-side data and demand-side data. However, most of the recent researchers (Camara & Tuesta, 2014); Demirgüç-Kunt & Klapper, 2013) scrutinised usage of supply-side data since it does not cover all FI dimensions.

The advent of FI (accessibility) triggers one to think about the potential role FI can play in a country's economy. There are only a handful of studies on finance-poverty in South Africa (e.g. Gondo, 2009; Odhiambo, 2009; Kostov, Arun & Annim, 2015; Matsebula & Yu, 2020). Nexus between FI and poverty reduction history can be tracked to developing Asia's successes (continued economic growth which drew millions of people out of deprivation). Nonetheless, it is observable that poverty is a persistent challenge in most developing countries (Cyn-Young, 2015).

FI is usually regarded as a significant driving factor, as increasing the poor's access to financial services is frequently reflected as an effective tool that helps reduce poverty as well as income inequality. However, there exist some studies which are in contrast with majority of the past studies and by positing that FI and FD initiatives rather contribute negatively to poverty and deteriorate the state of the poor (e.g. De Haan & Sturm, 2017; Greenwood & Jovanovic, 1990; Kostov, Arun & Annim, 2015). Weak financial systems and insufficient supply of financial

markets and thus financial services contribute to negative impacts that FD exerts on growth and poverty. Sulong & Bakar (2018) further expressed that, some studies employed only one variable to measure the efficiency of FI on growth (functional misspecification). Therefore, using one variable cannot effectively give clear results since FI is multidimensional.

1.2 Research question

The study intends to address two key questions on the link between FI and poverty in South Africa, namely: How do personal characteristics determine FI, and to what extent does access to finance impact one's poverty status in South Africa?

1.3 Objectives of the study

The general objective of the study is to use demand-side data (FinScope data) to establish the relationship between FI and status of poverty in South Africa. Specifically, the study seeks to:

i. Identify personal characteristics that influence FI in South Africa.
ii. How FI impacts poverty status in South Africa.

1.4 Relevance of the study

The findings of the study will provide implications for the poor, development finance, policymaking as well as future studies on FI in South Africa. The poor in South Africa becomes the supreme beneficiary since the study intends to document significant role FI plays in their lives to eradicate deprivation. This provides an enabling platform for the majority of the poor to take part in FI programmes in the country. Economists and development finance can thus use results of the study on how to tackle poverty problems as opposed to traditional ways that used economic growth.

Moreover, the study will add to the growing body of literature on this theme, and thus could be used for policy making purposes regarding financial system development as well as for the initiation and implementation of poverty alleviation strategies. The study also broadens the current literature on the relationship between FI and poverty reduction both locally and internationally.

1.5 Outline of the study

The study is structured as follows: Chapter two discusses definitions of key concepts (financial development, financial system of South Africa, financial inclusion, financial exclusion and poverty), economic theories of poverty, and theories of FI as well as providing a review of past empirical studies to identify research gap. Chapter Three specifies the methods and data source. Chapter Four presents and discusses the empirical findings, before Chapter Five concludes the study with various policy suggestions.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

The overall objective of this chapter is to present theories as well as past empirical evidence on the nexus between FI and poverty in South Africa. It consists of four main sections. Section 2.2 presents definitions of various key concepts, while section 2.3 presents discussion of theoretical framework. This is followed by a review of past empirical studies, before the chapter concludes by highlighting the research gap in the existing literature and discusses how this study will fill the gap.

2.2 Definition of key concepts

Developing contextually appropriate definitions upfront can afford a helpful route, not only by providing clear guidance on what variables to measure, but also determining the benchmark that can be used to measure success and failure. Therefore, definitions of FI and poverty are likely to influence the nature of the research.

2.2.1 Financial development

Financial development refers to "the policies, factors, and institutions, which lead to efficient intermediation and effective financial markets, as well as broad access to capital and financial services" (Gondo, 2009; Stiglingh, 2015; World Economic Forum, 2012;). These include expansion in size and quality of financial markets, efficiency and stability of and access to the financial system.

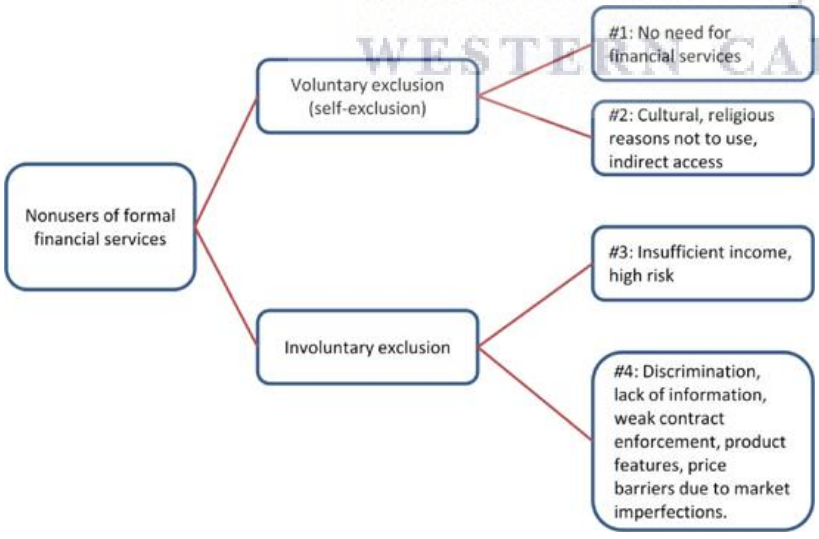
2.2.2 Financial exclusion

The term 'financial exclusion' is a complex concept and thus involves a wide variety of both implicit and explicit definitions. FE can be understood as a lack of access to or non-availability of formal financial services or a process that prevents certain segments of the society, the poor and marginalised section of the population, from gaining access to the formal financial system of their economy (Koku, 2015). Cross reading of literature suggests that FE can be defined as a process whereby certain social groups encounter difficulties accessing and/or using formal financial services and products in the mainstream market that are suitable to their needs and allow them to lead a normal social life in their respective societies (Kempson, Crame & Finney, 2007; Koku, 2015; Leyshon & Thrift, 1995).

Difficulties preventing access to formal finance are caused simultaneously by both supply and demand-side barriers (Sain, Rahman & Khanam, 2016). Supply-side barriers concern the characteristics of a product and the way they are provided, while demand-side barriers concern the situation as well as the financial capabilities of the firm or individuals. Kempson, Crame & Finney (2007) emphasised it must be acknowledged FE is a relative concept and not an absolute one with some degree of exclusion, where the term "financially excluded" refers to lack of all the products while "marginally included" refers to the section of people who have limited access.

This exclusion is categorised into two, namely voluntary and involuntary exclusion (World Bank, 2014), as shown in Figure 1. Voluntary financial exclusion refers to a division of the population that can access financial services, but people decide not to access and use them due to various reasons, for example, they do not need these services, as well as cultural and religious reasons. Involuntary exclusion, on the other hand, refers to part of the entities that demand financial services but are denied access due to differing barriers, including lack or insufficient income, risky population, costs related issues, lack of information and required documentation, inappropriate financial products as well as discrimination.

Figure 1: Main types of financial exclusion



Source: Adapted from World Bank (2014).

Subsequently, the definitions FE, offer a signal that exclusion happens predominantly among social strata who are at the margins of the society, regardless of whether an individual or a

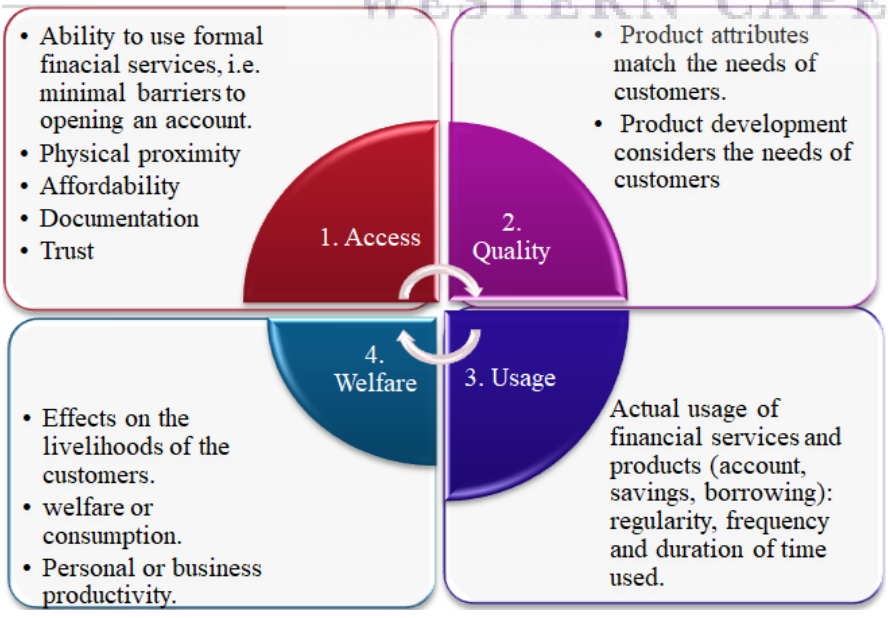
household is in the advanced or emerging economies (Carbo et al. 2007; Devlin, 2005; McKillop, Ward & Wilson, 2007).

2.2.3 Dimensions of Financial Inclusion

Cross reading of literature shows most researchers (e.g. Camara & Tuesta, 2014: Jabir, 2015) divided dimensions of FI into three categories, though there is a slight difference in terms of how each classifies these categories. In addition to usage and access, Jabir (2015) includes quality while Camara & Tuesta (2014) talk about barriers. On the other hand, Alliance for Financial Inclusion (2010) suggested four dimensions of FI, and thus mentioned welfare in addition to access, usage, and quality. However, the most commonly used FI dimensions are three (usage, access, and quality).

These three broad categories of FI dimensions set a platform on which FI indicators can be grouped. They enable policymakers to develop an appropriate measurement strategy that depicts the multidimensional nature of FI (e.g. Camara & Tuesta, 2014; Jabir, 2015). However, the set of indicators suitable for each economy's requirements and level of resources need to be identified within this strategy. Figure 2 below depicts the classification of FI dimensions, the three commonly used and the fourth one documented by Alliance for Financial Inclusion (2010), followed by a detailed discussion.

Figure 2: Dimensions of financial inclusion



Source: Alliance for Financial Inclusion (2010).

Access: This dimension is primarily concerned with the possibility of individuals and firms to access the available formal financial services and products. Examining and understanding access necessitates identification of possible barriers that prevent financial institutions supplying their services and products or factors hindering clients from using the services, such as costs related issues, physical proximity of financial service points, documents required and trust of clients on institutions and information as well (Alliance for Financial Inclusion, 2010). However, having access to formal finance does not imply using them. On the other hand, every client who does not have access to formal finance cannot use them and thus is classified as "financially excluded" or "unbanked" (Jabir, 2015). Similarly, having access does not automatically reflect "inclusion", if services are not used then the client can be referred to as "excluded".

Usage: This component is concerned with the extent to which formal finance is used. It concentrates on the permanence and depth of use of financial services. It is about how often, how consistently and for how long formal finance has been used. It also includes examining a combination of financial services used by each client. Individuals, households and firms must have access to financial services to use them. However, not every client who does not use formal finance is classified as financially excluded or unbanked (Alliance for Financial Inclusion, 2010; Camara & Tuesta, 2014; Jabir, 2015).

Quality: this component attempts to measure the relevance or compatibility of the formal financial services to the needs of the end-users. It includes the range of financial services options offered to the clients, experience, and attitude towards available services, awareness, and understanding of the services. Indicators of quality portray whether the product is fit for the required purpose, user-friendly and safe to use as well as consumer protection. Hence information on the quality can be obtained from both the supplier and the client (Alliance for Financial Inclusion, 2010; Jabir, 2015)

Welfare: this measure of FI focuses on the impact financial services exerts on the lives of the clients, as well as variation in consumption and business activities and wellness. Evaluating the impact cannot be in a straightforward manner and thus can be very challenging since it needs more information beyond finance, also strategies will need to be developed not only to

depict relationships but also to reflect causality. Developed strategies can also assist to differentiate the impact of financial services from other concurrent factors that also have an impact, either direct impact, indirect or interactive effect with financial services on people's lives (Alliance for Financial Inclusion, 2010).

2.2.4 Poverty

Defining poverty and how it should be measured and who the poor is are strongly contested topics (Kamusaala, 2016). It is debated whether poverty is more about a set of material needs that allow well-being. This is because poverty comprises being deprived on several fronts. Poverty is a complex societal issue despite its many definitions as well as measures, and as such, it is not easy to get a precise definition that will suit every situation (May, 1998). Poor society not only lack basic resources but also lack access to vital information valuable to their lives generally, political visibility, they also lack access to knowledge and education to advance their standard of living. Additionally, poor people lack access to the markets as a whole, both private and public, for the provision of their needs (Seymour, 2009; Townsend, 1979).

Poverty can be measured in various ways by governments, international bodies, policy makers as well as practitioners. Mostly, poverty is considered as multidimensional, covering social, natural and economic factors found within wider socio-political processes. Narrowly, poverty can be defined around economic, social, political as well as psychological incapability preventing one to provide the simplest basic needs for himself and the family as well (Bradshaw, 2007). World Bank (2004) defined poverty as a multi-dimensional phenomenon that includes "low incomes and the inability to acquire the basic goods and services necessary for survival with dignity". Malaba (2006) extends this definition by incorporating malnutrition; poor health; low literacy levels; low wages, lack of access to safe housing, water, sanitation and adequate clothing, housing and low living conditions.

Poverty can also be defined, commonly, as the lack of adequate amount of money or material possessions to fulfil the basic needs (food, clothing as well as shelter) as well as to permit participation in activities, customs and to be socially approved or accepted (Bradshaw, 2006; Davis & Sanchez-Martinez, 2015; Townsend, 1979). For the purpose of this study, poverty is defined in monetary terms. It is defined as lack of monetary resources to meet basic necessities of life. Therefore, poverty lines are employed to differentiate the poor from the non-poor. There

are three official poverty lines used in South Africa namely upper-bound poverty line (UBPL), lower-bound poverty line (LBPL) and the food poverty line (FPL) (Statistics South Africa, 2019). In this study, the lower bound poverty line (R810 per person per month in 2019 prices) will be used as a benchmark to distinguish the poor from non-poor.

2.3 Trends in FI and Poverty Levels

In the world, below 20% of the population in developing countries have access to formal financial services (Rosenberg, 1995; Robinson, 2001). The remaining are part of the financially excluded people globally since the majority of the formal financial service providers regard low-income earners who are lowly educated and reside in the rural areas as financially poor to save or access credit facilities from them. About 80% that are financially excluded are obliged to participate in the informal financial programmes or keep their finances at home (Oluyombo, 2013b).

An estimated 23% of the African adult population is banked (Evans, 2015). In Sub-Saharan Africa, more than 40% of the people save money regularly, but about half of these people participate in formal financial services. While participation in the formal services is low in Central and North Africa, it is high in Southern Africa, and it is on the rise in Eastern and Western Africa. Informal financial sectors are those financial service providers that are neither controlled nor regulated by the government and are not approved by the Central Banks.

The world has deep poverty while there are plenty of resources. The World Bank estimates show that in 1998 more than one billion people lived in poverty (on less than 1$ a day), which is higher than a decade earlier. Of the world's six billion people, about one-fifth live in poverty, with 44% residing in South Asia. While East Asia experienced a remarkable decrease in the number of people living in poverty (from around 420 million to 280 million) between 1987 and 1998, the number of poor people has been increasing in Latin America, South Asia, and Sub-Saharan Africa. The number of poor people in European and Central Asia rose more than twenty times (World Bank, 2000/2001).

2.3.1 South Africa's FI landscape

This section is devoted to providing an overview of South Africa`s FI landscape. Nations worldwide implemented various interventions to enlarge their scope of financial access, South

Africa is not an exception. A sophisticated South African financial system was early to adopt policies and initiatives to broaden FI and a country experienced a remarkable rise in FI from 61% in 2004 to 89% in 2016, which put South Africa 1% back from its National Development Plan goal of 90% by 2030 (Abrahams, 2017: FinMark Trust 2016). The number of adults who were included rose from 17.7 million to a 31.4million. This can easily confirm the success of the initiatives adopted.

The above changes were attributed to various initiatives put in place by the government. However, the primary driver was the many Mzansi accounts (six million accounts) that were opened over the period and attracted international interest. The initiative stemmed from South Africa's Broad-Based Black Economic Empowerment policies, particularly the Financial Sector Charter.

2.3.2 Poverty Trends in South Africa

The updated poverty lines, by Statistics South Africa, are used to measure the level of poverty. The poverty lines indicated that extreme poverty (using FPL) in South Africa has been fluctuating over the years. 28.4% of the South African population was poor in 2006, it climbed to 33.5% in 2009 and this could be attributed to the global financial crises. In 2011, the poverty share declined to 21.4% and it then rose to 25.4% in 2015 (Statistics South Africa, 2019).

2.4 Theoretical framework

A conceptual or a theoretical definition provides the meaning of a particular word based on the theories of a certain discipline. A conceptual definition therefore assumes the theories that the definitions rely on are well known and accepted. Subsequently, to conceptually define a word is equally forming a hypothetical construct.

2.4.1 Theoretical Literature

2.4.1.1 Financial System of South Africa

South Africa has a dual economy with a sophisticated world-class financial service sector, providing a high-class array of financial services and products (Arora & Leach, 2005; Ardington, Lam, Leibbrandt & Levinsohn, 2004). This sector presents a wide choice for some South African households and individuals. However, only the privileged households benefited from these services and thus appear to be irrelevant to the struggling South Africans. This

financial service sector is assisted by a sound regulatory and legal framework, with differing domestic and international institutions providing a full variety of services including commercial, retail and merchant banking, mortgage lending, insurance, and investment (Ardington, Lam, Leibbrandt & Levinsohn, 2004).

South Africa has a well-developed and effectively regulated banking system, consisting of a central bank (South African Reserve Bank), few large and financially strong banks dominating the retail market (Absa, FNB, Standard Bank, Nedbank and newcomer Capitec), investment institutions and a variety of smaller banks. The level of concentration in the market influences depth of competition among players and thus the quality of services and products provided. This implies the higher level of concentration reflects lower level of competition in the market system (Moyo, 2018). There are many other international banks and investment institutions operating in South Africa. Hawkins (2004) defined South African financial sector as the banking, insurance and securities industries.

The financial system of South Africa is considered a stable one. Arora & Leach (2005) documented that there have been core structural and regulatory adjustments, when foreign capital and companies enter into South Africa, to align local institutions and systems with global best practices. Baumol (1982) supported the above statement in that the arguable market theory highlights that a highly concerted market can be very competitive irrespective of whether the minority of firms control it. A financial system with few giant banks, which are the major players, is referred to as stable, however, this comes with social costs in terms of capability to secure profits and this may, therefore, prevent required developments (Hawkins, 2004). While stability is significant, financial systems are still required to permit innovation and change.

2.4.1.2 Financial inclusion

FI is a multidimensional concept and there is no generally accepted single definition. However, different definitions converge to the same context. FI can be generally defined as an economic state from which individuals, households and firms are not denied access to formal financial services (basic services). FI measures the extent to which individuals or households are incorporated into the formal financial sector (Aduda & Kalunda, 2012). Similarly, Sarma

(2008) and Allen et al. (2012) defined FI as a process of ensuring that formal financial systems are easily available, accessible and can as well be easily used by all members of the economy.

FI is explained as the delivery of the necessary financial services at an affordable cost to a large fraction of deprived and low-income social strata in an economy (Leeladhar, 2005; Zinsa & Weill, 2016; Matsebula & Yu, 2020). Camara & Tuesta (2014), on the other hand, defined an inclusive financial system as one that takes full advantage of access and usage of formal financial services while making involuntary financial exclusion very minimal. Involuntary financial exclusion is assessed by barriers preventing people from having access to and from using formal financial services, and they include distance, trust, costs, and documentation. All these cited definitions of FI lead to access society to the financial system, including therein the disadvantaged and vulnerable members of an economy.

Therefore, for the purpose of this study, it is important to define FI in terms of effective accessibility to basic formal financial services (non-existence of price and non-price barriers in the access and usage of formal financial services). Effective accessibility comprises appropriate, convenient and responsible formal financial service delivery which is safe and affordable to the customers and sustainable for the providers, also be readily consumable by all members of the society specifically the disadvantaged and vulnerable groups so that development in the financial sector can be directly linked to poverty (Sarma, & Pais, 2011; Wang'oo, 2008).

2.4.2 Schools of thought

The relationship of FI and poverty reduction depends on different schools of thoughts because of numerous definitions of poverty adopted over time by each school. These definitions reflect transition of thinking from monetary to wider issues or perspectives. To have the most relevance of insights into decreasing deprivation, selective synthesis of approach is required. The four main theories of poverty (Classical, Neoclassical, Keynesian and Marxian theories) will be briefly reviewed in nexus to FI.

Classical economic traditions contend that poverty is a product of wrong decisions made by individuals or families and thus poverty impacts negatively on their productivity (Davis & Sanchez-Martinez, 2015). According to Townsend (1979), poverty is not a result of market

failure, rather people trapped in poverty self-select into deprivation. Poverty is basically centred on individuals' control and not on outside factors. FI, as considered an outside factor, thus has no role in poverty alleviation. In addition to Classical theory, neoclassical economics is more diverse in showing that factors contributing to poverty extend beyond individuals' choice or control. These factors, market failure in particular, prohibit the poor from the credit markets and thus become financially excluded. Consequently, any form of financial development only reflects positive effects to the non-poor (Davis & Sanchez-Martinez, 2015).

In contrary, Keynesian school underlines that market distortions and underdevelopment propel poverty. Poverty is considered essentially as involuntary and triggered by unemployment. The role of government is more pronounced in providing economic stabilisation, public goods as well as dealing with inequalities. Income growth is seen as an effective tool in reducing poverty. Thus, this implies development in the financial sector, specifically financial inclusion, reflects a valuable positive effect on poverty reduction (Davis & Sanchez-Martinez, 2015).

Lastly, the Marxian or radical views consider social groups discrimination as central to poverty and allocate a significant role to the government to regulate markets. Anti-poverty schemes comprise minimum wages and anti-discrimination laws. Economic expansion alone is not sufficient to alleviate poverty since people belong to different social strata, and thus income growth resulting from economic expansion does not benefit the entire populace in different classes. Similar to Keynesian theory, any form of FI has a role to alleviate deprivation to a larger extent across the economy (Davis & Sanchez-Martinez, 2015).

2.4.3 Economic Theories of Financial Inclusion

2.4.3.1 Trickle-down theory

Trickle-down theory, also called trickle-down economics, basically refers to the economic state that taxes levied on both businesses and the wealthy in society should be decreased to stimulate business investment in the short term so that there will be a positive spill-over effect to the society at large, especially to the disadvantaged population, in the long term (Aghion & Bolton, 1997). This theory is fundamental and relevant in this study since it is argued that development in the financial sector contribute positively, but indirectly, on poverty reduction through economic growth.

This theory is categorised into two broad understandings that seems to favour the wealthy: supply-side arguments proposing that tax cuts for the rich (wealth creators) incentivises to increase output and create better employment opportunities, while demand-side arguments suggests that wealthy need be protected through provision of subsidies and tariffs to ensure they keep paying their employees and enabling more investment (Arackal, 2016).

This theory, however, is criticised to be applicable only on theory and not real-life situation in a number of occasions: evidence from the United States shows that a vast number of black people have not benefited from economic growth; unemployment rates are persistently high and worse poverty is still a problem among third world countries despite significant transfers of capital and technology from developed countries. It is, therefore, argued that the theory was used to cover up the economic manipulation of the wealthy and elite in an economy (Arackal, 2016).

2.4.3.2 Other theories

Allan & Santomero (1997) documented that traditional theories of intervention relied on two types of market frictions namely asymmetric information and transaction costs. These market frictions contributed to the development of both financial markets as well as financial intermediaries who undertake various duties in the financial system of an economy, generally, they provide multiple financial services to the consumers.

FI is a complex subject matter and thus diverse theories and strategies are used to define and investigate it (Seman, 2016). Under economic theories, both new-Keynesian and neoclassical theories can be used to study and analyse FI or FE. The neoclassical theory posits that consumers and firms are the main economic agents who have all the necessary information to make rational decisions to uphold or advance their well-being, who are competitive and rationally self-interested, while the state is a secondary agent. Based on these assumptions, consumer choices and wrong state's policy can lead to financial exclusion. For example, consumers may voluntarily choose not to use the mainstream financial markets rather choose to use the informal financial services due to various reasons such as lack of need for formal financial services as well as cultural and religious reasons. On the other hand, the government may set higher borrowing rates which in turn discourage consumers and thus result to exclusion of the disadvantaged groups.

However, new-Keynesian theory focused on the market distortions rooted in the macro-economy to examine and analyse FE. Under this theory, FE is involuntary. The constraints that prevail in the financial market system restrict the other segments, the especially considered risky borrowers, from accessing some financial services such as credit services. It is thoroughly explained in the work of Stiglitz & Weiss (1981) that, financial services providers especially the banks, supply the services if it is profitable to do so. Banks give credit to consumers who have potential to repay. Consumers have different probabilities of repaying their loans and it is rather difficult to identify good and bad borrowers. In this regard, banks use interest rates, among other screening devices, which an individual is willing to pay as a screening strategy. Consequently, to avoid losses from risky borrowers, creditors reduce interest rates and restrict credit.

2.5 Review of past empirical studies

While there have been several researches about FI in developed countries for the developed countries, there is a serious scarcity of literature on this theme for emerging economies. Since South Africa is a developing country, or is anomaly among the developing countries, with a sound infrastructure but with huge social as well as economic problems and a larger possibility of FI, to fill the shortage of literature and discover the new potentials in this theme, the succeeding literature has been reviewed prior to start to further stages of the study.

2.5.1 International Studies

While ample international studies on finance-growth-poverty nexus have been conducted, not much of the research has been conducted on the direct impact of FI on poverty alleviation around the world at both macro and micro-levels. Few studies focused on microfinance, financial development, and finance-growth as well as on financial access all concerning poverty.

Numerous recent investigations found the existence of a progressive connection between access to finance and poverty alleviation (e.g. Honohan, 2008; Imai & Annim, 2010; Quartey, 2005). A study by Zins & Weill (2016) found that FI is low among African countries. Several international studies that have been conducted (e.g. Aduba & Kalunda, 2012; Bruhn & Love, 2014; Mugo & Kilonzo, 2017; Williams, Adegoke & Dare, 2017) suggest that FI plays a vital

role in poverty alleviation. The last study put more emphasis on the significant contribution of internet access reflecting vital implications for FI. However, few local studies on the theme of FI-poverty nexus exist.

By using 2001 Indian national cross-sectional data, treatment effect strategy, and propensity score matching to investigate whether household access to microfinance reduces poverty in India, Imai & Annim (2010) argue that the micro-finance impact positively on economic growth as well as poverty reduction. They confirmed a substantial contribution of Micro Finance Institutions (MFI) loans on multidimensional welfare indicators. Again, they found that loans for productive purposes contributed more to reduce poverty in rural areas than in urban areas. The authors' general results for both models suggest that access to MFIs has positive contributions to economic growth and therefore MFIs play a vital role in reducing poverty in India. However, access to loans is not the only way to eradicate poverty, other financial services that could help. While the study became successful in India, further local investigations need to be undertaken, and taking into consideration variety of financial services that may provide addition information for depth analysis.

Following a similar econometric approach to Imai & Annim (2010), Jabir (2015) investigated the impact of financial inclusion on poverty reduction in Sub-Saharan Africa. Outcomes of the study depicted that FI was substantially influenced by a high level of education and income, age, and informal borrowing. The results further suggest that females were less likely to be financially included than the males. Those who were highly educated and those with additional sources of income were less likely to be poor. The study also found that access to formal financial services had a significant impact on the poor people than non-poor. However, there is a need to explore this approach locally, and on a country-specific study.

Unlike Imia & Annim (2010), who focused on the MFI, Donou-Adonsou & Sylwester (2016) incorporated the banks in addition to MFI and followed a different econometric tool, the instrumental variable (IV) approach (the fixed-effects two-stage least square), to examine the contribution the above financial institutions have on poverty reduction in developing countries. The authors also used data from 71 emerging countries in 2002-2011. The main financial development indicator used was a credit to gross domestic product (GDP). While the results revealed that banks reduce deprivation when the headcount ratio and poverty gap are used to

measure the level of poverty, banks have no substantial impact on the squared poverty gap. Most importantly, the outcomes of the study depict that MFI are revealed to have no contributions to poverty irrespective of the measurement of poverty used. While this study focused only on two segments of the financial sector, it ignores the direct contribution that could arise from the other ignored segments. Inclusion of the entire players in financial system could give an overall understanding of the contributions financial system conveys into the economy.

Park & Mercado (2015) followed a different route and developed their own financial inclusion indicator for 37 developing Asian countries to investigate the effects of FI on poverty reduction and income inequality. Three regression models were employed where the first one focused to identify factors that significantly influence FI. The second model investigated the significance of FI reducing poverty levels, and the last regression tested the significance of FI on income inequality. Their results show that the rule of law, demographic characteristics as well as per capita income substantially influenced the level of FI in developing Asian economies. Their outcomes further depict a strong and significant relationship between high FI and lower poverty levels and income inequality. Demographic characteristics as well as governance and institutions in African economies are likely to influence the level of FI differently from developing Asian countries. Therefore, this signifies the need to further explore this study locally, especially in South Africa.

A study by Quartey (2005) employed time-series data from 1970-2001 and a descriptive statistical analysis approach in examining the interrelationships between financial sector development and poverty reduction in Ghana. Granger-causality procedure was used to examine the causal relationship between the variables. The researcher further employed the Johansen cointegration procedure to determine whether there exists a long-run relationship between variables of concern. He found that financial sector development contributes positively but insignificantly to poverty reduction.

In consonance with Quartey (2005), the Dhrifi (2013) study also focused on FD however he used a simultaneous equation and not a granger-causality procedure on a sample of 89 countries for the period of 1990-2011. The model focused on the connection between three variables namely growth, inequalities, and poverty. The results show that the indirect impact of FD on

poverty is both not clear and not significant. However, FD substantially impacts on poverty directly through insurance, access to credit facilities and savings. They further stated that countries with a more developed financial system are likely to reflect lower deprivation rates. While the strength of this study relies on trickle-down from FD through economic growth to poverty, a new and direct means of assessing the impact of financial system on poverty can be the use of FI.

Swamy (2014) employed both cross-sectional and time-series data, and used panel least squares to investigate the impact of FI, gender dimensions, and economic growth on poverty in India. The results depicted that women's participation in economic activities increased household income in India. These results are supported by Park & Mercado (2018) on the role of FI on poverty reduction in that FI contributes positively to the poor families in India. Again, they found that gender plays a significant role in FI programmes for the poor. The general results of the study revealed that FI contributes positively to the poor families in India.

There are numerous other works that have also examined the contributions of FI on poverty and income inequality. For example, Burgess & Pande (2005) stressed that the increase in the number of bank branches in the remote areas of India has assisted reduce poverty. In particular, these authors revealed strong evidence that opening new bank branches in the rural areas of India substantially contributes to poverty reduction in those areas. Likewise, a study by Brune et al. (2011) confirms that an increase in financial access in the rural areas of Malawi helps to bring poor households out of poverty conditions since it enables them to save for agricultural inputs. In their study, Allen et al. (2013) demonstrated that incorporating disadvantaged segments of the population into the formal financial services can assist improve financial outreach to the poor in Kenya.

2.5.2 Local studies

There are very few local studies dealing with finance and poverty relationships both at both micro and macro levels, of which half of them focused on FD and the other half on FI. First, Odhiambo (2009) examined the causal link between FD, economic growth and poverty reduction. 1960-2006 annual time-series data obtained from various sources including South African Reserve Bank reports, International Financial Statistics Yearbooks published by International Monetary Fund as well as World-Bank Statistical Yearbooks was used. Trivariate

Granger causality test technique was employed to examine the nexus between FD and poverty reduction. Upon using the cointegration based error-correction mechanism, empirical findings indicated that both FD and economic growth Granger-caused poverty reduction. The results also depicted that economic growth Granger-caused FD which in turn leads to poverty reduction (trickle-down theory). This is applicable both in the short and long-run causality tests. The strength of study relies more on the trickle-down effect of FD on poverty reduction. Against this background, there is a need to further investigate in depth the direct impact of FD on poverty reduction.

On the other hand, with the aid of Ordinary Least Squares (OLS) and Instrumental Variables (IV) regressions with robust standard errors, Gondo (2009) examined the finance-growth link in South Africa. He obtained annual time-series data bridging 1970 to 1999 from the South African Reserve Bank Quarterly Bulletin and World Bank database for FD indicators. He also used the Financial Structure Database compiled by Beck et al (2007) and the World Development Indicators database was used as well. The outcomes reported that the impact of FD is more on the rich than on the poor segment of the society. Hence, if pro-poor growth is the goal, then the financial sector plays a significant and dual role to stimulate growth and decrease inequality. This is attained by widening access to credit as well as access to indexed securities, predominantly to the poor population.

The study by Kostov, Arun & Annim (2015) examined factors affecting demand for financial services with concerning pre-entry Mzansi account mediation in South Africa. The study relied on the 2007 FinScope database collected from a sample of 3 900 households. The author employed logistic regression (generalised linear model) with a composite 'Octagonal shrinkage and clustering algorithm for regression' (OSCAR). Financial literacy was the main concern in this study. The authors found that financial education did not necessarily open opportunities for financial access and thus did not move people into the financial access pool. However, to some less extent, financial education moved individuals into the financial access pool. Therefore, the initiative of Mzansi's account to widen the level of financial access did not succeed, and thus cannot play a substantial role to move people out of poverty. Incorporating more FI indicators, on top of financial literacy, into the study could have improved the extent of access of financial services. Also, using data for a longer period, than only a year, could aid

comparison and betterment of the results. There is a need to undertake exploratory study to extent the scope and incorporate more FI indicators.

Matsebula and Yu (2020) investigated and evaluated the trend and depth of financial inclusion in South Africa as well as the impact of access to finance on poverty reduction and economic involvement. The first four waves of National Income Dynamics Study (NIDS) data were used. Upon regressing the derived financial inclusion index (FII) with some demographic characters, and employing probit regression to examine the probabilities of financial exclusion, the results revealed the existence of positive connection between FI and poverty reduction. While the extent of financial inclusiveness increased over the waves, low-income households were less likely to be financially included than high-income households.

However, the NIDS data used in this study does not afford information on access and affordability of formal financial services (lacks questions on access and affordability), therefore the FII derived herein fails to provide in depth the extent of inclusiveness of the South African financial system. The reason being, FII is constructed as a multidimensional index capturing data on various indicators of FI that provide vital and valuable information on the outreach of the formal financial sector. Therefore, there is a need to further explore the study using a dataset that provides information on all financial inclusion dimensions to derive a comprehensive index to ascertain the extent of the inclusiveness of the South African formal financial sector.

2.6 Conclusion

Both poverty and FI are understood as a multidimensional phenomenon. Like various definitions of FI, the majority of the poverty definitions also merge with similar meanings. In most cases, poverty is measured in monetary terms prompting the use of poverty lines to differentiate the poor from non-poor. More than 50% of the South African population is deemed poor (Armstrong, Lekezwa, & Siebrits, 2008), and the majority of them are excluded from the mainstream formal financial institutions (Matsebula & Yu, 2020).

There exists an extensive literature on finance and poverty globally. However, upon reviewing the past empirical literature, it is clear there is limited literature on FI and poverty in South Africa. In particular, there is a lack of local studies examining FI using FinScope data. While

the majority of the studies found that FI plays a vital role in reducing poverty, few exceptional studies found FI plays no role in reducing poverty instead contribute to worsening the poverty status.

In light of the reviewed literature and the prevalence of the global FI-poverty theme, the scarcity of local studies as well as some studies found FI associated with poverty reduction while other researchers did not observe any correlation between the two, suggest that the relationship amongst FI and poverty is still blurred needing further exploration. While the importance of FI is widely acknowledged, there is a lack of comprehensive measures to assess the outreach of FI in economies on the literature. Even so, FI literature tells the continuous efforts done to find a comprehensive measure of the extent of FI. Furthermore, the preceding studies have omitted some FI dimensions for different reasons. However, since all the dimensions are individually essential, taking in as many as possible will give out a more holistic FI.

Hence, this study will investigate the socio-economic factors influencing FI locally. This research differs from previous researches in two ways. Firstly, to the best of the author's knowledge, this becomes the first study to use microdata from the FinScope database to investigate the relationship between FI and poverty in South Africa. Lastly, in addition to investigating the effects of individual attributes on FI, it examines the role of FI on poverty reduction in South Africa.

CHAPTER THREE: METHODOLOGY AND DATA

3.1 Introduction

This chapter discusses data and methodology to be employed for the analysis purposes and to achieve the objectives of the study. Section 3.2 discusses data used in this study, section 3.3 discusses methodology, section 3.4 states limitations of the study, and section 3.5 concludes this chapter.

3.2 Data

This study will source its data from FinScope South Africa. FinScope is a FinMark Trust initiative (a research tool developed by FinMark Trust), established in 2002 and its sample size ranges between 3 900 and 5 000 respondents in recent years, which is the most comprehensive nationally representative household annual survey focused on the financial services needs and usage across the entire South African population (FinMark Trust, 2016). FinScope database contains information on the following: income and employment; household ownership and details on structure, utilities, and facilities; ownership of large and small durable items; use of financial services and products (investments, insurance, burial society, stokvel, retail accounts, banking loans); financial household risk management and coping strategies; psychographics on banking and finance issues as well as personal well-being and outlook; language; and lastly communications (usage of cell phone, telephone and internet).

Information regarding variables of interest is captured by the FinScope questionnaire. The demographic section captures information on age, gender, race and province of a respondent. The sections employment/income and expenditure capture information on employment status, source of income and three largest household expenditures including groceries, banking products, banking and personal cards. While borrowing (credit/loans) contain information concerning loans and credits made by the respondents. Lastly, the saving /investment section deals with whether respondents save or invest their money, and where do they invest or save.

The FinScope South Africa Consumer data is an annual survey, however, the scope of coverage may alter between the years. On the other hand, FinMark is unable to share the latest dataset for public consumption due to internal reasons, and therefore the latest dataset is currently not in the public domain. Even so, it is better to use the dataset that is within a certain era where

especially financial and poverty policies are the same. The similarity of data enables a fair and consistent comparison. The 2011 and 2016 FinScope questionnaires cover almost the same information. Therefore the 2011 and 2016 FinScope data of the nine provinces in South Africa will be employed. FinScope is a cross-sectional dataset and thus will give more insight into the variation between poverty and FI.

Following with the study, FinScope data provides information on all the FI dimensions (access, usage, quality as well as welfare)[1] as shown in Figure 2, allowing the FII to provide a deeper analysis of the financial system outreach. The access dimension contains information on the variables that quantify whether the respondents can use the available formal financial services and products. The information includes barriers such as affordability and physical proximity to access the services. The usage dimension asks questions about the actual use of financial services. These include factual questions on the frequency and duration of use of the services over time. The information is sourced from the end-users of formal financial services.

Furthermore, the quality dimension provides information on the relevance of the services to the lifestyle's needs of respondents. The question on this dimension implies that, while the formal financial institutions invent and provide products and services, the customers are merely the end-users who only receive what is supplied or available for them. Hence this dimension measures and quantifies the compatibility of the services and products to the customers' needs.

Finally, there is a welfare dimension. This asks people whether they realise improvements in their wellbeing that can be attributed to the usage of financial services or devices. In this way, the changes in consumption, total household assets as well as household expenditure are evaluated. Therefore, this measures the impact of formal financial services on the livelihoods of the people. In this regard, access and usage imply that people could improve their living standards regardless of their background. FinScope also asked questions about 25 more financial products. Besides, FinScope data provides information concerning individuals' income thereby enabling the application of the money-metric measure of poverty.

Provision of information on all the FI dimensions aid to derive a comprehensive FII to ascertain the depth of the of the financial sector outreach. Furthermore, the coverage of FinScope, both

[1] NIDS data unfortunately only ask shallow questions on usage.

the aims and the content, in South Africa have enlarged with time reflecting development in the financial markets as well as analysis of personal factors affecting the financial landscape and needs of the people (FinMark Trust, 2016). FinScope provides data which is relevant, credible, and highly detailed for FI purposes.

3.3 Methods

This sub-section provides tools to be employed to achieve the objectives of the study. It provides a discussion concerning the specific methods selected and used in this research paper. Similarly, this discussion includes the theoretical concepts that further offer information regarding the selection and application of the methods. It includes descriptive statistics on finance variables for FI and discussion of estimating strategy. Both are significant for analysing economic relevance. Note that for all empirical analysis to be presented in Chapter Four, the person weight (Weight_Ind) variable will be used; this is due to the lack of observation on household weight in the 2011 dataset[2]. Also, only the working-age population comprised of all persons aged 15-64 years at the time of the survey will be included for the empirical analysis.

3.2.1 Descriptive statistics

Descriptive statistics quantitatively describes features of a collection of data. To summarise data and thus present it in a more meaningful mode, which enables simpler interpretation, simple descriptive statistics will be conducted on demographic, geographic, education and labour market characteristics, as well as on FI dimensions by these characteristics. Tables, charts, proportions and percentages will be used.

3.2.1.1 Money-metric poverty

While there are many available poverty measurements, one of the major concerns is choosing the poverty indices that best satisfy some of the necessary properties. In the present study, the Foster-Greer-Thorbecke (FGT) indices will be derived to measure the level of poverty in a society. This is the most integral index, which is also commonly applied in empirical works. FGT index appeal is predominantly due to its simplicity (simple structure). To measure the level of poverty, a poverty line is defined, usually in monetary terms, and a poverty index is chosen. FGT index takes into account the variation of individuals' poverty below a poverty

[2] 2011 FinScope dataset has only household weight (Weight_HH) and individual weight (Weight_Ind), while 2016 dataset has the third weight (Weight_EA) in addition to the two mentioned weights.

line and treat them differently. In short, it considers the disparity between the poor and permits one to vary the amount of weight in income levels when calculating poverty in an economy. The FGT index definition is as follows:

$$FGT_{\alpha} = \frac{1}{N}\sum_{t=1}^{H}\left(\frac{Z-Yi}{z}\right)^{\dot{\alpha}} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots (1)$$

Where Z is the poverty line (LBPL), N represents the number of people in the economy (sample size), H is the number of poor people (those with incomes at or below poverty line), Y_t is the income of each individual t. $\alpha \geq 0$ is a "poverty aversion" parameter. For the different set values of α (0, 1 or 2), the index assumes different forms. First, for $\alpha = 0$ (FGT_0), the index reduces to the headcount ratio, which is the fraction or percentage of population living below the selected poverty line. For $\alpha = 1$, the formula collapses to the poverty gap index, and FGT_2 stands for squared poverty gap ratio, which is the most commonly applied index in Development Economics to evaluate income inequality along with poverty. As α approaches infinity, the situation of the most poor is all that matters. For this reason, α takes the role of "poverty aversion"[3]. However, this study focuses primarily on poverty headcount ratio. Formally, this ratio can be defined as follows:

$$FGT_0 = \frac{H}{N} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (2)$$

Where H represents the number of people below the poverty line (Z), and N is the total population in the economy. FGT_0 value ranges as follows: $0 \leq FGT_0 \leq 1$, where the lower limit implies all individuals earn income just above the poverty line. There are no poor people ($H = 0$). The upper limit suggests that all the individuals are poor, and $H = N$, equating the fraction to 1. The higher FGT_0 value implies the society is poorer, and the opposite holds.

The poverty line is a threshold (money-metric poverty measure) used to distinguish the poor from non-poor, and poverty lines differ in time and place. An individual with an income level below the established poverty line is regarded as poor (Sanchez-Martinez, & Davis, 2014). Three official national poverty lines are used in South Africa (Statistics South Africa, 2019). First, the FPL represents the amount of money required to purchase the minimum required daily intake (R561 per person per month in 2019 prices), the LBPL represents the minimum

[3] While at lower values of alpha, FGT matric weights all the poor individuals the same, but for the greatest values of alpha implying the greatest poverty aversion, FGT matric attaches more weight to the poorest individual.

level of income where a person sacrifices some basic food needs to meet their non-food requirements (R810 per person per month in 2019 prices), and lastly, the UBPL is the level of income required for people to afford the minimum lifestyle desired by most South Africans (R1 227 per person in 2019 prices).

A comprehensive poverty line must consist of food and non-food items combined in various ways[4]. Unlike the consumption of food items, there is a lack of universal standards for the consumption of non-food items (e.g. clothing, shelter, transport, and others). Cross-reading Statistics South Africa (Stats SA) suggests the LBPL has appeared as a preferred benchmark in policy making and monitoring. Also South African poverty reduction targets are based on the LBPL. Therefore, it is better to use the LBPL threshold in this study to distinguish the poor from the non-poor.

The main difficulty encountered is a high proportion (47% and 25%) of individuals who reported zero or unspecified household incomes in both 2011 (Q22) and 2016 (M7) respectively, as shown in Tables A1 and A2 in the Appendix. In the case of missing data, it is possible to overestimate or underestimate measures such as the levels of poverty and inequality. In this study, the missing data will not only lead to biased measures but also a loss of huge observations later when computing per capita income and poverty dummy. The FinMark Trust provided the after-imputed household income variable (M7) in the 2016 file but not in the case of 2011. While the diverse approaches are available to deal with missing information, there is a need to conduct the most appropriate approach. In this study, the sequential regression multiple imputation (SMRI) is adopted to multiply impute the missing household income values for 2011.

The SMRI is an approach usually applied to impute the unspecified values when data are randomly missing (Yu, 2016). The variables used to impute the missing values are arranged with respect to how much missing data they contain, beginning from least to most. The predictor variables are categorised into two matrices, *X* and *Y*, where *X* contains a set of variables with no missing values, while the *Y* matrix contains variables with missing values.

[4] Even though most of the South Africans spend a larger share of their income on food items, food items alone do not offer a reflective measure of poverty, and FPL only informs on extreme poverty.

The variables in Y are ordered by the number of missing values they contain, beginning with the variables with the fewest number of missing values ($Y_1, Y_2 \ldots Y_t$).

The imputations are then generated and each imputation consists of a specified number of rounds (five rounds in this study). First, Y_1 is regressed on X, to impute the missing values applying the appropriate regression model. Y_1 is then appended suitably to update X and proceed to Y_2 (variable with the next least missing values), conditioning on Y_1, the previously imputed variable, also using X, until all the unobserved variables are imputed. This imputation process is repeated from the second to fifth round, until a complete imputed dataset occurs.

3.2.1.2 Financial inclusion index

FI is an unobservable multi-dimensional concept and thus cannot be measured quantitatively in a direct approach (Camara & Tuesta, 2014). It is determined by the interaction of various causal variables. Level of FI must be measured to determine a benchmark to distinguish financially excluded people from the financially included ones. FII will be employed to measure how inclusive financial system of an economy is. This threshold will aid to differentiate those with poor access to financial services from the rest (1 = excluded, 0 = included). This study adopts the PCA approach to derive FII like several previous studies that took the initiative to measure FI. PCA is a frequently used statistical analysis and has been effectively applied to analytical results.

Numerous measurement techniques utilised in the finance gather statistics for several more variables per sample than the distinctive number of samples examined. Such high-dimensionality makes conceptualisation of samples difficult and confines simple examination of the data. PCA is a frequently employed statistical tool that seeks to identify variables or factors that explain the nature of the relationship in a set of observed variables (Kallithraka et al., 2001). It is commonly used in data reduction to find a small number of variables that explain most of the variance observed within a larger number of factors.

Karamizadeh et al. (2013) defined PCA as a statistical tool employed to transform a set of observations of potentially correlated factors into a set of estimate values of linearly uncorrelated factors. This tool reduces multidimensional data into lower dimensions while retaining the majority of the information. PCA achieves this reduction through identifying

directions, known as principal components (PC) along which variation in the data is greatest (Ringner, 2008). By using fewer components, individual samples can be represented by fewer numbers as opposed to the values of many variables.

Lever, Krzywinski & Altman (2017) and Kim, Jung & Kim (2002) explained PCA as a powerful technique for data reduction that extracts a structure from high-dimensional datasets into smaller components. In addition, PCA makes simple the high-complex-dimensional data without distorting trends and patterns by converting data into fewer dimensions, which in turn act as summaries of features. PCA is also a tool to reduce the dataset by changing them into lower dimensions named PC to discover the best summary of the data using a limited number of PC. When the number of samples is less than that of variables, PCA can reduce the dimensionality of the samples however retaining information. The first PC is chosen to minimize the total distance between the data and their projection onto the PC.

According to Coromaldi & Zoli (2007), PCA is an orthogonal linear transformation technique that converts a greater number of correlated variables into a new smaller set of uncorrelated factors known as PCs. These PCs are linear combinations of the original variables, and they reproduce the information in the variables as closely as possible. Furthermore, Datta (2009) stated that PCA is relevant since it changes the effect of a rather larger number of variables, which may be correlated, into a smaller set of uncorrelated factors (PCs). Since each FI dimension involves several indicators, application of PCA appears to be the most suitable index to construct a single index that reflects the overall financial outreach. The PCA indexing can also be applied to compress the multidimensional data by cutting the number of dimensions simultaneously retaining the maximum possible information.

Since it is clear that FI is multidimensional in nature, also its measurement includes various financial outreach dimensions, a multidimensional approach is followed in this research to construct FII. Previous studies have applied various methods of computing FI, which measures the financial outreach of the economy in the grass root level, however few of them used PCA. This present study adopts the statistical procedure (PCA method) previously applied by Lenka

& Barik (2018) to construct FII. However, this study incorporates one more FI dimension (welfare) to derive FII[5].

This study relies on PCA procedure for computing FII to avoid the subjectivity since prior information about the importance of individual indicators in measuring FI is not available. Furthermore, PCA procedure is applied to merge primarily the four chosen FI dimensions into a single index. In this study, like Hanning & Jansen (2010) as well as Serrao, Sequeira & Hans (2012), FII is computed using four FI dimensions (access, usage, quality and welfare), where FII value ranges between zero (no FI) and unity (complete FI). Incorporating all the four possible FI dimensions to construct FII ascertain a comprehensive index (indicative as well as accurate) compared to previous indexes. Using PCA technique, this research constructs FII to assess the inclusiveness of the South African financial system.

PCA will be used to decompose the variance of the set of variables into components by summing the weighted individual variables such that the weight assigned is proportional to the total variance.

$P_1 = \sum_{i=0}^{n} a_{1i} X_{1i}$, where $a_{ki} = (\sum_{i=0}^{n} r_{x1xi}) / (\sum_{i=0}^{n} \sum_{i=0}^{n} r_{xJxi})$ ..... (3)

The components will be computed in turns where the preceding component captures the elimination of the consecutive variation. The second PC will be computed based on a matrix with elements equal to: $r_{x1xi} - a_{1i}a_{ij}$. The eigenvalue ratios were used to determine the number of variables that can be included in the index.

The first step in determining the level of FI is to identify indicators that measure the extent of accessibility of financial services in an economy (Gupte, Venkataramani & Gupta, 2012). Various studies have considered diverse sets of indicators of FI under their purposes. All the sets contain a majority of the common indicators. Equally, this study has employed most of the indicators found in the literature for assessing the inclusiveness of the financial sector. The PCA method will be applied to comprise eight selected indicators of FI in a single index. Weights of individual indicators will be assigned. The adopted PCA method, the *i*-th factor of FI is expressed as:

[5] Similar to the majority of the past studies, Lenka & Barik (2018) used only three basic dimensions of FI to construct FII.

$$FII_i = W_{i1}X_1 + W_{i2}X_2 + W_{i3}X_3 + \cdots + W_{in}X_n \quad \text{..... (4)}$$

Where W_i is the weight (individual weight); X represents an indicator in connection with a FI dimension; and n is the number of variables in the equation.

The FII will be constructed using four dimensions where each dimension consists of two factors. Therefore, there are four dimensions and eight factors. These dimensions are access, usage, quality and welfare. They are briefly detailed thereafter:

i. **Access**: the study used data on the proximity, affordability, documentation, trust of commercial banks and owning bank accounts to measure the access dimension of FI.
ii. **Usage**: actual utilisation of banks can be of different forms, for example, regularity and duration of usage.
iii. **Quality**: in this index, the study will use data on whether the product attributes match the clients' needs, and whether the financial product development considers the needs of the customers.
iv. **Welfare**: data on the effects of financial services on customers' livelihoods and welfare will be utilised. It captures the changes or improvements in wellbeing derived from the utilisation of financial devices or services. For example, changes in consumption patterns, household total assets and expenditure.

Eigenvalues for the eight factors will be calculated through PCA. The components with the highest eigenvalues retain more standardised variance compared to others. Only eigenvalues higher than one are considered for the analysis. If the value holds more than one PC, then more PCs can be taken into account in the financial analysis. The calculated weights using PCA will be multiplied by the respective variables and thereafter sum the product to get a composite single value of the financial index. In this way, the FII for the periods 2011 and 2016 will have been evaluated. By using the PCA method, which does not involve the equal weighting approach as adopted by Sarma (2008), the FII can take positive or negative values, but the mean index equals to zero. To distinguish the included (60%) from the rest, the relative approach is used to use the 2011 index at the 40^{th} percentile. This index value will be used again to differentiate the included from the excluded in 2016 where it is expected that the included proportion will exceed 60% as FI should improve over time.

3.2.2 Econometric Model

Probit regression models are frequently adopted in practice to model or analyse binary response data that is either zero or one (Gibbons, & Hedeker, 1994; Kibria & Saleh, 2012). The responses can be found as the product of a longitudinal response procedure where a respondent is repetitively classified on a binary outcome variable. These models are usually used in microeconomics, health economics as well as in medical science, where the study intends to model a binary variable using linear regression model.

The probit regressions will be used in this study since the response variables of interest (financially included and poverty), are binary variables. Three probit regressions will be employed, where the first probit will be run on the FI likelihoods. The second probit will be run on money-metric poverty likelihoods, and thereafter, run the bivariate probit regression to examine the relationship between these two variables.

Firstly, probit regression on FI will be run with some contextual and demographic variable to test for the FI likelihoods. The study adopts econometric techniques, with modifications, previously used by Jabir (2015) in investigating the effects of FI on poverty reduction in Sub-Saharan Africa, and the model is specified as follows:

$$Prob(Financially\ included)_i = \beta_0 + \beta_1 Employment_i + \beta_2 Income + \beta_3 Age_i + \beta_4 Age2_i + \beta_5 Male_i + \beta_6 Educ_i + \beta_7 Urban_i + \beta_8 Province_i + \beta_9 Race_i + \varepsilon_i \dots\dots\dots\dots\dots (5)$$

Subscript "*i*" represents the individual in the sample; the intercept is β_0 and lastly ε is the error term for each individual in the model. In addition, the depended variable 'Financially included' is a binary variable specifying whether a household member is included in the formal financial institutions or not.

The independent variables included for the regression are as follows:

- Province (reference category: Western Cape)
- Geo-type (reference category: urban)
- Gender (reference category: male)
- Population group (reference category: white)

- Age cohort (reference category: 55-64 years)
- Labour market status (reference category: employed)
- Educational attainment (reference category: tertiary)
- Marital status (reference category: married / lived together)
- Household size

The second probit regression will also be run with some contextual and demographic characteristics as well as FI variable(s) to test for the money-metric poverty likelihoods. LBPL (R810 per person per month in 2019 prices) threshold will be used to distinguish poor from non-poor (1 = poor, 0 = non-poor). Poverty status is then specified as a function of financially included, demographic characteristics as well as contextual factors. Econometric model used by Quartey, Danquah & Iddrish (2017) in investigating the extent of influence of financial sector development on poverty reduction in Ghana is adopted.

Thus, the model is specified as follows:

$$Pstatus_i = \alpha_0 + \alpha_1 Financially\ included_i + \alpha_2 Employment_i + \alpha_3 Income_i + \alpha_4 Age_i + \alpha_5 Age2_i + \alpha_6 Male_i + \alpha_7 Educ_i + \alpha_8 Urban_i + \alpha_9 Province_i + \alpha_{10} Race_i + \mu_i \quad (6)$$

Where *Pstatus* means poverty status, and it is a binary variable, μ_t is the error term. All other control variables in equation (6) are the same as those variables in equation (5) as mentioned above.

Lastly, to examine the relationship between poverty and FI variables, the study will run bivariate probit regression on both variables. Both variables are assumed to be correlated and thus bivariate probit model would be suitable for jointly predicting both outcomes on an individual specific basis. Both variables are binary regressands and may not be independent of each other. Moreover, determinants of poverty status include qualitative information in the form of dummy variables, also FI variable is both exogenous and endogenous dummy variable. In this case, bivariate probit models would be appropriate as they allow for the interdependence (Chisadza, 2015). Thus, it is better to run bivariate probit regression to examine the linkages between the two binary variables, and to address the correlation of error terms of the two probits.

A bivariate probit model is used for estimating the effects of an endogenous binary predictor on a binary dependent variable (Hecman, 1979 & Li, 2016). This is vital if the model contains one dependent dummy regressor since the bivariate probit regression's maximum probability estimator produces consistent and asymptotically efficient parameter estimates (Arendt & Holm, 2006). Based on the usual normality assumptions, the model that concerns the observed binary outcome does not become a univariate probit model, but a bivariate probit model which observes only one out of the four possible outcomes (Poirier, 1980).

In this study, the bivariate probit approach is used to study the links between FI and poverty. This is a distinct technique from the standard probit approach. Different from the traditional binomial probit model, on top of the outcomes linked with each variable of interest for the two decisions, then we get an estimation of the interconnection (error covariance) of the dual decisions under consideration. Accordingly, a significant covariance estimation informs that decisions are interconnected also other coefficient estimates found must be viewed as superior compared to those produced by traditional binomial technique.

The bivariate probit model is presented below, which underlies the entire cases which the author will discuss immediately. Let there be two dummy endogenous variables, poverty status and access. Each of these two variables is generated using probit regression and errors of the regressions are correlated. The general bivariate model is specified as;

$$Pstatus_t = \beta_1 + +\beta_2 FI_t \quad \text{..... (7)}$$

Where FI will be the alternating FI variables.

Hence the specific econometric model is expressed in equation 8 below;

$$Pstatus_t = \beta X_t + \delta Access_t + \varepsilon_t$$

$$Financially\ included_t = \Upsilon H_t + \mu_t \quad \text{..... (8)}$$

Where 1 = poor, 0 = non-poor, and

1 = excluded, 0 = included

$$E(\varepsilon_t) = E(\mu_t) = 0;\ \ var(\varepsilon_t) = var(\mu_t) = 1\,; cov(\varepsilon_t, \mu_t) = p, where\ p\ \neq 0.$$

Where, Pstatus represents poverty status, Access measures indicators of *FI*, *X* and *H* represent sets of explanatory variables (contextual and demographic characteristics) that captures characteristics of an individual and household that help to determine poverty status as well as access to financial services respectively, β and Υ are parameters of the equations, lastly ε_t and μ_t are error terms.

3.4 Limitations

Though employing periodically repeated cross-sectional survey data may ensure a consistent representative sample size, as the same size can be sampled repeatedly, it does not mean the same respondents are interviewed across all surveys. While respondents to the survey at a particular time are not intentionally re-sampled, a respondent to one administration of the survey could be randomly selected for a succeeding survey. This poses a problem as it becomes difficult to track and measure changes in the population being studied over. Therefore, this type of data does not afford the study to examine changes in variables over time, but only provides a snapshot of the population at a particular time period. To account for this, data for two time periods (2011 and 2016) will be used to compare and find out how changes in independent variables characteristics lead to differences to the dependent variables. This can also be accounted for by panel surveys, which can capture information on all FI dimensions, for which the individual respondents are followed over time.

The nature of the relationship between FI and poverty is not examined in this study. That is, the study does not examine the existence of the long-run or short-run relationships between the variables. Also, causality amongst these variables is not studied. Therefore, the study is not able to determine the speed at which the connection between the variables changes, also does not inform the nature of causality between the variables. These are not going to affect the results but could add more value to the study if taken into account.

3.5 Conclusion

This chapter relies on FinScope data South Africa for the period 2011-2016. This data provides appropriate information from demand-side with enough coverage on FI variables which, therefore, will enrich understanding of the impact FI exerts on poverty reduction. Econometric modelling specified above will be run to establish a relationship between variables of interest and thus help to answer the research questions.

CHAPTER FOUR: EMPIRICAL FINDINGS

4.1 Introduction

This chapter presents and discusses the empirical literature of the study. Empirical literature concerning FI comprises several themes. One strand of the literature centers on measurements of FI and poverty. This chapter, therefore, studies the relationships between FI and poverty by using [2011 and 2016] FinScope data, as well as demographic characteristics. The weighted digits are derived using person weight variable. Here, section 4.2 analyses the descriptive statistics on demographic characteristics, financial inclusion as well as on poverty. Section 4.3 offers econometric analysis before section 4.4 concludes the chapter.

4.2 Descriptive statistics

4.2.1 Demographic characteristics

Table 1 shows that, of all the provinces, Gauteng represented the greatest share of the working-age population in both years (about a quarter), followed by KwaZulu-Natal, Western Cape and Eastern Cape (above 10% in both years). The table also indicates that about two-thirds of the sampled people resided in the urban areas – 67% in 2011 and 73% in 2016. Moving on to racial composition, as expected, the share represented by the Africans was the highest at about three quarters.

The table also depicts that the youth aged 15-24 years represented the greatest age cohort share of the weighted sample in both years (rising from 29% to 37%). This is followed by those aged 25-34 years (about 27.5% in both years), while the respective shares of the three oldest cohorts all declined between 2011 and 2016. Looking at other results, the share of employed increased from 43% to 59%; this result is not surprising as the working-age population became more educated over time, as suggested by the declining shares of those with no formal education or only primary education. Lastly, those who were single / never married accounted for the greatest share of the weighted sample (2011: 58%; 2016: 46%).

Table 1: Demographic characteristics of the final sample (%)

	2011	2016
Province of residence		
Western Cape	10.77	13.43
Eastern Cape	13.27	11.73
Northern Cape	2.07	2.64
Free State	5.39	5.93
KwaZulu-Natal	20.85	14.46
North West	6.53	7.33
Gauteng	23.86	27.19
Mpumalanga	7.44	7.56
Limpopo	9.82	9.72
	100.00	100.00
Geo-type of residence		
Urban	66.81	72.73
Rural / Tribal	33.19	27.27
	100.00	100.00
Gender		
Male	47.81	45.72
Female	52.19	54.28
	100.00	100.00
Population group		
African	77.99	74.52
Coloured	9.67	10.03
Indian / Asian	2.72	3.33
White	9.61	12.12
	100.00	100.00
Age cohort		
15-24 years	29.02	36.92
25-34 years	27.48	27.59
35-44 years	19.59	17.94
45-55 years	14.04	12.46
55-64 years	9.87	5.09
	100.00	100.00
Labour market status		
Employed	42.83	59.12
Unemployed	32.15	17.41
Economically inactive	25.02	23.47
	100.00	100.00
Educational attainment		
No formal education	2.84	1.58
Primary education	10.48	10.87
Secondary education	71.85	72.81
Vocational training / Special training / Other	2.61	1,99
Tertiary education	12.22	12.75
	100.00	100.00
Marital status		
Married / Living together	34.20	38.60
Divorced / Separated	3.59	4.42
Widowed	4.23	11.33
Single / Never married	57.90	45.58
Do not know	0.08	0.07
	100.00	100.00

4.2.2 Financial inclusion dimensions

Figure 3 presents the overall banking status and working-age population in 2011 and 2016. Concerning FI indicators, bank account becomes the basic formal financial service to avail all types of banking services including credit facility[6]. The banking status showed a relatively large percentage increase (14.34%) of the people who had formal accounts from 62.79% in 2011 to 77.13% in 2016. This represented a pleasant FI situation as about two-thirds of the weighted sample owned bank accounts for both periods and thus South African financial sector was more inclusive. However, this contradicted the findings of Demirguc-Kunt & Klapper (2012) that less than 25% of the adult African population own bank accounts while the remaining population is unbanked. People with no accounts as per the column chart, whose answer is 'never had' or 'used to have it in the past' are allowed to proceed to answer questions in connection with access and quality (see Tables 2 and 4 – to be discussed later).

Figure 3: Overall Banking Status

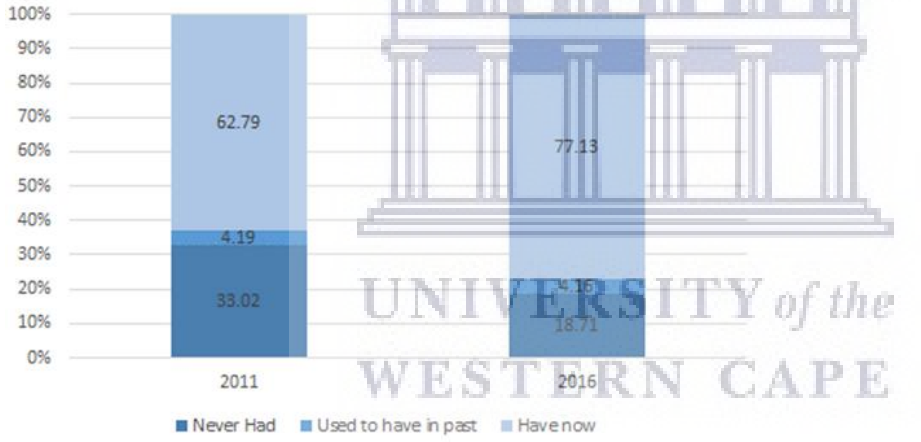


Table 2 shows the access dimension indicators of FI by the working-age population. The results show that the 'yes' proportion was the highest for the unemployment reason, however, the results also shows a considerable decline from (29.22% in 2011 to 9.02% in 2016). This could be attributed largely to a substantial decline in unemployment in the weighted sample during that period as shown in Table 1. Additionally, there could also be other reasons including, among others, the rise in the populating living in urban areas as well as improvement in educational attainment displayed by Table 7 showing that both living in urban areas and

[6] A basic banking account permits an individual to draw money for their own use and facilitates payment of bills. A debit card may be provided to savings account holders; however, overdraft and cheque facilities may be generally available to cheque account due to some requirement restrictions.

acquiring higher education are associated to higher FI likelihoods. The results also show that the proportion for the student reasons as well as the preferring cash dealings reasons were also high. Therefore, unemployment significantly restricted the majority of the people from having bank accounts or bank cards during the period of the study.

Table 2: Descriptive statistics on the access dimension of FI (%)

	2011	**2016**
Reason: never had or used to have a bank account/card: no proof of residence		
Yes	1.95	0.18
No	98.05	99.87
	100.00	100.00
Reason: never had or used to have a bank account/card: bank is too far		
Yes	1.54	0.12
No	98.46	99.88
	100.00	100.00
Reason: never had or used to have a bank account/card: no identity document		
Yes	2.27	0.68
No	97.33	99.32
	100.00	100.00
Reason: never had or used to have a bank account/card: expensive to have a bank account		
Yes	2.89	0.67
No	97.11	99.33
	100.00	100.00
Reason: never had or used to have a bank account/card: access other people's bank account		
Yes	2.13	0.20
No	97.87	99.80
	100.00	100.00
Reason: never had or used to have a bank account/card: unemployed		
Yes	29.22	9.02
No	70.78	90.98
	100.00	100.00
Reason: never had or used to have a bank account/card: student		
Yes	16.23	3.87
No	83.77	96.13
	100.00	100.00
Reason: never had or used to have a bank account/card: prefer dealing with cash		
Yes	15.77	1.00
No	84.23	99.00
	100.00	100.00
You find the language used in financial paperwork confusing		
Disagree	32.76	38.03
Neither agree nor disagree	25.43	6.57
Agree	41.81	55.40
	100.00	100.00

Speaking a variety of home languages is an advantage in South Africa, given that the country is a multilingual country with 11 official languages, but financial language may play a crucial role to determine access to financial services. As does any field, finance and accounting have its own language with distinct financial terminology. Financial literacy is also important as individuals manage their own finances. Similar to the findings of Nanziri & Leibbrandt (2018), Table 2 shows that almost half of the population is financially illiterate as a language used in financial paperwork is reported to be the major restricting factor to open bank accounts. Lastly, most of the difficulties that may be brought by these barriers fade away with time as the percentage of the population that these indicators deny them access declined between 2011 and 2016.

Whilst not the main focus of the empirical analysis, Table A6 in Appendix shows the supplementary empirical findings with regard to the access dimension. The table shows that the highest proportion for not having contents insurance is those who earn too little (11.40% in 2011 and 11.55% in 2016). The majority of the people did not have life insurance because it was too expensive (2011: 15.38%; 2016:40.30). The table also shows that the largest share (above 95% for the duration of the study) for not having a saving policy is for those without bank accounts. A larger share of the unemployed population also did not have saving policy.

Table 3 shows the distribution of financial services usage by the working-age population. The results showed that 'yes: usage' share was the highest for the bank account / bank card variable (2011: 60.20%; 2016: 63.83%). The largest increase occurred on the saving variable, showing whether people saved money or not, with the 'yes: usage' proportion increasing from 24.60% in 2011 to 49.30% in 2016. The proportion of individuals who hold both the funeral cover and insurance policy remained fairly stable during the study period with the shares of 2011: 28.73%; 2016: 27.33% and 2011: 18.86%; 2016: 19.41% respectively. The results also show that the 'yes' proportion of the borrowing variable significantly declined by 24.79% during the period under study.

Table 3: Descriptive statistics on the usage dimension of FI (%)

	2011	2016
Use a bank account or bank card		
Yes	60.20	63.83
No	39.80	36.17
	100.00	100.00
Use a bank loan		
Yes	10.66	8.11
No	89.34	91.89
	100.00	100.00
Use savings book		
Yes	3.80	2.76
No	96.20	97.24
	100.00	100.00
Use overdraft facility		
Yes	2.95	3.67
No	97.05	96.33
	100.00	100.00
Use personal or garage card		
Yes	2.20	2.49
No	97.80	97.51
	100.00	100.00
Use funeral policy offered by the banks		
Yes	10.19	12.05
No	89.81	87.95
	100.00	100.00
Have you borrowed in the past 12 months?		
Yes	33.70	8.91
No	66.30	91.09
	100.00	100.00
Funeral cover usage		
Yes	28.73	27.33
No	71.27	72.67
	100.00	100.00
Terminal benefits		
Yes	16.21	14.47
No	83.79	85.53
	100.00	100.00
Having insurance policy		
Yes	18.86	19.41
No	81.14	80.59
	100.00	100.00
Do you currently save or put money away?		
Yes	24.60	49.30
No	75.40	50.70
	100.00	100.00

Table A7 shows the supplementary empirical findings with regard to the usage dimension. The results indicate the small fraction of the working-age population had insurance to safeguard the unforeseen circumstances, and the fraction declined during the study period to 1.51%. This is possibly due to drastic decline in the borrowing proportion (24.79%) as well as a massive increase in the percentage of savings (24.70%). When people have more funds, they are able to save more and lower their borrowings. This will probably leave them with less need to demand insurance to pay off the loans should anything bad happens.

Looking at the quality dimension, Table 4 clearly shows that the 'yes' proportion for all the three reasons was very low, below 2%, during the study interval. The results therefore suggested that all the three quality inclusion variables played no significant role to barrier the access and usage of formal financial services. The betterment in education attainment, as the share of the people with no formal education declined over time displayed in Table 1, may have played a crucial role to improve the understanding of how the banks operate also including understanding of the technology used.

Table 4: Descriptive statistics on quality dimension of FI (%)

	2011	**2016**
Reason: never had or used to have a bank account/card: don't feel comfortable in a bank		
Yes	0.89	0.17
No	99.11	99.83
	100.00	100.00
Reason: never had or used to have a bank account/card: don't understand how banks work		
Yes	1.99	0.11
No	98.01	99.89
	100.00	100.00
Reason: never had or used to have a bank account/card: don't understand technology		
Yes	1.17	0.13
No	98.83	99.87
	100.00	100.00

Whilst not the main focus of the empirical analysis, Table A8 shows the supplementary empirical findings with regard to the quality dimension. The results show that the percentage of the sampled population who did not have insurance policy was highest for those who reported that they never needed it (2011: 9.35%; 2016: 6.26%) and never wanted it (2011: 8.50%; 2016: 7.22%). The yes proportion to life insurance cover variable significantly declined for the people who never thought about it from 6.97% in 2011 to 4.84% in 2016. The yes answer to saving policy, as expected, showed the significant increase over the period.

Table 5 presents welfare dimension of FI by the working-age population. The table shows that the majority of the weighted sample owned devices (cell phone and computer) and internet facilities as their yes proportions were all above 85% for the duration of the study. These devices and network facility are not only reflecting expenditure and possession of assets, but are also linked to the usage of online financial services. They are the convenient alternatives means to physically visiting services providers' premises thus adding value to individual livelihood and welfare.

Table 5: Descriptive statistics on welfare dimension of FI (%)

	2011	**2016**
Ownership of a cell phone		
Yes	96.14	85.60
No	3.86	14.40
	100.00	100.00
Ownership of a computer		
Yes	87.60	89.98
No	12.40	10.02
	100.00	100.00
Ownership of internet facility at home		
Yes	93.48	95.91
No	6.52	4.09
	100.00	100.00
Dealing with personal finances is stressful and a real burden		
Agree	52.39	70.90
Neither agree nor disagree	24.97	6.86
Disagree	22.64	22.24
	100.00	100.00
You like to be in control of your finances and money matters		
Agree	67.85	40.43
Neither agree nor disagree	20.49	36.17
Disagree	11.66	23.40
	100.00	100.00

Looking at other results, Table 5 shows that majority of the weighted sampled (50%; 2011 and 70%: 2016) experienced stress in dealing with their own finances. The table also displays the substantial fall in the percentage share of the working-age population who liked to control their finances and money matters from 68% in 2011 to 40% in 2016. This is probably due to the findings in Table 2 that the percentage share of those who found financial language confusing was not only high but increased over time.

4.2.3 Poverty

The LBPL (R810 per person per month in 2019 prices) proposed in chapter 3 was applied to examine poverty between 2011 and 2016. The study concentrated on the FGT poverty headcount ratios[7]. Table 6 presents the results of poverty ratios by demographic characteristics of the working-age population. Looking at the table, a general observation is that the overall poverty headcount ratio declined from 31.69% to 20.15% between 2011 and 2016.

The results also show that the poverty headcount ratios have declined for all the demographic characteristics for the duration of the study, implying the existence of a visible possible negative relationship between time and poverty. As expected, the findings show that while Limpopo and Eastern Cape had the greatest poverty ratios (2011: 42%; 2016: 32%), Western Cape and Gauteng reported the lowest ratios of about 17% in 2011 and 11% in 2016.

The table also shows that the poverty ratio was highest for the rural population (52.56% in 2011 and 36.48% in 2016). The females had the largest ratios across the period of study (40.08% in 2011 and 24.12% in 2016). Typically, poverty is more pronounced to the household in the rural areas and headed by a black single South African female who is also not economically active. Looking at the racial composition, the findings show that the poverty ratio represented by the Africans was the highest for the entire period followed by the Coloureds' share. Additionally, the Africans and the Coloureds' share decreased throughout the period while the shares of both the Indians and the Whites increased. The findings could be that the Africans are apportioned more opportunities, especially the black females, that are able to drive them out of poverty.

The other results down the table depict that, while poverty share was largest to the youth aged 15-24 years in 2011, the poverty ratio was highest for the aged cohort 35-44 years in 2016. The youth aged 15-24 years had the greatest declined (50%) throughout the period. Going on, the table displays that the poverty share was the highest for the unemployed population during the period under investigation (54.31% in 2011 to 52.82% in 2016).

[7] Table A4 in the Appendix also shows the poverty gap and squared poverty gap ratio results, but they won't be discussed here. In other words, the primary focus of the main text discussion is poverty headcount ratios by demographic characteristics.

Table 6: Poverty headcount ratios by demographic characteristics

	2011			2016		
	Not poor	**Poor**	**Total**	**Not poor**	**Poor**	**Total**
All	0.6831	0.3169	1.0000	0.7985	0.2015	1.0000
Province						
Western Cape	0.8225	0.1775	1.0000	0.8935	0.1065	1.0000
Eastern Cape	0.5275	0.4275	1.0000	0.6397	0.3603	1.0000
Northern Cape	0.7270	0.2730	1.0000	0.8012	0.1988	1.0000
Free State	0.6333	0.3667	1.0000	0.6809	0.3191	1.0000
KwaZulu-Natal	0.6193	0.3807	1.0000	0.8585	0.1415	1.0000
North West	0.6564	0.3436	1.0000	0.7172	0.2828	1.0000
Gauteng	0.8269	0.1731	1.0000	0.8886	0.1114	1.0000
Mpumalanga	0.6775	0.3225	1.0000	0.7592	0.2409	1.0000
Limpopo	0.5058	0.4942	1.0000	0.6805	0.3195	1.0000
Geo-type of residence						
Urban	0.7867	0.2133	1.0000	0.8599	0.1401	1.0000
Rural / Tribal	0.4733	0.5256	1.0000	0.6352	0.3648	1.0000
Gender						
Male	0.7746	0.2254	1.0000	0.8457	0.1543	1.0000
Female	0.5992	0.4008	1.0000	0.7588	0.2412	1.0000
Population group						
Black African	0.6229	0.3771	1.0000	0.7513	0.2487	1.0000
Coloured	0.7712	0.2288	1.0000	0.8761	0.1239	1.0000
Indian or Asian	0.9938	0.0062	1.0000	0.9380	0.0620	1.0000
White	0.9950	0.0050	1.0000	0.9860	0.0140	1.0000
Age cohort						
15-24 years	0.5897	0.4103	1.0000	0.7967	0.2033	1.0000
25-34 years	0.7177	0.2823	1.0000	0.8234	0.1766	1.0000
35-44 years	0.7305	0.2695	1.0000	0.7674	0.2326	1.0000
45-55 years	0.7055	0.2945	1.0000	0.7909	0.2091	1.0000
55-64 years	0.7353	0.2647	1.0000	0.8047	0.1953	1.0000
Labour market status						
Employed	0.9006	0.0994	1.0000	0.9172	0.0828	1.0000
Unemployed	0.4569	0.5431	1.0000	0.4718	0.5282	1.0000
Inactive	0.6014	0.3986	1.0000	0.7418	0.2582	1.0000
Educational attainment						
No formal education	0.3369	0.6631	1.0000	0.6161	0.3839	1.0000
Primary education	0.4935	0.5065	1.0000	0.5281	0.4719	1.0000
Secondary education	0.6679	0.3321	1.0000	0.8030	0.1970	1.0000
Tertiary education	0.9578	0.0422	1.0000	0.9942	0.0058	1.0000
Other	0.9511	0.0489	1.0000	1.0000	0.0000	1.0000
Marital status						
Married/ Living together	0.7571	0.2429	1.0000	0.8859	0.1141	1.0000
Divorced/ Separated	0.8284	0.1716	1.0000	0.892	0.1080	1.0000
Widowed	0.5799	0.4201	1.0000	0.7175	0.2825	1.0000
Single/ Never married	0.6389	0.3611	1.0000	0.7352	0.2648	1.0000
Lifestyle						
Dissatisfied	0.5803	0.4197	1.0000	0.5806	0.4194	1.0000
Neither nor	0.6506	0.3494	1.0000	0.7948	0.2052	1.0000
Satisfied	0.7472	0.2528	1.0000	0.9064	0.0936	1.0000
Financial inclusion index quintile						
Quintile1	0.5043	0.4957	1.0000	0.5625	0.4375	1.0000
Quintile2	0.5126	0.4874	1.0000	0.6845	0.3155	1.0000
Quintile3	0.6333	0.3667	1.0000	0.8386	0.1614	1.0000
Quintile4	0.7957	0.2043	1.0000	0.9462	0.0538	1.0000
Quintile5	0.9538	0.0462	1.0000	0.9984	0.0016	1.0000

The lower part of Table 6 indicates that the proportion of poverty was more prevalent to the people with no education in 2011 (66.31%) followed by those with primary level of education (50.65%). Unexpectedly, the results also show that the working-age population with primary education takes the larger share of the poverty ratio (47.19%) in 2016 compared to those with no education at all (38%). Consistent with Tilak's (2002) findings, the outcomes could be attributed to the fact that, those with only primary education failed to secure employment opportunities, whereas those with no formal education are normally employed in the informal sector. Looking at the marital status, the results of the table depicts that the poverty share of widowed people was leading followed by the share of the single ones. However, the ratios of both the widowed and the single declined between 2011 and 2016 from 42.16% to 28.25% and from 36.11% to 26.48% respectively.

Looking at the lifestyle variable, the poverty share was leading amongst those who were not contented with the way they lived, and the share remained consistent at 42% between 2011 and 2016. While the poverty likelihoods remained the lowest for the satisfied group, this group also experienced the greatest decline of 15.89% points to 9.36% in 2016. The people who were happy with their lifestyle were associated with lower poverty likelihoods.

Lastly, as far as the relationship between the financial inclusion index quintile variable and money-metric poverty status is concerned, as shown by the last few rows of the table, those from the poorest quantile (financially excluded) are associated with higher money-metric poverty likelihoods. These are usually the Africans staying in the rural areas with little or no education and unemployed or economically inactive and do not enjoy their lifestyle. On contrary, the table shows that those from the richer quantile are associated with much lower money-metric poverty likelihoods. These are mostly the Whites in urban areas who have better educational qualifications and who are formally employed. There is a strong negative correlation between money-matric poverty and the quantile groups.

4.2.4 Financial inclusion status

This subsection discusses financial inclusion status by demographic characteristics. Table A3 in Appendix shows the first principal components for deriving the FII. The table shows that the components have the correct sign, conforming to the theoretical arguments and the earlier discussed Tables on the four dimensions of FI. As discussed in Section 3.2.1.2, the 2011 financial inclusion index at the 40th percentile is used to distinguish the financially excluded

from the financially included in both the 2011 and 2016 waves of Finscope data. The dummy variables with the greatest components values are the bank account/ card under access and the same variable under usage.

Table 7 also shows the FI likelihoods by demographic characteristics. The results show that the included share was 60% while the excluded share was 40% in 2011. An over-all reflection of the findings exhibits that the SA financial sector was more inclusive during the study period. The table reflects that the overall provincial inclusion shares increased over time. The inclusion shares for both the Western Cape and Gauteng were the highest, ranging over 70%, followed by the Northern Cape's share of over 60% chances in 2011 and 2016. While the table presents a general increase of the inclusion likelihoods, Kwa-Zulu Natal shows the leading increase (from 48% in 2011 to 80% in 2016). Moving on to geographical location, as anticipated, the inclusion likelihood was more pronounced for the urban areas (67.98% in 2011 and 77.92% in 2016).

Looking at the other characteristics, the Whites consistently exhibited the highest inclusion share as expected (2011: 94.29%; 2016: 95.20%). Though the Africans' share was the least for the entire period, they experienced the highest inclusion share increase from 53.48% in 2011 to 68.81% in 2016. This could be attributed to the strategies developed to uplift the African society to access the formal financial services.

The middle rows show that the inclusion share was highest for the people aged over 24 years, with the proportions falling in the range of 60% in 2011. The youth aged 15-24 years experienced the greatest inclusion share increase from 38.24% to 74.57%. Moving to the other results, as expected, being employed had the highest probability of being included –83.58% in 2011 and 83.70% in 2016. Also, the results show that the inclusion share increased with the rising level of education.

The results from the lower rows show that being married is associated with the highest chances of inclusion (72.14%: 2011). The divorced experienced the greatest inclusion likelihoods and became the leading in 2016 (83.39%). This is likely so because during divorce the other partner gets the share from their spouse's wealth, and that could easily move them into the included proportion.

Table 7: Financial inclusion likelihood by demographic characteristics (%)

	2011			2016		
	Included	**Excluded**	**Total**	**Included**	**Excluded**	**Total**
All						
All	60.00	40.00	100.00	72.54	27.46	100.00
Province						
Western Cape	74.06	25.94	100.00	77.88	22.12	100.00
Eastern Cape	53.61	46.39	100.00	59.48	68.39	100.00
Northern Cape	62.23	37.77	100.00	63.01	36.99	100.00
Free State	52.39	47.61	100.00	59.53	40.47	100.00
KwaZulu-Natal	48.84	51.16	100.00	80.48	19.52	100.00
North West	53.60	46.40	100.00	58.13	41.87	100.00
Gauteng	74.06	25.94	100.00	81.37	18.63	100.00
Mpumalanga	48.91	51.09	100.00	66.53	33.47	100.00
Limpopo	48.65	51.35	100.00	59.72	40.28	100.00
Geo-type of residence						
Urban	67.97	32.03	100.00	77.92	22.08	100.00
Rural / Tribal	40.86	59.14	100.00	58.19	41.81	100.00
Gender						
Male	60.39	39.61	100.00	73.54	26.46	100.00
Female	57.67	42.33	100.00	71.70	28.30	100.00
Population group						
Black African	53.48	46.52	100.00	68.81	31.19	100.00
Coloured	64.77	35.23	100.00	71.47	28.53	100.00
Indian or Asian	71.19	28.81	100.00	76.75	23.25	100.00
White	94.28	5.72	100.00	95.20	4.80	100.00
Age cohort						
15-24 years	38.24	61.76	100.00	74.57	25.43	100.00
25-34 years	67.55	32.45	100.00	73.90	26.10	100.00
35-44 years	68.83	31.17	100.00	68.38	31.62	100.00
45-54 years	64.03	35.97	100.00	73.87	26.13	100.00
55-64 years	69.29	30.71	100.00	61.78	38.22	100.00
Labour market status						
Employed	83.58	16.42	100.00	83.70	15.61	100.00
Unemployed	40.01	59.99	100.00	44.59	55.41	100.00
Inactive	41.21	58.79	100.00	63.42	36.58	100.00
Educational attainment						
No formal education	31.51	68.49	100.00	46.09	53.91	100.00
Primary education	34.41	65.59	100.00	42.24	57.76	100.00
Secondary education	57.33	42.67	100.00	72.38	27.62	100.00
Tertiary education	90.98	9.02	100.00	98.91	1.09	100.00
Other	93.45	6.55	100.00	95.95	4.05	100.00
Marital status						
Married/ Living together	72.14	27.86	100.00	77.93	22.07	100.00
Divorced/ Separated	67.84	32.16	100.00	83.39	16.61	100.00
Widowed	63.17	36.83	100.00	66.61	33.39	100.00
Single/ Never married	50.28	49.72	100.00	68.35	31.65	100.00
Lifestyle						
Dissatisfied	49.98	50.02	100.00	52.85	47.14	100.00
Neither nor	52.70	47.30	100.00	72.67	27.33	100.00
Satisfied	66.16	33.84	100.00	82.89	17.11	100.00
Financial inclusion index quintile						
Quintile1	0.00	100.00	100.00	0.00	100.00	100.00
Quintile2	0.00	100.00	100.00	70.98	29.02	100.00
Quintile3	100.00	0.00	100.00	100.00	0.00	100.00
Quintile4	100.00	0.00	100.00	100.00	0.00	100.00
Quintile5	100.00	0.00	100.00	100.00	0.00	100.00

The results on the lifestyle indicate that financial inclusion probability was the highest for the people who enjoyed their way of living (66.16% in 2011 and 82.89% in 2016). On contrary, those who were not pleased with their way of living were also less likely to be included compared to the rest (2011: 49.98%; 2016: 52.85%). The greatest financial inclusion share growth (19.97%) occurred to those who were indifferent about their lifestyle during the study period. The people who were happy with their lifestyle were associated with higher inclusion likelihoods.

Lastly, the last few rows show the relationship between the inclusion and the financial inclusion index quintile variable. The results show that the poorest quantiles had zero possibility to be included in 2011, while the richest quantile counterparts were 100% likely to be included. However, the poor quantile 2 experienced a massive inclusion possibility to from 0% to 70.98% in 2016.

To conclude, the findings of Table 7 suggest that the following people were associated with greater financial inclusion likelihood: A profile of a financially included person shows a typically included individual as a white male person residing in the urban areas of either the Western Cape or Gauteng provinces. This person attained a tertiary educational qualification, is married, aged 55-64 years, and must come from the upper quantile, also, this individual enjoys their lifestyle. The results also suggest that the financially included are ones who have formal employment. As expected, the profile of the upper 60% of the consumption distribution is more like that of non-poor individuals.

4.2.5 Relationship between financial inclusion and poverty

Table 8 shows that when the focus is only on money-metric poor, in 2011, only 37% of the money-metric poor population was financially included, however this share increased by five percentage points to 42% in 2016 (although the included shares remain low, and it is not surprising, given their money-metric poverty status). When the focus changed to money-metric non-poor, in 2011, nearly 70% of the weighted sample was financially included, but this share increased to 80% in 2016. Therefore, this table suggests that higher financial inclusion likelihoods are more pronounced when the person is money-metric non-poor.

Table 8: Percentage share of working-age population by poverty and financial inclusion status (%), row totals

2011			
	Financially excluded	Financially included	
Money-metric poor	62.65	37.35	100.00
Money-metric non-poor	30.77	69.23	100.00
	40.00	60.00	100.00
2016			
	Financially excluded	Financially included	
Money-metric poor	58.10	41.90	100.00
Money-metric non-poor	19.73	80.27	100.00
	27.46	72.54	100.00

Table 9 depicts that, of the overall 31.65% money-metric poor, 12.12% of them were financially included in 2011. While the share of the money-metric poor reduced to 20.15% in 2016, also the share of the included declined to 8.5% in 2016. The overall FI share raised by nearly 14 percentage points to 72.98% in 2016. Similarly, the overall proportion of the money-metric non-poor increased to 79.85% in 2016. Consistent with Table 8, Table 9 also suggests a positive relationship between FI and money-metric non-poor.

Table 9: Percentage share of working-age population by poverty and financial inclusion status (%), cell totals

2011			
	Financially excluded	Financially included	
Money-metric poor	19.53	12.12	31.65
Money-metric non-poor	21.33	47.02	68.35
	40.86	59.14	100.00
2016			
	Financially excluded	Financially included	
Money-metric poor	15.40	8.53	20.15
Money-metric non-poor	11.62	64.45	79.85
	27.02	72.98	100.00

To conclude the descriptive statistics, the working-age population are divided into the following four groups based on their money-metric poverty and financial inclusion status:

- Group [I]: Money-metric poor; financially excluded

- Group [II]: Money-metric poor; financially included
- Group [III]: Money-metric non-poor; financially excluded
- Group [IV]: Money-metric non-poor; financially included

Table 10 presents information on the proportions of the working-age population by money-metric poverty and FI status. The table shows that, of all the provinces, Limpopo was the most disadvantaged province, which associated with the lowest proportion of people belonging to group [IV] (2011: 31.47%; 2016: 47.36%). On the other hand, Western Cape and Gauteng were the two best-performing provinces, with nearly two-thirds falling under group [IV] in 2011 and about three quarters in 2016. Interestingly, KwaZulu-Natal improved rapidly between the two survey periods as the group [IV] share of the individuals nearly doubled from 38.25% to 72.88%.

The urban area was the most advantaged geographical location reporting the highest percentage share in Group [IV] for the duration of the study (57.63% in 2016 and 72.73% in 2016). The table shows that, whilst the proportion of rural residents in group [IV] was relatively lower in both years, it increased by 17 percentage points (2011: 25.67%; 2016: 42.37%). Looking at the results by gender, the group [IV] share increased in both genders during the period under study, although this share remained relatively greater for males.

As far as results by race are concerned, as expected, a very high proportion of white individuals (above 90% in both years) belonged to group [IV]. The group [IV] increased between 2011 and 2016 in all four race groups, but the increase was the greatest (19 percentage points) for the Africans – 2011: 39.63%; 2016: 58.54%. In addition, the group [I] share remained the greatest for the Africans, despite a drop from 23.11% to 14.40%.

The table also presents the results by age category. The group [IV] percentage share was lowest in the 15-24 years old age group in 2011. The group [IV] share for the age cohorts between 25 and 64 years ranged between 50%-59% in 2011. However, in 2016, it is interesting to see the group [IV] showed the greatest increase in the younger cohorts, especially the 15-24 years old group (increasing to 65.51%).

Table 10: Percentage share of working-age population by poverty and financial inclusion status by demographic characteristics (%), row totals

	2011				2016			
	[I]	**[II]**	**[III]**	**[IV]**	**[I]**	**[II]**	**[III]**	**[IV]**
Province								
Western Cape	10.74	6.77	15.97	66.51	6.38	4.28	14.45	74.90
Eastern Cape	23.19	20.17	21.08	35.56	17.11	18.92	13.99	49.98
Northern Cape	13.58	12.72	23.83	49.87	12.20	7.69	25.20	54.92
Free State	20.47	18.99	27.36	33.19	20.51	11.40	18.09	50.00
KwaZulu-Natal	26.79	10.95	24.01	38.25	6.54	7.61	12.96	72.88
North West	20.59	12.71	24.64	42.06	17.91	10.37	22.80	48.91
Gauteng	8.57	7.82	18.23	65.38	7.88	3.25	10.91	77.95
Mpumalanga	26.30	9.75	24.89	39.07	12.63	11.45	20.59	55.32
Limpopo	30.31	17.58	20.65	31.47	19.11	12.84	20.69	47.36
Geo-type								
Urban	11.28	10.17	20.92	57.63	8.32	5.70	13.25	72.73
Rural / Tribal	36.12	16.05	22.16	25.67	20.40	16.08	21.15	42.37
Gender								
Male	16.02	7.31	23.92	52.74	11.26	4.17	13.88	70.69
Female	22.74	16.53	18.96	41.78	11.92	12.20	16.69	59.19
Population group								
Black African	23.11	14.38	22.87	39.63	14.40	10.47	16.60	58.54
Coloured	15.34	8.84	21.59	54.23	6.93	5.47	19.96	67.65
Indian or Asian	0.56	0.07	27.57	71.80	2.59	3.61	17.82	75.99
White	0.00	0.50	6.76	92.73	0.89	0.51	3.62	94.97
Age cohort								
15-24 years	31.88	10.91	31.69	25.52	11.18	9.15	14.06	65.61
25-34 years	13.00	13.23	18.74	55.03	11.08	6.58	15.10	67.24
35-44 years	15.43	12.53	13.89	58.15	16.38	6.88	15.88	60.86
45-55 years	16.50	11.67	18.87	52.96	7.90	13.01	15.56	63.53
55-64 years	13.81	12.44	16.35	57.40	9.90	9.54	24.72	55.76
Labour market status								
Employed	4.24	6.25	12.05	77.45	4.96	3.32	9.97	81.76
Unemployed	31.10	20.90	27.90	20.10	33.33	19.50	23.24	23.94
Inactive	30.81	10.90	28.77	29.52	12.29	13.53	23.27	50.91
Educational attainment								
No formal education	45.78	16.99	22.44	14.79	27.01	11.38	32.55	29.06
Primary education	34.92	15.30	29.44	20.34	31.40	15.78	26.77	26.05
Secondary education	20.13	13.23	22.53	44.10	10.68	9.01	16.15	64.16
Tertiary education	1.77	1.07	15.34	81.81	0.00	0.00	4.05	95.95
Other	0.47	4.12	8.32	87.09	0.00	0.58	1.10	98.32
Marital status								
Married/ Living together	12.53	11.41	14.20	61.86	6.10	2.31	15.54	73.06
Divorced/ Separated	7.38	10.65	21.69	60.28	6.04	4.77	7.86	81.34
Widowed	21.87	17.41	14.22	46.50	14.66	13.59	18.17	53.58
Single/ Never married	24.27	50.74	26.07	37.47	16.09	10.38	15.36	58.17

[I]: Money-metric poor; financially excluded
[II]: Money-metric poor; financially included
[III]: Money-metric non-poor; financially excluded
[IV]: Money-metric non-poor; financially included

Looking at the other results, as far as employment status by money-metric poverty and FI is concerned, Table 10 indicates that the employed have become more privileged as their share in Group [IV] increased over time from 77.45% in 2011 to 81.76% in 2016 and remained the highest shareholders in both terms. The table displays that the unemployed have been the most vulnerable group, as a very low proportion of them belonged to group [VI] (2011: 20.10%; 2016: 23.94%), but a greater proportion of them (about one-thirds in both years) fell under the most vulnerable group [I]. Hence, it can be said that unemployment is associated with a greater probability of money-metric poverty and financial exclusion.

As one moves across to the higher educational attainment categories, the group [IV] share increased. In fact, for the individuals with tertiary education, the group [IV] was extremely high – 81.81% in 2011 and 95.95% in 2016. In other words, higher educational attainment is associated with a lower poverty and financial exclusion likelihood. Furthermore, for those who were widowed or single/unmarried, a relatively greater proportion of them belonged to group [I] but a smaller share in group [IV], compared with others who were married or divorced / separated at the time of the survey.

In summary, the findings of Table 10 suggest that the following individuals were more likely to be both financially included and money-metric non-poor: male white married individuals with tertiary education, who resided in urban areas in the Western Cape and Gauteng provinces at the time of the survey.

4.3 Econometric analysis

The results of the money-metric poverty probit regression are presented in Table 11, and Table A5 in Appendix presents findings of the OLS regressions on FII, regressing both poverty and FII by demographic characteristics. In this study, the probit regression is used to test for the financially excluded probability as well as money-metric poverty likelihoods.

Table 11 indicates that African rural residents aged 35-44 years old (this is not strange with this age category given that a lot of opportunities created are geared towards the national candidates below 35 years), unemployed or inactive, lowly educated, and those who are not married, as well as those coming from the bigger households, were associated with a significantly greater probability of money-metric poverty.

Table 11: Probit regressions on money-metric poverty likelihood

	2011	2016	2011	2016
	Coefficient		Marginal effect	
Province: Eastern Cape	0.1001	0.2644*	0.0276	0.0487
Province: Northern Cape	-0.2082	0.0763	-0.0506	0.0129
Province: Free State	0.1198	0.3849***	0.0335	0.0772*
Province: KwaZulu-Natal	0.0017	-0.3113*	0.0019	-0.0433**
Province: North West	-0.2111	0.0439	-0.0517	0.0073
Province: Gauteng	-0.2566*	-0.2515	-0.0644**	-0.0376*
Province: Mpumalanga	-0.1967	-0.1754	-0.0486	-0.0256
Province: Limpopo	-0.0983	-0.3762	-0.0253	-0.0494**
Geo-type: rural / tribal	0.4559***	0.3728***	0.1297***	0.0674***
Gender: Female	0.2473***	-0.0922	0.0657***	-0.0150
Population group: African	1.8552***	0.4933*	0.3036***	0.0677**
Population group: Coloured	1.5745***	0.1824	0.5535***	0.0324
Population group: Indian / Asian	-0.2077	0.7613**	-0.506	0.1862*
Age cohort: 15-24 years	0.2274	0.4693**	0.0633	0.0827*
Age cohort: 25-34 years	0.1235	0.5324**	0.338	0.1008**
Age cohort: 35-44 years	0.2461*	0.7458***	0.0701	0.1625***
Age cohort: 45-54 years	0.1747	0.2975	0.0493	0.0556
Labour market status: unemployed	0.9781***	1.1808***	0.2952***	0.2945***
Labour market status: inactive	0.9086***	0.7852***	0.2845***	0.1582***
Educational attainment: no formal education	1.3704***	1.6175***	0.4936***	0.5123***
Educational attainment: primary education	1.2396***	1.7051***	0.4323***	0.5077***
Educational attainment: secondary education	0.9105***	1.1737***	0.2008***	0.1350***
Educational attainment: other	-0.8064	Omitted	-0.1446***	Omitted
Marital status: single / never married	0.0065	0.7360***	0.0017	0.1257***
Marital status: divorced / separated	-0.1029	0.4656***	-0.0263	0.0982
Marital status: widowed	0.0187	0.4828***	0.0050	0.0988***
Lifestyle: Dissatisfied	0.0655	0.8247***	0.0178	0.1750***
Lifestyle: Indifferent	0.1087	0.3316***	0.0299	0.0591***
Household size	0.1855***	0.2421***	0.0496***	0.0391***
Constant	-5.0114***	-5.1506***	Omitted	Omitted
Sample size	3 449	3 220	3 449	3 220
Pseudo R-squared	0.3404	0.3898	0.3404	0.3898
Observed probability	0.3164	0.2062	0.3164	0.2062
Predicted probability	0.1853	0.0894	0.1853	0.0894
Chi-squared statistic	515.12	600.54	515.12	600.54
Prob. > Chi-squared statistic	0.0000	0.0000	0.0000	0.0000

*** Significant at 1% ** Significant at 5% * Significant at 10%

Note: Reference categories

- Province: Western Cape
- Geo-type: urban
- Gender: male
- Population group: white
- Age cohort: 55-64 years
- Labour market status: employed
- Educational attainment: tertiary
- Marital status: married / lived together
- Lifestyle: satisfied

The results also suggest that only Gauteng province dummy had a negative coefficient in 2011 suggesting that Gauteng residents were significantly less likely to be poor compared to the Western Cape residents, and therefore Gauteng was the most privileged province. Also, the African race and lower educated individuals had the largest positive coefficients meaning greater impact on boosting money-metric poverty likelihoods. Lastly, lifestyle variable was only significant during 2016, and both the indifferent and dissatisfied individuals about their way of living were more likely to be money-metric poor compared to their satisfied counterparts.

With regard to the OLS regression on FII, the results in Table A5 indicate that the white elderly individuals residing in the urban areas of the Western Cape, those with higher education and higher per capita income enjoyed significantly greater financial inclusion index. The table also shows that the unemployed or inactive youth aged 15-24 years old had the largest negative figures during the study period and thus were the factors predominantly adding negatively to the financial inclusion index. Being a Black African lowly educated person had a significantly negative impact on the financial inclusion index. Lifestyle dummies also impacted negatively on the financial inclusion index implying that those who were either not satisfied or indecisive about their life were less likely to be included.

Table 12 shows the results of the probit regressions on financial exclusion likelihood. Note that in these regressions, log real per capita income was included as an explanatory variable (it was rather excluded in the Table 13 probit regressions – to be discussed later). The results of the Table 12 regressions shows that, firstly, the rural residents aged below 45 years old, individuals from the other three race groups compared to their white counterparts (all the three race dummy variables were statistically significant), those who were unemployed or inactive, individuals with low educational attainment as well as the unmarried ones suffered a significantly greater probability of being financially excluded. While KwaZulu-Natal residents were significantly more likely to be financially excluded compared to their Western Cape counterparts in 2011, in 2016, KwaZulu-Natal residents were less likely to be financially excluded compared to those from the Western Cape. Also, the females were less likely to be financially excluded compared to the reference category.

Table 12: Probit regressions on financial exclusion likelihood

	2011	2016	2011	2016
	Coefficient		Marginal effect	
Province: Eastern Cape	-0.1358	-0.1766	-0.0489	-0.0439
Province: Northern Cape	-0.0181	0.2049	-0.0066	0.0604
Province: Free State	0.2574*	0.1400	0.0983*	0.0391
Province: KwaZulu-Natal	0.3423***	-0.2793*	0.1229***	-0.0673**
Province: North West	0.0588	0.2012	0.0219	0.0574
Province: Gauteng	0.0523	-0.0629	0.0194	-0.0165
Province: Mpumalanga	0.2101	0.0877	0.0797	0.0240
Province: Limpopo	-0.1080	-0.0512	-0.0390	-0.0040
Geo-type: rural / tribal	0.3485***	0.1539*	0.1305***	0.0421
Gender: Female	-0.2651***	-0.1554**	-0.0976***	-0.0414**
Population group: African	0.6919***	0.2329	0.2283***	0.0585
Population group: Coloured	0.7779***	0.3252*	0.3016***	0.0960*
Population group: Indian / Asian	0.7162***	0.8013**	0.2792***	0.2725***
Age cohort: 15-24 years	0.7951***	0.3767*	0.3011***	0.1042*
Age cohort: 25-34 years	0.3809***	0.4856**	0.1438***	0.1407**
Age cohort: 35-44 years	0.3203***	0.6257***	0.1215***	0.1933***
Age cohort: 45-54 years	0.4303***	-0.1852	0.1653***	-0.0460
Labour market status: unemployed	0.8786***	0.7089***	0.3302***	0.2240***
Labour market status: inactive	1.0669***	0.7288***	0.4029***	0.2235***
Educational attainment: no formal education	1.3998***	1.6313***	0.5016***	0.5822***
Educational attainment: primary education	1.4864***	1.4880***	0.5349***	0.5208***
Educational attainment: secondary education	0.8163***	0.9393***	0.2704***	0.2020***
Educational attainment: other	0.3685	0.4544	0.1425	0.1426
Marital status: single / never married	0.2698***	0.0488	0.0982***	0.0130
Marital status: divorced / separated	0.0415	-0.2889	0.0154	-0.0674*
Marital status: widowed	-0.1417	-0.1304	-0.0507	-0.0330
Marital status: don't know	Omitted	Omitted	omitted	Omitted
Lifestyle: Dissatisfied	0.0545	0.3987***	0.0202	0.1154***
Lifestyle: Indifferent	0.1299	0.1012	0.0485	0.0274
Household size	-0.0310**	-0.0855***	-0.0114**	-0.0227***
Log real per capita income	-0.1764***	-0.3106***	-0.0649***	-0.0823***
Constant	-1.6759***	0.030	N/A	N/A
Sample size	3 442	3 255	3 442	3 255
Pseudo R-squared	0.2880	0.2565	0.2880	0.2565
Observed probability	0.4085	0.2613	0.4085	0.2613
Predicted probability	0.3442	0.1829	0.3442	0.1829
Chi-squared statistic	704.32	474.50	704.32	474.50
Prob. > Chi-squared statistic	0.0000	0.0000	0.0000	0.0000

*** Significant at 1% ** Significant at 5% * Significant at 10%

Note: Reference categories

- Province: Western Cape
- Geo-type: urban
- Gender: male
- Population group: white
- Age cohort: 55-64 years
- Labour market status: employed
- Educational attainment: tertiary
- Marital status: married / lived together
- Lifestyle: satisfied

Table 13: Probit regressions on financial exclusion likelihood, excluding log real income

	2011	2016	2011	2016
	Coefficient		Marginal effect	
Province: Eastern Cape	-0.1236	-0.1174	-0.0447	-0.0312
Province: Northern Cape	-0.0378	0.2026	-0.0138	0.0604
Province: Free State	0.2631*	0 .2001	0.1007*	0.0593*
Province: KwaZulu-Natal	0.3162***	-0.3628**	0.1200***	-0.0889***
Province: North West	0.0337	0.1797	0.0125	0.0528
Province: Gauteng	0.0197	-0.1148	0.0073	-0.0310
Province: Mpumalanga	0.1558	0.0325	0.0588	0.0091
Province: Limpopo	-0.1047	-0.1156	-0.0379	-0.0306
Geo-type: rural / tribal	0.3928***	0.2727***	0.1478***	0.0729***
Gender: Female	-0.2278***	-0.1627**	-0.0840***	-0.0452***
Population group: African	0.9077***	0.5128***	0.2873***	0.1261***
Population group: Coloured	0.9440***	0.5674***	0.3630***	0.1841***
Population group: Indian / Asian	0.8137***	0.9700***	0 .3159***	0.3452***
Age cohort: 15-24 years	0.8073***	0.3269	0.3060***	0.0934
Age cohort: 25-34 years	0.3909***	0.4528**	0.1478***	0.1352**
Age cohort: 35-44 years	0.3408***	0.5931***	0.1297***	0.1879***
Age cohort: 45-54 years	0.4429***	-0.2008	0.1705***	-0.0513
Labour market status: unemployed	0.9912***	1.0034***	0.3715***	0.3375***
Labour market status: inactive	1.1514***	0.8345***	0.4329***	0.2674***
Educational attainment: no formal education	1.6170***	2.0202***	0.5508***	0.6840***
Educational attainment: primary education	1.6692***	1.8981***	0.5800***	0.6543***
Educational attainment: secondary education	0.9537***	1.2398***	0.3095***	0.2619***
Educational attainment: other	0.4020*	0.5739	0.1560*	0.1915
Marital status: single / never married	0.2753***	0.1773***	0.1004***	0.0493**
Marital status: divorced / separated	0.0207	-0.2540	0.0077	-0.0631
Marital status: widowed	-0.1397	-0.0645	-0.0501	-0.0174
Marital status: don't know	Omitted	Omitted	Omitted	Omitted
Lifestyle: Dissatisfied	0.0688	0.5331***	0.0255	0.1635***
Lifestyle: Indifferent	0.1425*	0.1466*	0.0534*	0.0416*
Household size	-0.0090	-0.0235	-0.0033	-0.0065
Constant	-3.4588***	-3.2446***	N/A	N/A
Sample size	3 449	3 292	3 447	3 292
Pseudo R-squared	0.2826	0.2437	0.2826	0.2437
Observed probability	0.4089	0.2710	0.4089	0.2710
Predicted probability	0.3460	0.1956	0.3460	0.1956
Chi-squared statistic	676.90	470.10	676.90	470.10
Prob. > Chi-squared statistic	0.0000	0.0000	0.0000	0.0000

*** Significant at 1% ** Significant at 5% * Significant at 10%

Note: Reference categories

- Province: Western Cape
- Geo-type: urban
- Gender: male
- Population group: white
- Age cohort: 55-64 years
- Labour market status: employed
- Educational attainment: tertiary
- Marital status: married / lived together
- Lifestyle: satisfied

It can be concluded that employment status was significantly associated with financial exclusion with positive coefficients. Being unemployed and economically inactive increases the likelihood of being financially excluded compared with the reference category (employed). It is also observed that all education dummy variables had a positive sign and were statistically significant, meaning that compared with the reference category (tertiary education), individuals without tertiary education were associated with a significantly greater probability of being financially excluded. Similar to an increase in household size, an increase in per capita income is associated with low financial exclusion likelihoods. Therefore, the households in the lower quantile group with less income suffer a high probability of financial exclusion.

Table 13 is virtually the same regressions as Table 12, except the per capita income variable is excluded. The sign and the statistical significance of the female dummy, and all the dummy variables of the age groups, labour market and marital status, remained the same as Table 12, after removing per capita income. Provincial dummies retained the same signs and the significance level except for few changes of the signs on the particularly insignificant figures.

All the coefficients and the marginal effects for the rural and race dummy variables became significant in Table 13 as opposed to Table 12. It is also observed that, for education dummy variables, Table 13 and Table 12 were the same except that the 2016 coefficient and the marginal effect remained insignificant. Lifestyle dummy variable (indifferent group) became statistically significant in Table 13. Lastly, the household size variable maintained the same signs, and interestingly, all the coefficients and marginal effects lost significance in Table 13 indicating unobserved importance concerning financial exclusion likelihoods.

The results of the bivariate probit regressions on money-metric poverty and financial exclusion likelihoods are presented in Table 14. This regression is run to test the relationship between poverty and financial exclusion. First, the fewer coefficients in both regressions are statistically significant. The table indicates that the following dummy variables were used in both regressions to test for the likelihoods since they were statistically significant during the study period: a Black African woman or a Coloured woman from the rural area, formally employed, and with no education or with up to secondary qualification. The coefficients show a positive relationship between poverty and financial exclusion, implying that poverty is more stricken on the people who are financially excluded.

Table 14: Bivariate probit regressions on money-metric poverty and financial exclusion likelihoods

	Poverty		Financial exclusion	
	2011	**2016**	**2011**	**2016**
Province: Eastern Cape	0.0981	0.2631*	-0.1222	-0.1159
Province: Northern Cape	-0.2101	0.0718	-0.0363	0.1966
Province: Free State	0.1153	0.3669**	0 .2626*	0.1870
Province: KwaZulu-Natal	0.0074	-0.3082*	0.3172***	-0.3697***
Province: North West	-0.2088	0.0479	0.0350	0.1699
Province: Gauteng	-0.2584**	-0.2557	0.0200	-0.1214
Province: Mpumalanga	-0.1978	-0.1724	0.1571	0.0325
Province: Limpopo	-0.0975	-0.3806*	-0.1042	-0.1221
Geo-type: rural / tribal	0.4541***	0.3832***	0.3928***	0.2743***
Gender: Female	0.2469***	-0.0807***	-0.2284***	-0.1645**
Population group: African	1.8547***	0.4948***	0.9076***	0.5188***
Population group: Coloured	1.5731***	0.1882***	0.9430***	0.5754***
Population group: Indian / Asian	-0.2145	0.7724**	0.8131***	0.9806***
Age cohort: 15-24 years	0.2297	0.4706**	0 .8090***	0.3239
Age cohort: 25-34 years	0.1261	0.5337**	0.3910***	0.5337**
Age cohort: 35-44 years	0.2469*	0.7424***	0.3395***	0.5931***
Age cohort: 45-54 years	0.1760	0.2898	0.4444***	-0.1913
Labour market status: unemployed	0.9814***	1.1951***	0.9933***	1.0127***
Labour market status: inactive	0.9107***	0.8148***	1.1543***	0.8404***
Educational attainment: no formal education	1.3692***	1.5427***	1.6136***	2.0023***
Educational attainment: primary education	1.24362***	1.6369***	1.6665***	1.8944***
Educational attainment: secondary education	0.9052***	1.1164***	0.9533***	1.2439***
Educational attainment: other	-0.8316	-6.3208***	0.4024*	0.5800
Marital status: single / never married	0.0056	0.7530***	0.2728***	0.1764***
Marital status: divorced / separated	-0.1025	0.4669**	0.0227	-0.2621
Marital status: widowed	0.0215	0.4806***	-0.1414	-0.0633
Marital status: don't know	0.9002	-3.6797***	-6.0228***	-5.0147***
Lifestyle: Dissatisfied	0.0653	0.8273***	0.0701	0.5306***
Lifestyle: Indifferent	0.1105	0.3371***	0.1435*	0.1486*
Household size	0.1855***	0.2414***	-0.0092	-0.0246
Constant	-5.0086***	-5.1401***	-3.4593***	-3.2491***
Sample size	3 449	3 293	3 449	3 293
F-statistic	3446.81	28.17	3446.81	28.17
Prob. > F-statistic	0.0000	0.0000	0.1106	0.0000

*** Significant at 1% ** Significant at 5% * Significant at 10%

Note: Reference categories

- Province: Western Cape
- Geo-type: urban
- Gender: male
- Population group: white
- Age cohort: 55-64 years
- Labour market status: employed
- Educational attainment: tertiary
- Marital status: married / lived together
- Lifestyle: satisfied

4.4 Conclusion

From the descriptive statistics discussed earlier, it can be concluded that the South African population is mostly concentrated in the urban areas of Gauteng, Kwa-Zulu Natal, Western Cape as well as the Eastern Cape. These people are mostly unmarried Black Africans aged 15-34 years old. The improvement in their educational attainment also improved employment status. This was more important since unemployment was the key factor that restricted the majority from obtaining a bank account. However, the South African financial sector was more inclusive (over 60% inclusion). The majority were keen to control their finances, but they suffered stress in dealing with their own finances.

The overall poverty headcount ratio declined from 31.69% to 20.15% in 2016. Limpopo and Eastern Cape were the most poverty-stricken, while Western Cape and Gauteng were the most privileged provinces. Also, the Black African women aged 35-44 years, residing in rural areas with low education and unemployed/ inactive suffered a high poverty ratio. Oppositely, the Whites in the urban areas who have better education and who are formally employed enjoyed the lower money-metric poverty likelihoods. The results also indicated that the financially included proportion increased from 60% to 72.54% in 2016. The white married man in the urban areas of the Western Cape and Gauteng enjoyed both higher financial inclusion probability and higher money-metric non-poor likelihoods. Lastly, the results suggested a positive relationship between financial inclusion and money-metric non-poor.

The regression analysis indicated that Gauteng was the most privileged province as its poverty likelihoods were lower than that of a reference category (Western Cape). Being a lowly educated Black African individual who is also unemployed and not married escalated the probability of money-metric poverty. The other results showed that financial inclusion was the greatest among the White elderly urban residents of the Western Cape with higher education.

The increase in household size showed a negative impact on the financial exclusion probability. Also, those who earned higher income enjoyed a lower probability of being financial exclusion. The last regression exhibited a positive relationship between financial exclusion and poverty, suggesting that high levels of poverty are associated with an increased probability of exclusion.

CHAPTER FIVE: CONCLUSION

5.1 Introduction

This chapter concludes the study. First, section 5.2 presents the review of findings. This starts by highlighting the key concepts and theories discussed in the previous chapters, it also includes the key research gaps concerning this study, the data and methodology applied, as well as the key findings. Section 5.3 provides conclusion and policy recommendations.

5.2 Review of key findings

Various key concepts were discussed in Chapter Two, such as financial development, financial system of South Africa, the financial inclusion and financial exclusion, dimensions of financial inclusion, as well as poverty. Also, the two key theories used to build this paper include the four main theories of poverty (the Classical, Neoclassical, Keynesian, and the Marxian theories), and the economic theories of financial inclusion (trickle-down theory and other theories). Upon reviewing the past empirical studies, the researcher identified the two key research gaps. First, the previously conducted local studies employed dataset that does not provide thorough information on all the possible financial inclusion dimensions, and thus constructed the index using only three dimensions (a not comprehensive index). Last, the FinScope data has been seriously under-utilised to examine financial inclusion especially in South Africa.

The 2011 and 2016 FinScope South Africa datasets were used to conduct this study. The data provided information on all the four possible financial inclusion dimensions, assisting the construction of the comprehensive index to ascertain the depth of the financial sector outreach. The Foster-Greer-Thorbecke indices were used to measure the level of poverty, while the lower-bound poverty line (R810) was used to differentiate the poor from the non-poor. Principal Component Analysis was also applied to derive the financial inclusion index, and the 40th percentile financial inclusion index in 2011 was used to distinguish the financially excluded individuals in both 2011 and 2016. Probit regressions were run to measure the likelihood of being poor and being financially excluded. Ordinary Least Squares were run to identify the nature of the relationship between the dependent and the independent variables. Lastly, bivariate regression was also run to test the relationship between poverty and financial exclusion.

Compared with other developing countries, South Africa enjoys greater financial inclusion likelihood but the poverty level remains relatively high. As financial inclusion can assist to curb poverty, it is better to understand the factors affecting financial inclusion and the relationship between financial inclusion and poverty in South Africa. The key results are summarised as follows.

First, it is notably observed that the majority of the South African citizens are incorporated into the banking system as over 60% of them had bank accounts during the study period. It was found that the barrier to financial inclusion depended on individual characteristics. It was particularly observed that unemployment and financial language impacted negatively against having access to and use of financial services. It was also notably observed that borrowing and funeral cover were the most used services while dealing with their finances had shown to be stressful.

The analysis shows that being a Black African female who is lowly educated and who resides in the rural areas and also unemployed favoured higher money-metric poverty likelihoods, with a higher influence of low education and unemployment. Oppositely, being a rich white man from the urban areas of the Western Cape and Gauteng, highly educated, and older to some extend favours financial inclusion with a more influence on race and higher education.

While probit regression on money-metric poverty showed that being a Gauteng resident reduces poverty chances, it showed that being a female is associated with a higher probability of money-metric poverty. Probit regression on financial exclusion likelihoods showed a negative sign for a female dummy implying that the females are less likely to be excluded. It can be concluded that being a woman is more likely to be financially included yet poor.

Similarly, the probit regressions on financial exclusion probability also showed a negative sign indicating that the increase in the household size reduces exclusion likelihoods. The individual from a bigger household is less likely to be excluded. The other results showed that individuals with higher real per capita income enjoy much lower chances of being excluded, and these are mostly the Whites in the urban areas.

The OLS regressions on financial inclusion index indicated that the rural dummy, population group, age cohorts, labour market educational attainment (lowly educated) marital status (single/ never married) as well as lifestyle dummies showed a negative sign meaning they impacted negatively on the financial inclusion index. The bivariate regression on money-metric poverty and financial exclusion likelihoods showed that the rural, African, Coloured, unemployed, inactive and low education variables exhibited a positive sing indicating the existence of a positive association between poverty and financial exclusion.

5.3 Conclusion and policy recommendations

African countries have higher poverty levels and lower financial inclusion in the global economy. As financial inclusion can add value to relieve poverty (Williams, Adegoke & Dare, 2017), understanding the relationship between financial inclusion and poverty in South Africa is a remarkable concern. This study investigated this question for a large sample of South African individuals and found informative results.

The ethnic groups, educational levels as well as the location of the population appear to be significant underlying features for financial inclusion in the South African context. Presumably, the financial service penetration figures remained low for the lowly educated Black Africans, given that majority of them reside in the rural areas

The policy implications from the findings are that financial inclusion, as measured in terms of bank account ownership does not create a key problem in South Africa. However, the authorities in South Africa could improve the formal account ownership by tackling barriers related to demographic characteristics all of which are impactful in the long-run. A study conducted by Fungacova & Weill (2015) in China showed that the utilisation of formal accounts has improved compared to other countries. Nevertheless, obstacles obstructing access to bank accounts existed.

From the policy perspective, improving country-wide access to wireless internet, smartphones, and computers especially in the rural areas, as well as encouraging provision of secure online financial products and services could be a boast to financial inclusion, which in turn can lower poverty. This may optimise the population's ability to understand internet-based financial services. The studies conducted by Evans (2018) on African countries, and Lenka (2018) on

South Asian-Association of Regional Cooperation countries, showed that internet use and mobile phones impacted positively on financial inclusion such that high levels of internet and mobile phones were connected with increased financial inclusion. Hence, adequate provision of internet facilities nationwide that permit the end-users of financial services to be located in rural areas, can be a promising potential to facilitate South African financial inclusion outside the main cities.

Another option is making study loans accessible to especially the most disadvantaged people. A study conducted by Zins & Weill (2016) on the African countries showed that the poor population was able to ask more for loans to pay for their education and medical expenses, while the richer proportion asked more loans for to pursue business purposes. Study loans could escalate higher learning enrolment to stimulate tertiary enrolment levels. This will not only assist the disadvantaged groups to further their studies beyond high school but also improve their labour productivity to expand their job opportunities. This will also ensure that the individuals obtain the lowest level of knowledge needed to partake in the formal financial system. However, any attempt undertaken by the financial sector to fully finance the study loans should be motivated with consideration to lending rates.

In short, the significant gains in South African financial inclusion are expected to necessitate a collection of services, delivery channels as well as service providers. The service providers and the professional stakeholders in the financial sector must jointly map out and prioritise the necessary services and assess their contribution to financial inclusion. Proper banking models with suitable services and products should be designed. It can be concluded that more financial services should be geared towards the lowly educated Black African poor population residing in the rural areas to fight poverty, given the empirical findings clearly suggest that financial inclusion is associated with lower money-metric poverty probability. The poor individuals benefit more from financial inclusion than the rich ones. Subsequently, financial inclusion assists to reduce poverty.

Lastly, this study recommends that further research should be piloted to assess the influence of financial inclusion intermediations in South Africa. The future study should analyse the banking models applied so that the finest one can be used to achieve full financial inclusion in South Africa in the future. Also, there should be a more intensive investigation in vulnerable

rural areas. The causal relationship between financial inclusion and poverty should also be examined. Further research could also incorporate mobile money and the rise of wireless internet access into the analysis to deepen the understanding of how the use of wireless internet and communication influence financial inclusion in South Africa. Informal financial services should be examined since they continue to flourish regardless of the financial inclusion initiatives.

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APPENDIX

Table 15: Percentage of working-age population in each household income category, before and after imputations (%), 2011

	Before imputations	After imputations
No income	0.20	0.20
R1-249 per month	0.93	0.93
R250 – 499 per month	1.25	1.25
R500 – 749 per month	2.17	2.68
R750 – R999 per month	1.85	2.77
R1 000 – 1 249 per month	4.70	6.26
R1 250 – 1 499 per month	2.53	4.82
R1 500 – 1 749 per month	2.77	5.79
R1 750 – 1 999 per month	2.08	5.21
R2 000 – 2 249 per month	3.62	6.68
R2 250 – 2 499 per month	1.84	5.78
R2 500 – 2 749 per month	1.84	4.42
R2 750 – 2 999 per month	1.37	4.41
R3 000 – 3 999 per month	4.10	7.02
R4 000 – 4 999 per month	3.83	6.53
R5 000 – 5 999 per month	3.28	5.99
R6 000 – 6 999 per month	1.74	4.27
R7 000 – 7 499 per month	1.49	3.47
R7 500 – 7 999 per month	1.13	2.72
R8 000 – 8 999 per month	0.86	1.96
R9 000 – 9 999 per month	1.08	1.94
R10 000 – 10 999 per month	1.24	2.26
R11 000 – 11 999 per month	0.51	1.21
R12 000 – 12 999 per month	1.10	1.75
R13 000 – 14 499 per month	0.40	1.16
R14 500 – 16 999 per month	0.91	1.71
R17 000 – 19 499 per month	0.99	1.37
R19 500 – R21 999 per month	0.94	1.49
R22 000 – 24 999 per month	0.35	0.82
R25 000 – 29 999 per month	0.80	1.09
R30 000 – 34 999 per month	0.56	0.88
R35 000 – 41 999 per month	0.33	0.47
R42 000 – 49 999 per month	0.45	0.46
R50 000 – 61 999 per month	0.06	0.06
R62 000 per month or more	0.13	0.13
Refuse to answer	*28.94*	*0.00*
Uncertain or Don't know	*14.60*	*0.00*
Irregular monthly income	*2.43*	*0.00*
I get money, however not monthly	*0.59*	*0.00*
	100.00	100.00
% with unspecified income	*46.56*	*0.00*

Table 16: Percentage of working-age population in each household income category, before and after imputations (%), 2016

	Before imputations	**After imputations**
No Income	0.21	0.21
R1 - R999	4.32	4.32
R1 000 - R1 999	12.10	12.10
R2 000 - R2 999	10.19	10.19
R3 000 - R5 999	18.00	18.00
R6 000 - R7 999	7.35	7.35
R8 000 - R9 999	4.46	4.46
R10 000 - R11 999	3.80	3.80
R12 000 - R16 999	4.65	4.65
R17 000 - R24 999	3.67	3.67
R25 000 - R29 999	1.69	1.69
R30 000 - R39 999	2.23	2.23
R40 000 or more	2.10	2.10
Don't know	*2.88*	*0.00*
Refuse to answer	*22.33*	*0.00*
No income		1.21
R1 – R999		1.53
R1 000 - R2 999		2.57
R3 000 - R7 999	N/A	5.87
R8 000 - R11 999		2.73
R12 000 - R29 999		3.88
R30 000 or more		7.41
	100.00	100.00
% with unspecified income	*25.21*	*0.00*

Note: The after-imputations household income category variable is already available in the dataset, derived by Finmark Trust. However, the categories are not exactly the same as the original categories, as shown in the last few rows of the above table.

Table 17: First principal components for deriving the financial inclusion index

	2011	2016
Access		
Overall banking status: have a bank account/card	0.3961	0.3671
Overall banking status: used to have in the past	-0.1238	-0.2267
Never had/used a bank account: No proof of residence	-0.0580	-0.0442
Never had/used a bank account: Bank is too far	-0.0491	-0.0396
Never had/used a bank account: No identity document	-0.0556	-0.0539
Never had/used a bank account: Expensive to have a bank account	-0.0595	-0.0975
Never had/used a bank account: Unemployed	-0.2106	-0.2608
Never had/used a bank account: Student	-0.1558	-0.0097
Never had/used a bank account: Prefer dealing with cash	-0.1396	-0.1032
Language used in financial paperwork is confusing: agree	0.1225	-0.0712
Language used in financial paperwork is confusing: indifferent	0.0019	0.1171
Usage		
Used a bank account or bank card	0.3969	0.3801
Used a bank loan	0.2769	0.2409
Used savings book	0.1659	0.1469
Used overdraft facilities	0.1583	0.1866
Used personal or garage card	0.1579	0.1664
Used funeral policy offered by banks	0.2541	0.2128
Have borrowed past 12 months	0.2112	0.0973
Have insurance policy	0.1373	0.3421
Used funeral cover	0.3056	0.2375
Terminal benefits	0.3134	0.3065
Currently saved or used money away	0.1659	0.1469
Quality		
Don't feel comfortable in a bank	-0.0373	-0.0518
Don't understand how banks work	-0.0536	-0.0372
Don't understand technology	-0.0422	-0.0387
Welfare		
Dealing with personal finance is stressful: agree	0.0107	0.1227
Dealing with personal finance is stressful: indifferent	0.0459	-0.0636
Would like to be in control of own finances and money matters: agree	-0.1293	0.0655
Would like to be in control of own finances and money matters: indifferent	0.1689	0.2027
Proportion of variation explained by the first principal components	14.02%	12.93%

Table 18: Poverty gap and squared poverty gap ratios by demographic characteristics

		Poverty gap (P_1)		Squared poverty gap (P_2)	
		2011	**2016**	**2011**	**2016**
All	All	0.1291	0.0981	0.0693	0.0614
Province	Western Cape	0.0640	0.0677	0.0325	0.0548
	Eastern Cape	0.1795	0.1785	0.0978	0.1115
	Northern Cape	0.1042	0.1007	0.0558	0.0613
	Free State	0.1639	0.1393	0.0909	0.0807
	KwaZulu-Natal	0.1625	0.0622	0.0872	0.0402
	North West	0.1277	0.1288	0.0678	0.0731
	Gauteng	0.0660	0.0583	0.0336	0.0381
	Mpumalanga	0.1159	0.1212	0.0549	0.0773
	Limpopo	0.2123	0.1409	0.1227	0.0741
Geo-type	Urban	0.0824	0.0686	0.0435	0.0437
	Rural / Tribal	0.2231	0.1769	0.1212	0.1087
Gender	Male	0.0847	0.0777	0.0434	0.0508
	Female	0.1698	0.1153	0.0931	0.0704
Population group	African	0.1556	0.1207	0.0840	0.0745
	Coloured	0.0768	0.0680	0.0366	0.0497
	Indian / Asian	0.0017	0.0338	0.0006	0.0270
	White	0.0029	0.0020	0.0022	0.0004
Cohort	15-24 years	0.1668	0.1004	0.0855	0.0640
	25-34 years	0.1081	0.0962	0.0577	0.0655
	35-44 years	0.1161	0.1167	0.0654	0.0730
	45-55 years	0.1271	0.0721	0.0732	0.0340
	55-64 years	0.1055	0.0893	0.0564	0.0477
Labour market status	Employed	0.0361	0.0307	0.0181	0.0149
	Unemployed	0.2319	0.2998	0.1282	0.2071
	Inactive	0.1563	0.1184	0.0813	0.0707
Educational attainment	No formal education	0.3288	0.2059	0.1950	0.1231
	Primary education	0.2238	0.2360	0.1221	0.1477
	Secondary education	0.1305	0.0947	0.0685	0.0596
	Vocational/ special	0.0117	0.0000	0.0059	0.0000
	Tertiary education	0.0186	0.0017	0.0130	0.0005
Marital status	Married/ Living together	0.1003	0.0554	0.0556	0.0362
	Divorced/ Separated	0.0769	0.0375	0.0422	0.0171
	Widowed	0.1824	0.1231	0.1000	0.0657
	Single/ Never married	0.1451	0.1340	0.0768	0.0861
Financial inclusion index quintile	Quintile1	0.1921	0.2366	0.1005	0.1596
	Quintile2	0.2010	0.1509	0.1200	0.1596
	Quintile3	0.1410	0.0652	0.0802	0.0342
	Quintile4	0.0866	0.0220	0.0440	0.0116
	Quintile5	0.0231	0.0018	0.0111	0.0008

Table 19: OLS regressions on financial inclusion index

Dependent variable: Financial inclusion index		
	2011	**2016**
Province: Eastern Cape	0.0976	0.2517**
Province: Northern Cape	0.1440	-0.1092
Province: Free State	-0.0232	-0.0106
Province: KwaZulu-Natal	-0.2171**	0.1956
Province: North West	0.0584	-0.1647
Province: Gauteng	0.0168	0.2883**
Province: Mpumalanga	0.0514	0.1707
Province: Limpopo	0.1686	0.0205
Geo-type: rural / tribal	-0.3344***	-0.1881**
Gender: Female	0.2108***	0.1276*
Population group: African	-0.5707***	-0.4992***
Population group: Coloured	-0.4980***	-0.4454***
Population group: Indian / Asian	-0.6528***	-0.5313***
Age cohort: 15-24 years	-1.0812***	-0.5191***
Age cohort: 25-34 years	-0.5398***	-0.5861***
Age cohort: 35-44 years	-0.4960***	-0.6773***
Age cohort: 45-54 years	-0.3289***	0.0127
Labour market status: unemployed	-1.2233***	-0.9843***
Labour market status: inactive	-1.4391***	-0.9919***
Educational attainment: no formal education	-1.5140***	-1.3542***
Educational attainment: primary education	-1.7531***	-1.5283***
Educational attainment: secondary education	-0.8519***	-1.0173***
Educational attainment: other	-0.2439	-0.1705
Marital status: single / never married	-0.4024***	-0.2314***
Marital status: divorced / separated	-0.2985***	0.2812**
Marital status: widowed	0.1332	0.1483
Marital status: don't know	0.5368	0.9469**
Lifestyle: dissatisfied	-0.2229***	-0.4204***
Lifestyle: Indifferent	-0.2160**	-0.1653***
Household size	0.0369**	0.1129***
Log real per capita income	0.3097***	0.4290***
Constant	0.6459	-1.3657***
Sample size	3 444	3 256
R-squared	0.4742	0.4337
Adjusted R-squared	1.4693	1.4437
F-statistic	79.98	84.50
Prob. > F-statistic	0.0000	0.0000

*** Significant at 1% ** Significant at 5% * Significant at 10%

Note: Reference categories

- Province: Western Cape
- Geo-type: urban
- Gender: male
- Population group: white
- Age cohort: 55-64 years
- Labour market status: employed
- Educational attainment: tertiary
- Marital status: married / lived together
- Lifestyle: satisfied

Table 20: Other descriptive statistics on access dimension of FI (%)

	2011	2016
Reasons why people don't have household contents or possessions insurance: I earn too little to make it worthwhile		
Yes	11.40	11.55
No	88.60	88.45
	100.00	100.00
Reasons why people don't have household contents or possessions insurance: Don't trust insurance companies to pay out if I had a claim		
Yes	2.57	2.18
No	97.43	97.82
	100.00	100.00
Reasons why people don't have household contents or possessions insurance: I've never been told about it		
Yes	2.69	0.59
No	97.31	99.41
	100.00	100.00
Reasons why people don't have household contents or possessions insurance: I do not qualify		
Yes	9.74	0.31
No	90.26	99.69
	100.00	100.00
Reasons why people don't have life insurance or life cover: I was declined or did not qualify		
Yes	0.92	0.31
No	99.08	99.69
	100.00	100.00
Reasons why people don't have life insurance or life cover: Do not trust life insurance to pay out when I die		
Yes	2.08	2.18
No	97.92	97.82
	100.00	100.00
There are many reasons why people don't have life insurance or life cover: It is too expensive		
Yes	15.38	40.30
No	84.62	59.70
	100.00	100.00
Reasons why people don't have life insurance or life cover: The language used and conditions are too confusing		
Yes	0.61	0.36
No	99.39	99.64
	100.00	100.00
Reasons why people don't have life insurance or life cover: If I miss a payment I lose the insurance cover and the money I have paid for the insurance cover		
Yes	1.87	1.45
No	98.13	98.55
	100.00	100.00
Reasons why people don't save or put money away or saving policy: I don't have money to save or invest		
Yes	23.55	9.36
No	76.45	90.64
	100.00	100.00
Reasons why people don't save or put money away or saving policy: I do not have a bank account		
Yes	3.49	3.51

No	96.51	96.49
	100.00	100.00
Reasons why people don't save or put money away or saving policy: It is too expensive		
Yes	5.80	4.88
No	94.20	95.12
	100.00	100.00
Reasons why people don't save or put money away or saving policy: I don't have a job		
Yes	30.80	20.76
No	69.20	79.24
	100.00	100.00

Table 21: Other descriptive statistics on usage dimension of FI (%)

	2011	**2016**
Can you tell me if you currently have insurance that will pay off your loan if you die, lose your job or are disabled in any way?		
Yes	6.43	1.51
No	93.57	98.49
	100.00	100.00

Table 22: Other descriptive statistics on quality dimension of FI (%)

	2011	**2016**
Reasons why people don't have insurance: Don't believe in insurance		
Yes	4.07	3.05
No	95.93	96.95
	100.00	100.00
Reasons why people don't have insurance: I don't need it		
Yes	9.35	6.26
No	90.65	93.74
	100.00	100.00
Reasons why people don't have insurance: Don't want it		
Yes	8.50	7.22
No	91.50	92.78
	100.00	100.00
Reasons why people don't have life insurance or life cover: Don't believe in life insurance		
Yes	3.35	3.05
No	96.65	96.95
	100.00	100.00
Reasons why people don't have life insurance or life cover: Never thought about it		
Yes	6.97	4.84
No	93.03	95.16
	100.00	100.00
Reasons why people don't have life insurance or life cover: Don't want it		
Yes	6.87	7.22
No	93.13	92.78
	100.00	100.00
Reasons why people don't have life insurance or life cover: Don't see the benefits		
Yes	2.10	2.61
No	97.90	97.39
	100.00	100.00

Reasons why people don't have life insurance or life cover: There are better things to spend my money on		
Yes	1.53	1.12
No	98.47	98.88
	100.00	100.00
Reasons why people don't have life insurance or life cover: These things are not meant for people like me		
Yes	3.18	0.87
No	96.82	99.13
	100.00	100.00
Reasons why people don't save or put money away or saving policy: Never thought about it		
Yes	6.98	11.74
No	93.02	88.26
	100.00	100.00
Reasons why people don't save or put money away or saving policy: I prefer to spend money on other things I need more		
Yes	3.20	2.45
No	96.80	97.55
	100.00	100.00
Reasons why people don't save or put money away or saving policy: I prefer to invest in other things e.g. property, livestock		
Yes	0.37	0.54
No	99.63	99.46
	100.00	100.00
Reasons why people don't save or put money away or saving policy: My children will look after me so I don't need it		
Yes	0.91	1.33
No	99.09	98.67
	100.00	100.00
Reasons why people don't save or put money away or saving policy: I save in other ways e.g. keep cash at home		
Yes	1.49	0.57
No	98.51	99.43
	100.00	100.00
Reasons why people don't save or put money away or saving policy: I won't be able to access my money if I need it		
Yes	1.32	0.56
No	98.68	99.44
	100.00	100.00
Reasons why people don't save or put money away or saving policy: Don't want it		
Yes	3.02	1.17
No	96.98	98.83
	100.00	100.00
Reasons why people don't save or put money away or saving policy: Don't need it		
Yes	4.19	2.06
No	95.81	97.94
	100.00	100.00
Reasons why people don't save or put money away or saving policy: Don't know about investments or savings		
Yes	3.14	0.68
No	96.86	99.32
	100.00	100.00