UNIVERSITY OF THE WESTERN CAPE

DEPARTMENT OF ECONOMICS

Investigating the Relationship between Financial Inclusion and Financial Health in South Africa

by

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A full thesis submitted in fulfilment of the requirement for the degree of Master of Commerce in the Department of Economics,
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September 2021

DECLARATION

I declare that *Investigating the Relationship between Financial Inclusion and Financial Health 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.

Njabulo Smangaliso Ndaba

Signature: .....

Date: 20 September 2021

ABSTRACT

South Africa is ranked, by any measure, among the most unequal countries in the world. Despite having a relatively well-developed financial system, historic patterns of economic concentration continue to feed into the pattern of unequal and combined development (Kabakova & Plaksenkov, 2018). With record low saving rates and poor long-term financial planning, Financial Health (FH) has become an important issue for individuals and households. Individuals throughout the world endeavour to better their financial lives. They allocate funds to nondiscretionary expenses, save, take out loans and plan, etc., working towards growing their assets and growing their resources, in their quest for good FH.

This study examined the relationship between FI and FH in South Africa, as well as whether and how individuals benefit from their relationship to the financial system. The study used a nationally representative demand-side survey, FinScope South Africa, for the periods 2011 and 2016. Principal Component Analysis (PCA) was applied to derive a Financial Inclusion Index (FII) and a Financial Health Index (FHI) to measure the range of FI and FH in South Africa. Probit regressions were run to measure the likelihood of being financially included and having good FH. Ordinary Least Squares (OLS) were run to identify the sort of the relationship between the dependant and independent variables. Lastly, bivariate regressions were run to test the relationship between FI and FH.

The empirical findings indicated that the financial system in South Africa is overall inclusive. Unemployment and low educational attainment were the main contributors to restricted financial services usage and access. The most commonly used financial services were borrowing and funeral cover. African females with low educational attainment, residing in rural settings, being unemployed or inactive were most disadvantaged. The well off elderly White male, residing in urban settings of Gauteng and the Western Cape, with high educational attainment, were more likely to be financially included and enjoy good FH.

The regression analysis indicated that the female was more likely to be financially included and enjoy good FH. It also showed that Gauteng residents were more likely to be financially included and enjoy good FH.

KEYWORDS: Financial inclusion, financial health, FinScope, South Africa

JEL: G00, G20, G40

ACKNOWLEDGEMENTS

Throughout the writing of this thesis, I have received an enormous amount of support and assistance. I would first like to express my sincerest gratitude and appreciation to my supervisors, Prof Johannes Sheefeni and Prof Derek Yu, whose expertise were invaluable. Their insightful feedback, patience, motivation and knowledge encouraged me to sharpen my thinking and brought my work to a higher level. Additionally, I wish to express my gratitude to Ms Chrystal Dilgee for her treasured administrative support, her door was always open whenever I ran into trouble. My gratitude further extends to Cenfri for their financial support to undertake my studies.

Finally, I wish to express my profound gratitude to my mother, sisters and partner for providing me with unfailing support and continuous encouragement throughout my years of study. This accomplishment would not have been possible without them, thank you!

"Education is the passport to the future, for tomorrow belongs to those who prepare for it today." - Malcolm X

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LIST OF ABBREVIATIONS

ATM	Automated Teller Machine
AFI	Alliance for Financial Inclusion
CFSI	Center for Financial Services Innovation
CFI	Center for Financial Inclusion
FI	Financial Inclusion
FE	Financial Exclusion
FHI	Financial Health Index
FII	Financial Inclusion Index
FH	Financial Health
FHN	Financial Health Network
GDP	Gross Domestic Product
GHS	General Household Survey
GPFI	Global Partnership for Financial Inclusion
KYC	Know Your Customer
LSM	Living Standards Measure
NIDS	National Income and Dynamics Survey
OLS	Ordinary Least Squares
PCA	Principal Component Analysis
Stats SA	Statistics South Africa
SA	South Africa
SARB	South African Reserve Bank
SADHS	South African Demographic and Health Survey
SADC	Southern African Development Community
SOC	Social Cohesion
SSA	Sub-Saharan Africa

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CHAPTER ONE: INTRODUCTION

1.1 Background

FI is a recent phenomenon observed in various countries, where there is uniform availability and usage of financial services for all. The opposite phenomenon is financial exclusion, implying that not every individual has access to formal financial services or does not have sufficient understanding or experience to use them (World Bank, 2013). FI has continued to attract global attention, largely, due to its impact on the FH of an economy and its capacity to drive the growth and sustainability of an economy (Kabakova & Plaksenkov, 2018). Considering that globally, about 1.7 billion individuals are unbanked[1], FI provides the opportunity for both low-income and high-income earners to be integrated into the financial system (Demirgüç-Kunt & Singer 2017).

FH is the dynamic relationship of an individual's financial and economic resources as they are applied to or impact their state of physical, psychological and social well-being. This is determined by the individuals behaviour and how they manage their financial resources on a daily basis by being cognizant of how their actions cam impact their financial future (Discovery, 2020). Improving the quality of life for individuals and households has for a considerable amount of time been a stated objective of research in the broader field of economics. Therefore, FI is a significant tool for enabling development and improving the lives of people around the world (FinMark Trust, 2018).

SA has a well-structured formal financial sector and a population, which in accordance to Demirgüç-Kunt, Klapper, Singer & Oudheusden (2015), occupies a prominent place with respect to excessive debt levels. Although South Africa has a well-structured financial services sector, the country is faced with FI difficulties. Furthermore, the lack of FI is not confined to vulnerable social groups or developing and low-income economies, where the challenge of access and usage of financial services is most severe (Kabakova & Plaksenkov, 2018). This problem can be significant to any population, irrespective of the social class or level of income, and to any economy regardless of its development status.

Louw, Fouché & Oberholzer (2013) suggest that, as of late, financial education has the interest of a broad range of parties, in particular, government agencies, major banks and community

[1] Unbanked individuals are those without an account at a financial institution or via a mobile money provider.

interest groups. Financial education has been recognised as a factor that could improve one's financial well-being. As such, financial education for FI is intended to facilitate access and, where relevant, encourage the widening use of appropriate financial products and services for the benefit of individuals (Atkinson & Messy, 2013). Studies show an association between financial literacy and FI. A lack of adequate awareness regarding the various types of financial products available and insufficient knowledge of how they work and their potential costs reduce the likelihood of inclusion. Therefore, financial education can increase the levels of financial literacy to help individuals overcome financial vulnerabilities as the lack of financial literacy is seen as a major barrier to FI (Atkinson & Messy, 2013).

Financial literacy is considered as a contributing factor that uncovers other fundamental dimensions of FI (Gardeva & Rhyne, 2011). One of the implications of being financially illiterate is financial conduct that is does not coincide with an individual's general welfare (Agarwalla, Barua, Jacob & Varma, 2012). A host of studies attest to this, as many individuals who show lower standards of financial literacy make judgements that are not at all times beneficial and are unfavourable to their FH (Oseifuah 2010; Van Rooij, Lusardi & Alessie, 2011). The failure to behave in one's best financial interest, inadequate planning, saving and investing into the future and high levels of debt are a few of the ramifications emphasized in these studies (Hilgert, Horgarth & Beverly, 2003; Klapper, Lusardi & Panos, 2013).

In connection to inadequate financial literacy is low levels of saving, a circumstance that is more frequently experienced by households in SA, where households retained -0.02% of their expendable income in the second quarter of 2013 (SARB, 2013). Such low levels of saving enhance the pressure on personal finances and act as a burden on financial well-being. According to the SARB (2013), SA's household debt to expendable income ratio for the second quarter in 2013 was 75.8%. Commonly, a household debt-to-income ratio above 40% is related with financial challenges (Bank of America, 2011; Xiao & Yao, 2011). Taking into account that the average household debt-to-income ratio exceeded 40%, it is evident that South African households are deeply in debt. The consumerism driven economy and credit system tempts individuals to accumulate debt, which has been identified to have an adverse consequence on individual FH (Shim, Barber, Lyons & Xiao, 2009).

1.2 Problem Statement

South Africa is ranked, by any measure, among the most unequal countries in the world. Despite having a relatively well-developed financial system, historic patterns of economic concentration continue to feed into the pattern of unequal and combined development. In order to provide inclusive economic growth and eliminate inequalities, FI can be of paramount importance when used as a strategic role. Although having access to large amounts of demand-side data, financial institutions still struggle to serve the needs of low-income earning households and the informal sector.

Access and usage of financial instruments have not been deemed clear factors of FH in most models, considering the models have been established in high-income economies where access is very universal and thus, not a distinct differentiator (Rhyne, 2020). However, in emerging economies, the range of involvement with financial services is quite broad, and so may be more revealing. Furthermore, if FH is to be estimated as an outcome of FI, it must be considered in the model.

Is there a relationship between FI and FH? Rhyne (2020) emphasises the following drivers: access to financial services, distinct financial behaviours and income. However, which elements matter the most? Moreover, where can interventions make the greatest impact? The Financial Health Network (2019) discovered that in the U.S., though higher earning is associated with higher FH, there are numerous individuals with poor FH at all income levels and many individuals at lower-income levels with good FH. The Financial Consumer Agency of Canada (2019) reported in its survey that: 23% of the variability was a result of behaviour, 19% to economic aspects, 12% apiece to psychological and social aspects and 4% to comprehension and experience. Nonetheless, it is essential to understand whether this result stands in lower earning countries where a significant share of the population is living at or near basic survival levels. Studies in developing economies find that income explains a comparatively higher proportion of the variance in FH. A frequent critique is that the application of FH concepts in emerging economies is that the indexes track strongly with income but contain limited data. Most surveys have discovered income to be significant, but a long way from definitive.

1.3 Research question

The study intends to address one key question on the connection among FI on FH in South Africa, namely: Does access to financial services impact one's FH status in South Africa?

1.4 Objectives of the Study

1.4.1 The aim of the study

The aim of the study is to examine the relationship between FI on FH in South Africa:

1.4.1 Specific objectives of the study

The specific objectives outline below are directly related to the empirical strategy outlined in Chapter 3:

- Objective 1: Examining the impact of demographic factors and contextual factors on FI
- Objective 2: Examining the impact of demographic factors, contextual factors and FI on FH
- Objective 3: To examine the co-joint effect between FI and FH

1.5 Hypothesis

The following hypotheses were formulated and aligned with the specific research objectives of this study:

- Null hypothesis 1 (H_0): Demographic factors and contextual factors do not have an impact on FI.
  Alternative hypothesis (H_1): Demographic factors and contextual factors have an impact on FI.
- Null hypothesis 2 (H_0): Demographics factors, contextual factors and FI do not have an impact on FH.
  Alternative hypothesis (H_2): Demographic factors, contextual factors and FI have an impact on FH.
- Null hypothesis 3 (H_0): There is no co-joint effect between FI and FH.
  Alternative hypothesis (H_3): There is a co-joint effect between FI and FH.

To address the formed hypothesis above, the study employs the PCA method to derive the FI and FH indices. Furthermore, the study estimates three regressions, the first in which FI is the dependent variable regressed on determinants, second in which FH is the dependent variable regressed on FI and other determinants, and the third is a bivariate probit regression in which FI and FH are modelled co-jointly.

1.6 Rationale and Significance of the study

Individuals throughout the world endeavour to better their financial lives. They allocate funds to nondiscretionary expenses, save, take out loans and plan, etc., working towards growing their assets and growing their resources in their pursuit of good FH (Ladha, Asrow, Rhyne, Parker, & Kelly, 2017). FH, which is a relatively new concept in the FI cohort, is a framework for evaluating how well an individual's day-to-day financial system contributes towards developing resilience from economic shocks and creates a window of opportunity in the pursuit of their financial dreams.

Taking into account the amount of data available, it cannot be concluded that FH is directly caused by FI, although FH measurement will be able to inform policymakers about the financial status of individuals and households. Therefore, this study aims to contribute to the increasing number of studies on FI and FH in a developing country, South Africa.

The study will reinforce the need to improve the FI and FH of all South Africans. As such, the findings of the study are a call to action to policy makers to develop policies and concepts that focus on analysing individual characteristics, which traditional economic indicators continue to overlook when it comes to the complex financial reality of individuals. Therefore, the study develops a basis for a more comprehensive understanding of the factors that form the relationship between FI and FH and the capacity of individuals to experience economic resilience. These initial steps lay the foundation for future research that examines not only why individuals make the choices they do, but also the personal, systemic, and structural factors that hinder or enable opportunities.

1.7 Thesis Outline

In pursuit of exploring and establishing the link between FI and FH, the study will be broken up into five chapters. Chapter One will provide the introduction, background, research question and objectives as well as the significance of the research. Chapter Two will consist of the theoretical and empirical literature review of FI and FH. Chapter Three will discuss the data and methodology employed in the study. Arriving at the crux of the study, Chapter Four will present the findings of the study. Finally, Chapter Five will provide a brief summary of the core findings of the study and present recommendations for future studies.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter presents a review of existing literature of FI and FH to provide the context for the present study on the impact of financial services provision on FH. Sections 2.2 and 2.3 introduce the chapter with a theoretical review that begins by defining FI and FH, as well as all its components. Following this, it is important to gain perspective and understand the fundamental elements that shape the foundation of FH measurement as well as how financial services provision can be characterised. The theoretical literature is discussed with the purpose of applying existing theories to provide a conceptual framework to emphasise the various limitations and dynamics of FI for future research. Thereafter, Section 2.4 provides an empirical review of a host of local and international studies regarding the impact of FI on FH. Various research gaps are also identified. Lastly, Section 2.5 concludes the chapter.

2.2 Definition of Key Concepts

2.2.1 Financial Inclusion

Financial inclusion is defined by the Center for Financial Inclusion (CFI) as the "state in which everyone who can use them has access to a full suite of quality services at affordable prices, delivered by a range of providers in a competitive market, with convenience, dignity and consumer protection to financially capable clients" (CFI, 2016). Matsebula & Yu (2017) define FI as the non-existence of price barriers in broadly accessing financial services and products. Financial inclusion measures draw special attention to accessibility/availability, usage and quality aspects. According to the World Bank People's Group of China (2018), accessibility to financial services refers to the geographical proximity of consumers to access centres such as bank branches, agents and ATMs. Mobile phones and computer access points are also considered in this dimension (World Bank People's Group of China, 2018).

Poor accessibility to financial services leads to high transaction costs, which further deter engagement with the financial sector, particularly for lower income individuals (World Bank People's Group of China, 2018). Financial inclusion involves more than just accessibility. Account ownership does not entirely capture the notion of FI, which also encompasses usage, considering how frequently individuals use their accounts (Thom, Cooper, Weideman, Coetzee, Gray, Hougaard & Plessers, 2016). It is not unusual for transaction accounts to remain inactive for prolonged periods of time. For this reason, usage is an important factor to consider in

assessing FI. In addition, financial services contain services such as insurance, savings, payments and credit facilities. Therefore, from a FI perspective, the provision of financial services concerns the variety of product classes as well as the frequency and magnitude of transactions.

According to Donian & Eltringham (2011), there are two categories of FI definitions. Firstly, FI is being defined regarding access and availability without considering the suitability or appropriateness of the financial services offered. The second category is far more comprehensive, in that it refers to functional FI and sustainable FI, whereby usage is continuous and occurs on a sustainable basis in a manner that fulfils the needs of both suppliers and customers. This is generally the quality aspect of FI.

The World Bank (2012) views the quality of FI as the match between financial products and consumer needs, as well as the consumers' product awareness and understanding. That is, the quality of FI measures, assesses the appropriateness of financial products in meeting the everyday needs of individuals (Katoroogo, 2016). The indicators of the quality of FI include convenience, product fit, transparency, safety, terms of contract, consumer protection and financial literacy (World Bank, 2012). On the contrary, the CFI glossary links the 'quality' of FI to affordability, convenience, product fit, safety and client protection (CFI, 2018).

Therefore, as described by Hougaard, Makuvaza, Carboni & Bester (2020), financial needs refer to the following:

- Transfer of value: this is a core functional need as it enables people to live their economic lives, enabling consumption, payments, gifting and receipt of income. More importantly, it is also a prerequisite for accessing credit, insurance and savings.
- Liquidity: refers to consumer's ability to manage day-to-day expenses to meet their financial obligations. It is considered an important tool for maintaining productive capacity.
- Resilience: speaks of the ability to deal with unexpected shocks that will have a significant financial impact.
- Meeting goals: having the capacity to utilise financial services to meet desired life objectives or to even grow one's economic or financial position to reach some fulfilment.

Figure 2.1: Comprehensive Financial Inclusion

Source: *Report of the Committee on Financial Inclusion* (2008)

Therefore, in the context of this study, FI may be interpreted as the usage, quality, availability, accessibility and welfare of basic financial products and services from formal financial service providers (See Figure 2.1 above).

2.2.2 Dimensions of Financial Inclusion

FI by itself is a multi-faceted concept with several nuanced components. Below are examples of four commonly used lenses through which FI can be defined, in order of complexity.

Access: The access dimension reflects the depth of outreach of financial services, such as the penetration of bank branches or point of sale (POS) devices in rural areas or demand-side impediments that individuals encounter to access financial institutions, such as cost or geographical proximity of bank service points (bank branches, ATMs, etc.) (World Bank, 2015).

Usage: The usage dimension estimates how consumers use financial services. Determining consumer usage requires collecting details about the regularity, frequency and duration of use over time (World Bank, 2015). In order to use financial products, individuals need to have access to them. However, having access in no way means that everyone will use financial products. Therefore, not every person who does not use financial services should be

characterised as “excluded” or “unbanked” and, similarly, not every person that has theoretical access to financial services is automatically financially included.

Quality: The quality dimension evaluates the capability of the financial service or product to serve the requirements of the customer. Quality estimates reflect the degree in which financial products and services meet consumers’ needs, the range of choices available to consumers, and their knowledge and experience of financial products. Indicators of quality are a proxy for convenience, product-fit, transparency, security and financial literacy (World Bank, 2015).

Welfare: The welfare dimension measures the impact that a financial product or service has had on the lives of consumers, in addition to changes in consumption, business activity and well-being (Alliance for Financial Inclusion, 2010). It is important to distinguish the role of financial services on the consumers’ lives, without mistaking it for another concurrent factor, such as increased income. Therefore, it is critical to have information from the user’s point of view, hence the welfare dimension.

2.2.3 Financial Exclusion

Financial exclusion alludes to the inability of consumers to access and make effective use of financial services and products that are relevant to their requirements and creates conditions for them to lead a regular life (Mccrocklin, 2019). Financial exclusion is preceded by [2]social exclusion and primarily focuses on the subject of geographic access to financial services, particularly banking branches. Financial exclusion is not only about the physical access caused by the ever-changing topography of financial services but is also inclusive of all kinds of individuals who make limited or no use of financial services (Leyshon & Thrift, 1996). Individuals and households who have access to formal financial services but choose not to use these financial services are voluntarily excluded.

2.2.4 Financial Literacy

Financial literacy is the capability to make educated and rational judgements when making decisions regarding the management of money (Kempson, Finney & Poppe, 2017). When individuals fail to behave in an economically rational manner, it is assumed that they are financially illiterate or unable to understand and use information (Garcia, 2013). Financial

[2] Social exclusion - Exclusion from the common social system and its rights and privileges, typically because of poverty or the reality of belonging to a minority social group (Lexico, nd).

literacy includes the basic knowledge of the financial market, understanding key financial concepts such as inflation and compound interest as well as the ability to read and extract information from financial documents (bank statements).

2.2.5 Financial Health

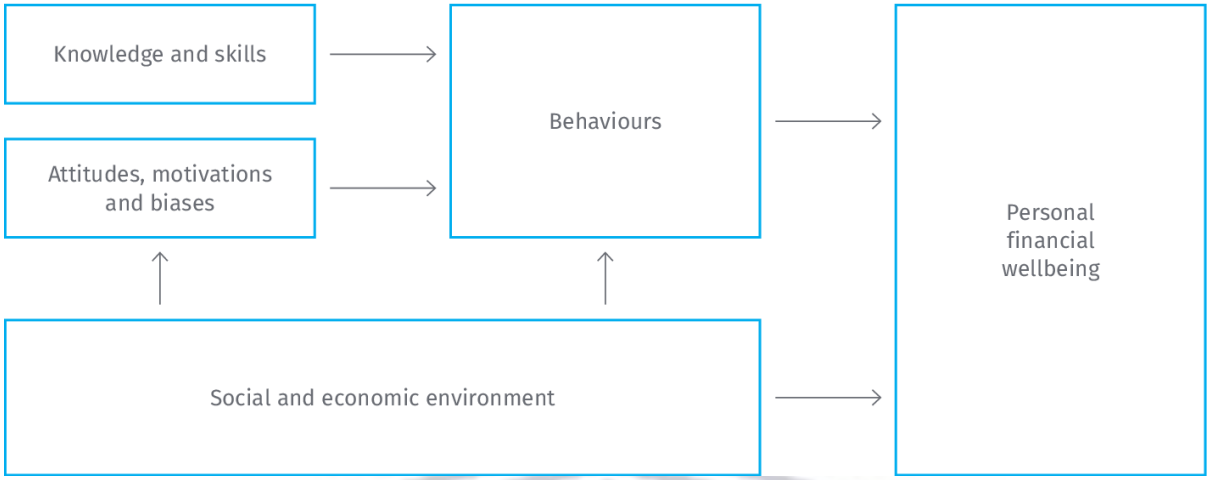
FH is when an individual's daily operations assist in developing financial resilience to endure shocks and the ability to pursue financial objectives. It is an assessment of an individual's current financial position (Ladha *et al.*, 2017).

Several of the most eminent researchers and advocates define FH around these fundamental elements:

- Identifies how much an individual saves, and how much of their income goes towards fixed and nondiscretionary expenditure (Adetunji & West, 2019).
- One's capability to fulfil current responsibilities, with disposable income and the flexibility to do so in the future (Bowman, Banks, Fela & Russell, 2017).
- Objective and subjective elements that contribute to one's present financial position (Gasiorowska, 2014).
- The degree to which an individual is able to fulfil all of their needs and commitments adequately and has the financial resilience to sustain this over a prolonged period of time (Kempson *et al.*, 2017).

The above-mentioned fundamental elements shape the foundation for the measurement indexes of FH. In all the above definitions, the perception refers to a state of being and not the behaviours of individuals as well as a variety of social and environmental factors that play a role. Kempson *et al.* (2017) suggest that FH is "not only determined by behaviours of individuals but also a range of social and environmental factors beyond their control." These social and environmental factors are conceived as influencing people's attitudes, biases and behaviours, which as a result, influence their FH (See Figure 2.2).

Figure 2.2: The Determinants of Financial Well-Being

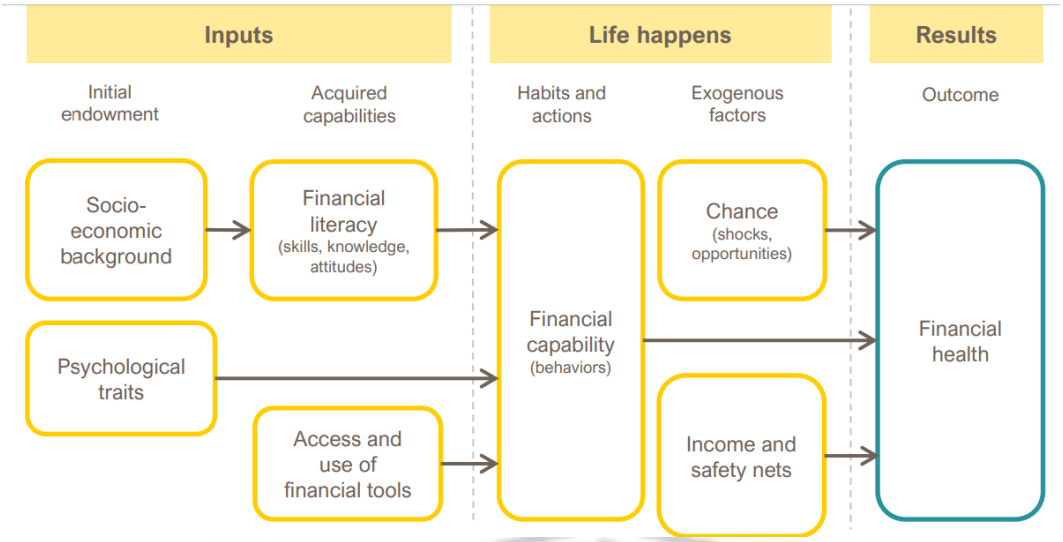


Source: Bowman et al. (2017)

An individual's FH is the result of a reciprocal relationship between a broad range of elements, containing their own contributions and decisions as well as their financial status, particularity income and countless contextual factors, suchlike the accessibility to financial services and social safety nets. Some studies have attempted to ascertain the function of these factors, but to date, few studies allow causal inferences (Rhyne, 2020).

Figure 2.3 shows a conceptual model of FH that is based on a framework constructed by Kempson *et al*. (2017). This FH model considers socioeconomic elements, financial literacy, psychological elements and behaviours as drivers of FH (Kempson *et al.*, 2017). In this model, the access and usage of financial services are the inputs. Furthermore, the model adds chance or the random courses of life as it happens, which emphasises that FH measured at any given point will reflect an individual's external shocks. This model separates socioeconomic background from current economic factors such as income. Kempson *et al*. (2017) recognises that socioeconomic background influences how an individual behaves, however, current economic factors determine the available choices.

Figure 2.3: A Conceptual Model of Financial Health



Source: Rhyne (2020)

This study is not an analysis of research on each of the individual factors on this model; the psychology of financial management, financial literacy and financial capability each have comprehensive and complex economics literature that far exceeds the scope of this study. The purpose rather is to consider how these factors join forces to create an individual's level of FH.

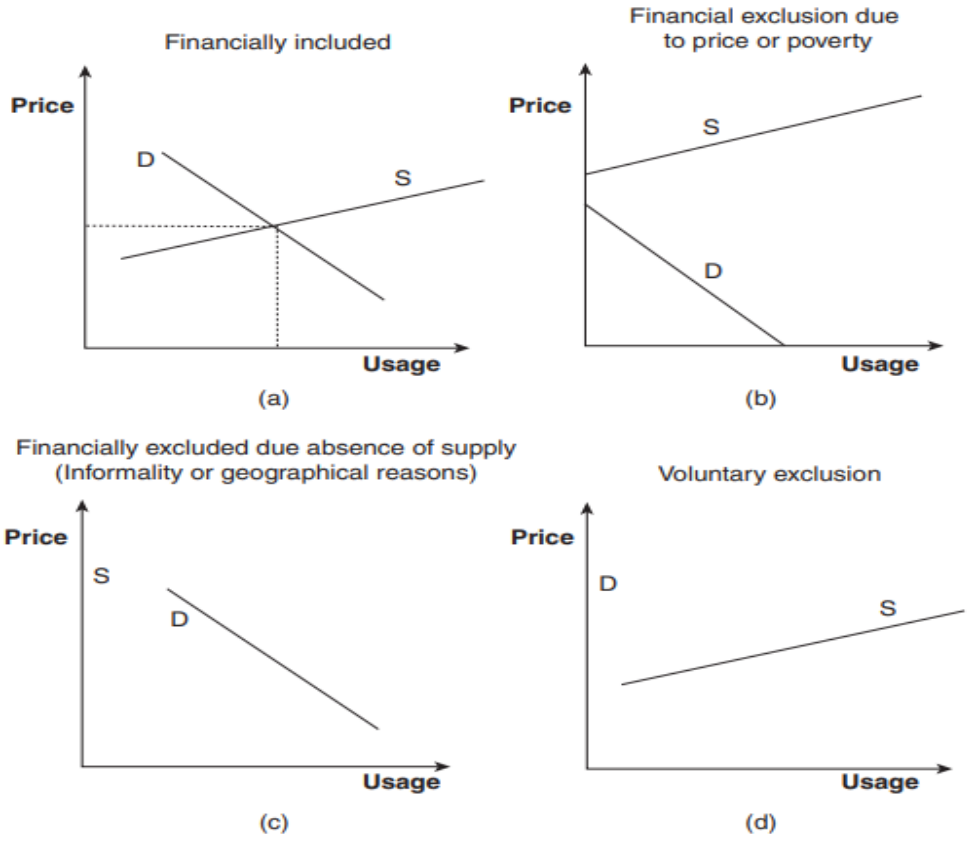
2.3 Theoretical Literature

2.3.1 Consumer Choice Theory

Applying consumer theory to questions of FI may assist in providing a conceptual framework for further empirical research. To emphasise the various limitations and dynamics of FI, three approches are taken into consideration: the demand and supply at individual and national levels, and consumer choice theory at individual level.

Figure 2.4 demostrates the conventional demand and supply framework for the usage of financial services where usage is illustrated by the point of intersection of the demand and supply curves. The demand curve for financial services is sloping downwards, demand declines as the price of using financial services increases. The supply curve is upward sloping, considering that banks have a higher incentive to supply financial services to a number of individuals at a given price. However, the point of intersection can be absent for various reasons (King, 2014).

Figure 2.4: Demand and Supply of Financial Services

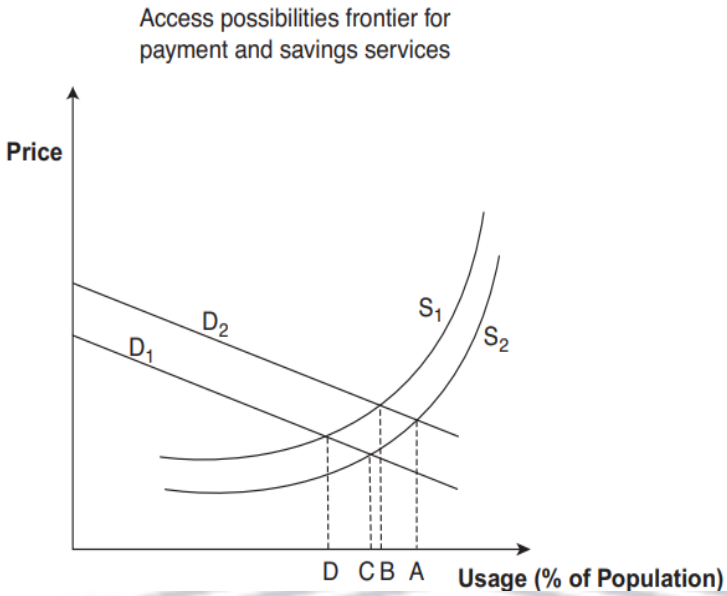


Source: King (2014)

At the individual level demand and supply shown in Figure 2.4, low levels of income could result in financial exclusion when the demand and supply curves do not meet before the supply curve touches the vertical axis (see Panel (b)). An increase in income would move the curve outward, opening the possibility of intersection and thus, FI. The price at which financial institutions are prepared to supply financial services and products may be too costly for the majority of poor individuals and households. The high prices may be due to poor economic performance of the financial sector. However, it is possible to increase the use of financial services by decreasing the cost of opening or using a banking account. In Panel (b), this would result in a downward shift in the supply curve and enhanced FI.

The dynamics of demand and supply may also be modelled at a country level. Beck and Torre (2006) present a graphical representation of the equilibrium outcome of aggregate and supply for basic financial services; particularily transactional and saving banking services. Their framework differentiates between the banked individuals and potential improvements in access and usage due to an outward shift in the aggregate demand curve and a downward shift in the aggregate supply curve (See Figure 2.4).

Figure 2.5: Macro-level Access Possibilities Frontier

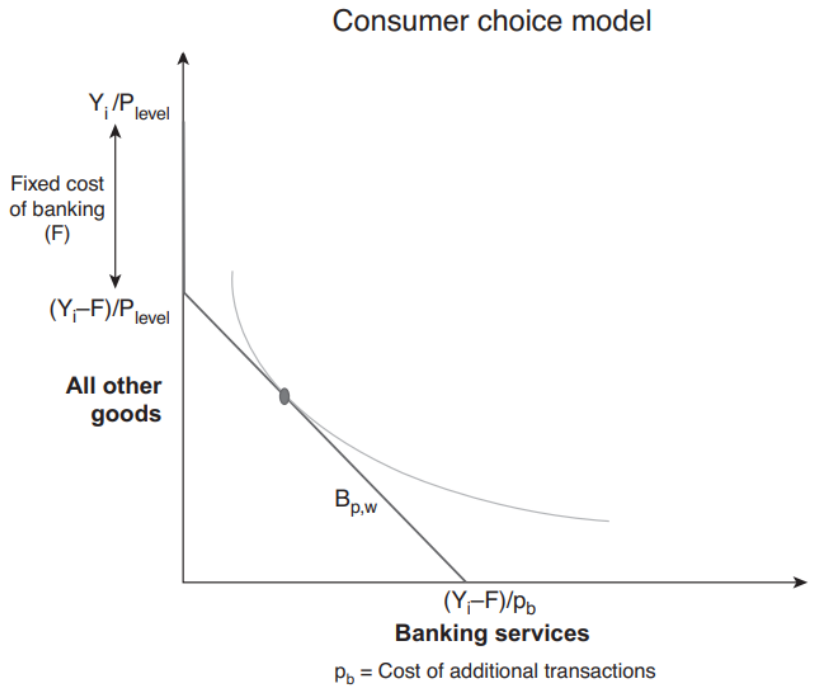


Source: Beck and Torre (2006)

The access to financial services is restriced in the majority of rural areas in SA, this represents a huge barrier to FI. An insufficiency of financial services may triumph when financial institutions are not available in certain secluded areas; as a result, the supply curve will be vertical at the origin (see Panel (c)).

The Access Possibilities Frontier described by Beck & Torre (2006) represents the highest share of the population that could be served by financial institutions for a given set of state variables. The highest share of the population is reached when higher levels of efficiency in supply are obtained (S_1 shifts to S_2 in Figure 2.5), as deformational regulatory policies are overcome, economies of scale and market competitiveness are achieved, and demand rises (D_1 shifts to D_2 in Figure 2.5) as the formerly voluntarily excluded become financially included.

Figure 2.6: Consumer's Budget Constraint with Fixed Cost



Source: King (2014)

Figure 2.6 illustrates a consumers usage of banknig services as one consumable in a basket of commodities. The rate of using financial services is illustrated with a fixed factor, either a fixed start-up rate or an annual charge, and a series of service fees as additional costs. This results in a budget restriction where the vertical portion of the budget contraint shows the fixed fee of access to financial services (King, 2014).

In Figure 2.6, consumers will not demand any banking services up to a certain degree, at which point, the instant they acquire the minimal amount of banking services, they waive a significant volume of other goods. Otherwise stated, individuals who are financially excluded will spend their income on alternative goods at point Y_i/P_{level}. Provided the individual selects a considerably small amount of banking services, the fixed cost will then have to paid and $(Y_i - F)/P_{level}$ will be chosen. In the event of an unlikely situation where the individual opts to spend their entire income on banking services, the amount of transactions would be determined by $(Y_i - F)/P_b$, where P_b is the cost of each additional banking transaction.

2.3.2 The Capability Approach

The capability approach for financial well-being provides a framework, which looks at FI in terms of individual well-being by examining ways in which individuals and households manage their finances and how these relate to their financial goals. Sen (1993) emphasizes the significance of people's freedom of choice of their valued states of being and doing. By looking at consumer behaviour through Sen's capability approach, individuals define their own priorities in terms of what they aim at achieving through financial services. Sen's (1993) capability approach focuses on what individuals' substantial freedoms are (their capabilities) and highlights that well-being is measured based on what individuals are able to be and do, rather than the resources that are available to them. Therefore, Sen's capability approach suggests that increasing the availability of financial services is only beneficial if the variety of financial services permits individuals to pursue their financial goals.

Two considerations are highlighted. Firstly, while individuals have the freedom to choose which financial services and products fit their needs and goals, the capability approach recognises that there is an existence of structural barriers such as cultural and gender norms as well as geographical distance, which may contribute to individuals being financially excluded (Storchi & Johnson, 2016). Secondly, attention is paid to individual's freedom of choice, therefore, it is important to note that some individuals may choose to voluntarily exclude themselves. FI is intended to improve individual well-being through the increased use of financial services; however, it is essential to not only understand why individuals access certain financial services, but also why they decide not to use others (Storchi & Johnson, 2016).

2.3.3 Behavioural Finance Theory

The behavioural approach towards financial decision-making stems from the fundamental perception that individuals have limited rationality in their ability to take optimum decisions at any given time. By applying the principles of economics and financial market at individual level, behavioural finance theory has sought to explain how and why individuals make seemingly irrational or uneducated choices when they spend, invest, save and loan money (Belesky & Gilovich, 1999). The implications of this bounded rationality are decision heuristics and cognitive biases.

Newell & Simon (1972) have shown research results in psychology that have suggested that the information processing capacity of individuals is rather weak; many psychological

phenomena, heuristics and biases are employed when individuals perform a variety of complex tasks. Financial decision making requires strong emotional processes and hence behavioural economists have used principles of psychology to comprehend the patterns regarding individual psychology and their behaviour. The fundamental determinants of a number of these biases are cognitive limitations in perception, attention, memory and analytical processing (Simon, 1955). These limitations constrain our ability to make rational judgments leading to further complications. Consequently, because of heuristics/biases, various negative outcomes emerge, such as ill-advised buying and selling, the absence of financial planning for retirement and reduced financial well-being, etc., which are not the behaviour of individuals who seek maximum utility.

Because of the various flaws of accepted economic theory, behavioural finance functions as a great compliment. It takes an alternative approach, through recognising the cognitive errors and emotions to which individuals are prone while making financial decisions. Thus, behavioural finance can be presented as the field that combines behavioural and cognitive psychological theory with traditional economics and finance to provide an explanation for why individuals make illogical choices or irrational financial decisions.

2.4 Empirical Literature

2.4.1 International Studies

With record low saving rates and poor long-term financial planning for retirement, FH has become an important issue for individuals and households (Brüggen, Hogreve, Holmlund, Kabadayi & Löfgren, 2017). The CBK, KNBS and FSD Kenya collaborated on comprehensive FI surveys, and in 2016 and 2019, incorporated questions on FH in their surveys. They employed a 9-item[3] FHI based upon three classes: day-to-day management, risk management, and ability to invest into the future (FinAccess, 2019). They found that more affluent segments of the population ranked higher than poorer segments on these measures. Furthermore, the amount of financially healthy adults decreased during the period from 2016 to 2019, even though access and usage of financial services increased. It is important to note that there are emerging areas in the surveys that require attention, such as unanswered questions in identifying

[3] KNBS and FSD Kenya FHI: day-by-day management (consumption smoothing, planning and providing for the family); ability to cope with risk (coping with illness, access to lump sum, and emergency fund savings); ability to invest in livelihoods and the future (intentional savings, productive investment and savings for old-age).

the link between the increase in FI and decrease in FH with only a fifth of the adult population being financially healthy.

In a previous study by KNBS and FSD Kenya, the researchers discovered that in 2017, there was a decrease in the percentage of individuals who had good FH from 39% in 2014 to 22% in 2017, although an improvement in FI over a period when the share of individuals using formal financial services increased from 75% to 83%. According to FSD Kenya, the explanations for this decrease in FH are not clear, however, it does coincide with lower economic growth and drought during the intervening period. The findings from the study show a trend found in other studies; individuals are best equipped to manage their daily finances than deal with risk, while planning and investing in the future is their weakest factor. Individuals tend to plan and make investments to secure their future after their present is secure (FinAccess, 2019).

The Toronto-Dominion Bank (2019) commissioned a national survey aimed at assessing FH in Canada. FH scores were measured using the U.S. FHN's Financial Health Pulse approach. Responses were weighted by age, gender, region and education, according to the 2016 Canadian Census. Individual financial behaviours and household-level data recorded in the study depicted a strong correlation between low FH and low financial literacy. Key findings in the study also revealed that 27% of Canadians surveyed had good FH, while 39% of the survey respondents were battling with some or all aspects of their finances. Eighteen percent of individuals with a high annual income (+150 000AUD) had below average FH, giving the impression that a higher income does not necessarily translate to sound financial practices. An individual could be financially vulnerable although having a high income and low debt, as income level alone is not the sole indicator of one's FH. From the FI and customer experience lens, the study failed to understand and measure the extent to which financial institutions support and help enhance the FH of their customers at an aggregate and individual level. This is by looking at the disconnects between individuals goals and behaviours impacting their FH in terms of their experience in dealing with financial institutions.

A study by Brockland, Celik, Dunn, Garon & Wilson (2019) presented findings from the 2018/19 annual U.S. Financial Health Pulse survey. Using an 8-item[4] FH indicator, they

[4] U.S. Financial Health Pulse Indicator: Spend (spend less than income, pay bills on time); Save (sufficient liquid savings, have sufficient long-term savings); Borrow (manageable debt, prime credit score); Plan (appropriate insurance, advanced financial planning).

conducted a k-means cluster analysis. To assure that their empirical analysis yielded conceptually consistent results, they developed archetypes to evaluate whether the hypothetical response pattern for archetypes generated scores that were logically aligned with their diagnosis of FH. Furthermore, a principal components analysis (PCA) was conducted on the eight-item indicator to identify components that best explain the input data. The researchers asked financial background questions, such as income at the household level to provide a holistic overview of respondents' financial lives. Questions regarding attitudes, experiences and sentiments were asked at the individual level. Overall, it was found that, at a national level, only 29% of Americans were deemed financially healthy in 2019, increasing by 1% from 2018. Looking at demographic groups, individuals who had low income experienced some FH gains despite being the least financially healthy income segment. Meanwhile, middle-income individuals showed signs of increased financial vulnerability although being in a higher income segment. This study failed to provide a comprehensive and nuanced understanding of FH in the US, such as developing targeted insights to track the FH trends of specific regions and populations.

The study by Tita & Aziakpono (2017) analysed the relationship between FI and income inequality in Sub-Saharan Africa using the World Bank Global Findex (2011). The study was based on the World Bank Global Findex (2011) database and as such, employed a cross-sectional regression technique in the analysis. The researchers adopt the specification of Clarke, Xu & H-fu (2006) with some modifications and among the control variables. PCA is used to derive governance index to capture the effect of institutions. The findings in the study revealed that bank account use, electronic payments and formal savings are positively correlated with income inequality. This relationship can be explained by recent discoveries by Obeng-Odoom (2015/16) that urban governance in Sub-Saharan Africa suffers from internally and externally imposed problems. This is most likely the reason why the welfare in Africa, especially income inequality, keeps increasing despite increasing GDP per capita growth. The authors argue that although account ownership increased, it does not certainly signify an increase in credit accessibility. This is because of issues related to information asymmetry associated with the lack of financial infrastructure in the SSA region that incentivises banks to hold excess liquidity and thus grant fewer loans. This study is based on cross-sectional data and as such the results are interpreted as correlations and not causal effects. Moreover, the study did not empirically model the relationship between FI and excess liquidity as well as institutional influence. Thus, this is a potential area for future research.

2.4.2 Local Studies

Barnard (2016) examined the impact of income, FH and personal characteristics on social cohesion (SOC) with the aid of a secondary dataset. The analysis of variance and trend tests found a significantly positive relationship between income and SOC, but did not find any significant relationship between FH and SOC. In addition, people with low SOC presented more indebtedness and less financial planning behaviour than those with high SOC in both high- and low-income groups. The findings thus suggested that one cannot assume high-income earning individuals experienced higher levels of FH. A limitation of this study is that it relied on self-report instruments, which are vulnerable to scrutiny in terms of social-desirability bias (Paunonen & LeBel, 2012). Nevertheless, in well-being studies, self-report measures are largely used and deemed acceptable indicators. Self-report measures provide insight on the individual's level of affective experience and perception that cannot be derived from objective measures and continue to contribute to our understanding of individual differences (Hodgkinson & SadlerSmith, 2014).

A study by Matsebula & Yu (2017) examined the trends and depth of financial inclusion in South Africa using four Waves of the NIDS dataset. The researchers use the PCA method to derive a financial inclusion index[5]. The FII was regressed with some demographic characteristics using a simple OLS across the four waves. Furthermore, the researchers use a probit regression model to examine the likelihood of a household being financially excluded. The researchers found that some indicators of FI showed that access to financial services had increased over the years. Between 2008 to 2014-2015, the percentage of households that had at least one member with a bank account increased from 57% to 78%. However, there was a decrease over the years in the percentage of households with at least one member that accessed home loans or bonds, from 8.63% to 5.68% from 2008 to 2014-2015. The researchers also discovered that FI was positively correlated with higher income earning households. On the other hand, lower income earning households and households with fewer members that were employed were most likely to be found financially excluded. The questionnaire used by the researchers to measure FI did not ask any questions relating to access and affordability. Another

[5] The variables that the researchers use to generate the FII are: home loan/bond, personal loan (bank), personal loan (micro-lender), credit card, bank account, pension or retirement annuity, unit trusts, stocks and shares, loan from a family member or employer, higher purchase agreement, study loan, loan with a Mashonisa, study loan with a bank, etc.

limitation is that the study did not examine the FI of each household across the four Waves. To achieve this, the researchers need to only include the balanced panel component of the date.

An analysis of indebtedness and over-indebtedness in the Southern African Development Community region using FinScope Surveys was conducted by FinMark Trust in 2018. The study provides cross-country comparisons of indebtedness and over-indebtedness along with determinants of each. The study also examined factors affecting indebtedness and over-indebtedness using aggregated regional data. The following conclusions were drawn from the study: SA stood out in terms of the number of institutions from which individuals borrowed money. People in a majority of the SADC regions took loans from a single source, whereas a quarter of South Africans simultaneously took loans from two sources. This suggests a high propensity to take out loans or easily available credit among South Africans. The results also indicated that over-indebtedness is not necessarily related to either formal or informal lenders. Furthermore, in SA, formal credit is accessed by individuals who are financially literate and earn high incomes, while informal credit is accessed by individuals who are financially illiterate and earn a low-income.

A study by Ardington, Lam, Leibbrandt & Levinsohn (2004) examined FI in South Africa over the post-apartheid period in three aspects, namely: savings, insurance and indebtedness. The study found that, in 2002, 8% of adults in the lowest Living Standards Measure (LSM) decile owned a bank account, whereas this share was 91% for the highest LSM decile. Matsebula & Yu (2017) highlight that this was an expected result as access to commercial banks is mostly restricted to salaried workers in higher LSM deciles but exclude those in lower LSM deciles. Access to formal banking services for those in rural populations was virtually non-existent; however, a significant factor that prevented poor people from accessing financial services was distance and costs attached to it. The level of indebtedness throughout all income categories increased between 1995 and 2000. Moreover, debt in lower-income households was mainly sourced from furniture stores, retail shops and family. This suggests that poorer people contracted significant amounts of debt at high interest rates on consumable instead of assets. On the contrary, higher-income households incurred debt mainly for the accumulation of assets. In the bottom deciles of the income distribution, most households were excluded from formal financial services.

The study by Nanziri (2015) in South Africa analysed FI and individual well-being. The study constructed two proxies of well-being, wealth or an asset index (WLT), and self-reported

wellbeing (SWB) then made use of the Recentred Influence Function decomposition approach to investigate the disparities of welfare distributions of financially included and voluntarily financially excluded individuals. The study revealed that when using the SWB measure, there was a variation difference between the welfare of financially included and voluntarily excluded individuals. However, the wealth disparity was significant and greater in the middle and top end than at the lower end of the welfare distribution. This disparity was highlighted by race, education and personal income. The distribution of self-reported wellbeing was highly skewed to the right whilst that of wealth highly skewed to the left. Therefore, the study suggests that FI policies should be targeted to people who benefit from it the most.

2.4.3 The Relationship between Financial Inclusion and Financial Health: Research Gaps

In light of the above discussions, there is a need to further investigate whether FH measures more than income. Analysts in high earning economies highlight that while FH tends to fluctuate with income, at every income level there are many people with good FH and many people with poor FH. This finding is significant for legitimising FH as a concept that brings added value beyond conventional socioeconomic variables.

For emerging economies, one hypothesis is that where incomes are low and individuals live in poverty, strained economic conditions supress attempts to manage money through financial strategies, making FH impossible and hence not relevant (Rhyne, 2020). Regarding FH, virtually no local studies looked at FH, although they did examine FI. Therefore, it can be concluded that broad measures are inadequate to reveal the relationship between FI and FH, and that close analyses is required to understand the conditions in which FI contributes to FH.

2.5 Conclusion

This chapter has presented a comprehensive theoretical and empirical literature review of FI and FH studies. It can be observed that the empirical research on FH in SA is somewhat limited and far from complete (Rhyne, 2020). Nevertheless, the richness of the FI literature emphasizes the importance of the issue and further research in the area is clearly warranted. Principally, it can be argued that there is no systematic and standard measurement on FI and FH. As a continuous process, FH faces difficult conceptual challenges. As an evaluative tool, the capability approach, consumer choice theory and behavioural finance theory can be usefully utilised in addressing these challenges, but alone this will not be sufficient. Explanatory theories

such as those mentioned in the theoretical review are required to make sense of the processes that underpin FI and FH.

CHAPTER THREE: METHODOLOGY AND DATA

3.1 Introduction

This chapter explains the methodology and data used in conducting the research. It begins with background on the data source as well as a brief description of the data. Crucial in the study are the definitions of FH and FI as well as the measurement of FH, as both terms are widely used and can be loosely interpreted. Therefore, a second component of this chapter is dedicated to constructing a FII and a FHI and the measurement applicable in this study. In order to examine the correlation between FI and FH, the framework presented by Datta & Singh (2019) is adapted, with some variation. Thereafter, the study adapts a probit regression to estimate FI and FH. The chapter concludes by discussing the limitations of the study as well as policy recommendations.

3.2 Methodology

The empirical modelling approach that will be undertaken in this study aims to investigate the relationship between FI and FH in South Africa. Quantitative analysis will be applied using descriptive statistics and various econometric models to recapitulate and elucidate the data collected on FI and FH.

Single-country comparisons of FH and FI on topics such as, among others, managing money (tracking income and spending, and not defaulting on financial commitments); financial product awareness (knowledge of the benefits of owning a bank account); effective utilisation of loans and financial vulnerability (single-country comparison of individuals who have no funds to cover basic expenses and those who borrowed money to cover living expenses) will be made. To obtain a better picture of individuals who are likely to have good FH and be financially included, the study will analyse the profile/characteristics of the following distinctive groups: financially included; financially excluded; good FH; and poor FH. Various econometric models will be developed to examine the effect of FI on FH.

3.2.1 Descriptive Statistic Analysis

Descriptive statistics are used to quantitatively explain the key features of the data in a study, to provide simple summaries about the sample and measures. Simple descriptive statistics will be conducted on the indicators in connection with the FH and FI of the indices. The analysis will be conducted using the Stata 14 software package, which will derive various statistics when applied to analyse the quantitative data in terms of graphs and tables whose results will facilitate comparison.

The study will define the following descriptive statistics: The descriptive analysis of the study will begin with a profile of the survey participants as shown in Table A1 in Appendix – age (16+), gender, race, educational attainment, labour market status, income, province and geo-type. Then the study will review the various FI dimensions over the periods 2011 to 2016 to understand the type of financial uptake that was taking place and the degree of success South Africa has attained in achieving FI and good FH. The study will use per capita income to divide the survey respondents into five groups of income quintiles, and then derive the mean, median, standard deviation, etc., of the indices by quintile to measure where each income group falls.

3.2.1.1 Principal Component Analysis

This study will employ the PCA approach as an indexing strategy to derive the FII. The PCA has been adopted to calculate the four-dimension index (access, usage, quality and welfare) and the FII. The PCA is a statistical data reduction method that is used to transform a set of observations of potentially correlated variables into a set of values of linearly uncorrelated variables (Datta & Singh, 2019). The relevance of the PCA method stems from the fact that it converts the influence of a relatively large number of variables, which may be correlated into a smaller set of uncorrelated factors. The amount of principal components is lower than or equal to the amount of original variables. Given that various indicators are involved in each category of FI, application of the PCA seems to be the more suitable index, to derive a single index reflective of overall FI (Datta & Singh, 2019).

A major advantage of PCA stems from quantifying the importance of each dimension to describe the variability of a data set (Shlens, 2009). The PCA may also be utilised to compress the data, lowering the number of dimensions, without significant loss of data.

The objectives of PCA are to: draw the most significant details from a large dataset; compress the attribute space from a larger number of variables to a smaller number of factors; and choose a subset of variables from a larger set, based on which original variables have the highest correlations with the principal component. To attain these objectives, PCA calculates new variables called principal components that are received as linear compounds of the original variables. The first principal component drawn recovers the maximum amount of variance from the original variables. The second principal component drawn is not correlated with the first principal component. Thus, if the correlation between the first component and the second component is calculated, this correlation would be zero (Sabău-Popa, Simut, Droj, & Bențe, 2020).

Therefore, the second component represents the maximum amount of variation that remains possible, etc. The values attained for these new variables are termed factor scores. To select the number of remaining components, multiple criteria are used, among which the most important are Kaiser's criterion, Evrard's criterion and Benzecri's criterion. Kaiser's criterion consists of selecting the number of axes for which the eigenvalues correspond to a value greater than one. This criterion is one of the most commonly used in PCA (Saporta & Stefanescu, 1996). Kaiser' criterion states that only the components with eigenvalues greater than one can be retained (Kaiser, 1960). After determining the number of principal components to be kept in the analysis, the matrix of factors for the principal components resulting from the analysis will be calculated. The matrix factor is a very significant factor because its elements (otherwise known as factor loading) are the correlation coefficients between the original variables and the principal components (Saporta & Stefanescu, 1996).

3.2.1.2 Financial Inclusion Index Using PCA

Deriving a FII demands the consideration of four sub-indices corresponding to each dimension of FI: access, usage, quality and welfare (Datta & Singh, 2019). These sub-indices will be estimated. Given that the components in the dimension of access, usage, quality and welfare convey different aspects of inclusion, it is thought pertinent to compute inclusiveness index for each category (sub-index) (Datta & Singh, 2019). The study will apply a one-stage PCA approach to estimate the degree of FI. In the first stage, the four sub-indices (access, usage, quality and welfare) will be estimated, which define FI.

The objective of dividing the overall set of indicators into four sub-indices is twofold. On one hand, the four sub-indices have a meaning, so they will produce additional disaggregated information that is also beneficial for policy development. On the other hand, for methodological purposes, given that the sub-indices comprise of highly correlated indicators within dimension, the study estimates the sub-indices first, rather than estimating the overall index directly by selecting all the indicators simultaneously. This is a preferred strategy because it invalidates weight's biases towards indicators that display the highest correlation (Mishra, 2007). The study estimates the four sub-indices: access, usage, quality and welfare, which define FI.

Therefore, in accordance with Camara & Tuesta (2014), the study develops a FII via PCA method to find the applicable weights (parametric method) and postulate that the latent variable FII is linearly determined as follows:

$$FII_i = w_1 I_i^a + w_2 I_i^u + w_3 I_i^q + w_4 I_i^w + e_i \ldots\ldots\ldots (3.1)$$

Where FII_i is composite FI index of individual *i;*
$w_1; w_2; w_3; w_4$: The relative weights of each dimension.
e_i is variation due to error.
$(I_i^a, I_i^u, I_i^q, I_i^w)$: The dimensions of the access, usage, quality and welfare, respectively, are computed as:

$$I_i^a = \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i} + \beta_4 X_{4i} + u_i \ldots\ldots\ldots (3.2)$$
$$I_i^u = \gamma_1 Y_{1i} + \gamma_2 Y_{2i} + v_i \ldots\ldots\ldots (3.3)$$
$$I_i^q = \delta_1 Z_{1i} + \delta_2 Z_{2i} + \varepsilon_i \ldots\ldots\ldots (3.4)$$
$$I_i^w = \theta_1 F_{1i} + \theta_2 F_{2i} + \varepsilon_i \ldots\ldots\ldots (3.5)$$

First stage of the PCA: Estimate the dimensions (four sub-indices: Access, Quality, Usage and Welfare). That is four unobserved endogenous $(I_i^a, I_i^u, I_i^q, I_i^w)$ and the parameters (β, γ, δ, and θ) in the system of Equations (3.2), (3.2), (3.4) and (3.5). Four dimensions are also indices that will be estimated by principal components as linear functions of the explanatory variables.

Note that the endogenous variables are unobserved, so they are estimated in conjunction with the unknown parameters: $I_i^A, I_i^U, I_i^Q and\ I_i^W$. Let R_P, (pxp) be the correlation matrix of the p

standardise indicators for each dimension. Denote $\lambda j (j = 1, \ldots, p)$ as the $j - th$ eigenvalue, subscript *j* refers to the number of principal components that also coincides with the number of indicators or sub-indices, p. $\varphi j (px1)$ is the eigenvector of the correlation matrix. Assume that $\lambda 1 > \lambda 2 > \ldots > \lambda_P$, and denote R_P,$(k = 1, \ldots, p)$ as the $k - th$ principal component. The corresponding estimator of each dimension is obtained based on the following weighted averages:

$$I_i^a = \frac{\sum_{j,k=1}^{p} \lambda_i^a P_{ki}^a}{\sum_{j=1}^{p} \lambda_i^a} \ldots\ldots\ldots (3.6)$$

$$I_i^u = \frac{\sum_{j,k=1}^{p} \lambda_i^u P_{ki}^u}{\sum_{j=1}^{p} \lambda_i^u} \ldots\ldots\ldots (3.7)$$

$$I_i^q = \frac{\sum_{j,k=1}^{p} \lambda_i^q P_{ki}^q}{\sum_{j=1}^{p} \lambda_i^q} \ldots\ldots\ldots (3.8)$$

$$I_i^w = \frac{\sum_{j,k=1}^{p} \lambda_i^w P_{ki}^w}{\sum_{j=1}^{p} \lambda_i^w} \ldots\ldots\ldots (3.9)$$

Where $P_K = X\lambda_j\lambda_j$, represents the variance of the $k - th$ principal component (weights) and X is the indicators matrix. The weights provided to each component are decreasing, so that the larger proportion of the variation in each dimension is described by the first principal component and so forth. Following this order, the $p - th$ principal component is a linear combination of the indicators that account for the smallest variance. In essence, this approach represents a p-dimensional dataset of correlated variables by p orthogonal principal components, with the first principal component explaining the largest amount of information from the initial data. One distinct issue when using PCA is to decide how many components to retain. Although a common method is to replace the complete set of causal variables by only the first few principal components, which account for a considerable proportion of the total variation in all the sample variables, the study considers as many components as the number of explanatory variables (Cámara & Tuesta, 2017). One concern is to accurately estimate FI rather than decreasing the data dimensionality, so we avoid omitting information that could affect estimates.

Table 3.2 below shows the list of indicators that will be used to generate the FII for this study. The indicators used for the study are frequently used to derive the FII in both international

(Ardington *et al.,* 2004 & Matsebula & Yu, 2017) and local (Brokland *et al.,* 2019) empirical studies in recent years.

Table 3.1: Indicators for Deriving the Financial Inclusion Index

Financial Inclusion Dimensions	
Access	Usage
Don't have an ID	Bank account or bank card
Proof of residence	Save or put away money
Access to someone else's bank account	Insurance policy
Find the language used in financial paperwork confusing	Overdraft
	Have borrowed money in the past year
Too expensive	Credit or store card
Unemployed	Personal loan from a bank
Still a student	Life assurance or funeral policy offered by bank
Prefer working with cash	Funeral cover
Too far	Medical aid/ medical expenses
	Retirement or pension fund
Quality	Welfare
Don't understand how banks work	Own a cell phone
Don't feel comfortable in a bank	Internet facility
Don't understand technology	Computer
Don't qualify to open an account	Ensured financially secure
	Dealing with personal finances is stressful and a real burden
	Like to be in control of finances and money matters

Source: FinScope Questionnaire (2011 & 2016)

The eigenvalues for the indicators will be calculated using PCA. The components with the highest eigenvalues retain more standardised variance in relation to the other components. Only eigenvalues higher than one (1) will be considered for the analysis. If the value holds more than one (1) principal component, then more principal components can be considered in the financial analysis. The calculated weights using PCA will be multiplied by the respective variables and subsequently, sum the product to get a composite single value of the financial index. Consequently, 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 (0). The FII captures information on several dimensions of FI in one digit lying between zero and one, where zero indicates complete financial exclusion and one denotes complete FI. The study will use the relative poverty line method to assume that, in 2011, the FII at the 40th percentile will

be used to distinguish the poorest 40% (financially excluded) from the remaining 60% (financially included), and then use the 2011 40th percentile poverty line for 2016 as well. 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.

3.2.1.3 Financial Health Index Using PCA

PCA will also be used to construct a FHI for the 2011 and 2016 surveys. The FHI is conceived as a core function that establishes individuals according to the numerical values that result from its application when an individual has good FH, when they have poor FH and when they are financially stable.

After the indicators of the FH of the individuals are determined, the subsequent step is to group them into a composite index using the weights of the main components obtained from the analysis of the main components. Therefore, beginning from the proportion of the variance recovered by each principal component in the total variation recovered as weights of the factor scores, the non-standardised index is determined. This index measures the FH of individuals from year to year using a linear scale. This estimation of the FH status of individuals should be made using a composite index using the principal components analysis specific to the data. This approach has several advantages, such as removing correlated features without losing too much information. However, when using this method, one needs to be cautious when selecting the number of main components. This method attempts to identify the maximum variation between the functions in a data set.

The indicators below used to derive the FHI are commonly used in international (FinAccess, 2019 & Rhyne, 2020) empirical studies. As mentioned in section 2.4.3, virtually no local studies looked at FH. Therefore, using FinScope data, indicators that will be used to derive the FHI are shown in Table 3.2.

Table 3.2: Indictors to be Included for the Derivation of the Financial Health Index

Spending
Often miss or make late payments for things like loan repayments, municipality bills or rent
Frequently have problems making ends meet
Have considered going to see someone to help with debt problems
Have considered cancelling policies to cover debts
Borrowing
Have borrowed in the past 12 months
Taken goods on credit in the past 12 months
Owe money that has to be repaid
Financing a motor vehicle
Home loan, bond, mortgage or to build
Educational or student loan
Savings
In case of an emergency or unplanned cost
Provide for family in case of death
Medical expenses
Retirement or old age
Purchase a home or deposit on a house
Funeral costs
Planning
Household contents or possessions insurance
Income or salary cover (pays out if retrenched)
Life insurance or life cover
Have a pension fund, provident fund or retirement annuity
Dealing with finances is stressful and a real burden
Ensured you are financially secure

Source: FinScope Questionnaires (2011 & 2016)

To measure the FH of individuals, the study will adopt the relative poverty line method to distinguish individuals from good FH to those with poor FH (Arndt & Tarp, 2016). This method to setting the poverty line is attractive in that it is both simple, transparent and is quite functional in terms of identifying a population sub-group upon which to focus attention (StatsSA, 2019). The FHI captures information on various components of FH in one single digit lying between zero and one, where zero denotes poor FH and one indicates good FH. The study will use the relative poverty line method to assume that, in 2011, the FII at the 40^{th} percentile will be used to distinguish the poorest 40% (poor FH) from the remaining 60% (goof FH), and then use the 2011 40^{th} percentile poverty line for 2016 as well. This index value will be used again to differentiate between the good FH from the poor FH in 2016 where it is expected that the good proportion will exceed 60% as FH should improve over time.

As previously mentioned, the study uses PCA method to combine the selected measures of FH into an index. According to this procedure, the j-th factor Fj can be expressed as:

$$FHI_i = w_1\int_i^s + w_2\int_i^b + w_3\int_i^{si} + w_4\int_i^p + w_5\int_i^o + u_i \ldots\ldots\ldots (3.10)$$

Where FHI_i is composite FH index of individual *i;*

$w_1; w_2; w_3; w_4; w_5$: The relative weights of each measure.

u_i is variation due to error.

$(\int_i^s, \int_i^b, \int_i^{si}, \int_i^p, \int_i^o)$: The dimensions of spending, borrowing, saving and investing, and planning respectively are computed as:

$$H_i^s = \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i} + \beta_4 X_{4i} + u_i \ldots\ldots\ldots (3.11)$$

$$H_i^b = \theta_1 Y_{1i} + \theta_2 Y_{2i} + \theta_3 Y_{3i} + v_i \ldots\ldots\ldots (3.12)$$

$$H_i^{si} = \delta_1 Z_{1i} + \delta_2 Z_{2i} + \delta_3 Z_{3i} + w_i \ldots\ldots\ldots (3.13)$$

$$H_i^p = \Omega_1 F_{1i} + \Omega_2 F_{2i} + \Omega_3 F_{3i} + w_i \ldots\ldots\ldots (3.14)$$

$$H_i^o = \sum_1 V_{1i} + \sum_2 V_{2i} + \sum_3 V_{3i} + w_i \ldots\ldots\ldots (3.15)$$

Where H_i is the principle component;

$(\beta, \Omega, \sum, \theta,$ and $\delta)$ is the eigenvector;

$(X, Y, Z. F,$ *and* $V)$ are the parameters in the system of equations (3.11), (3.12), (3.13), (3.14), and (3.15).

3.2.2 Econometric Model

The variation in FI is expressed by regressing several demographic characteristics, particularly age, gender, province, race, educational attainment, geographical area type, and employment status and income level, etc. Furthermore, various probit regressions are employed for analysis. The first regression tests for the likelihood of an individual being largely financially included.

This model is specified as follows:

Prob (*Financial Inclusion*)

$$= \beta_0 + \beta_1 Prov + \beta_2 Age + \beta_3 Race + \beta_4 Gender + \beta_5 EmployStat + \beta_6 Edu + \beta_7 Marit + \beta_8 GeoType + \beta_9 Income + u \ldots\ldots\ldots (3.16)$$

The second probit regression is on FH to estimate the effects of FI on FH. To distinguish inclusion (1 = financial inclusion; 0 = financial exclusion). The FH status is specified as a

function of access to financial services, demographic characteristics and contextual factors. Therefore, the model is specified as follows:

$$Prob\ (Good\ Financial\ Health) = \beta_0 + \beta_1 FinIncl + \beta_2 Prov + \beta_3 Age + \beta_4 Race + \beta_5 Gender + \beta_6 EmployStat + \beta_7 Edu + \beta_8 Marit + \beta_9 GeoType + \beta_{10} Income + u \ldots\ldots\ldots (3.17)$$

Finally, a bivariate probit regression is run on both FH status and FI to examine the linkages between the two. Both FH status and FI are binary regressands and may not be independent of each other. Furthermore, drivers of FH include qualitative information in the form of dummy variables. Moreover, FI is both an exogenous and endogenous dummy variable; in which case, bivariate probit models would be most suitable as they allow for interdependence (Chisadza, 2015).

Therefore, the model is expressed as follows:

$$Good\ Financial\ Health = \beta X + \delta Financial\ Inclusion + u \ldots\ldots (3.18)$$

$$Financial\ Inclusion = \Upsilon Z + \varepsilon \ldots\ldots (3.19)$$

Where 1 = good FH, 0 = poor GH

1 = financially included, 0 = financially excluded

'X' and 'Z' represent explanatory variables that help determine the FH status and financial inclusivity of an individual respectively. 'β' and 'ϒ' are parameters of the models, and finally, 'u' and 'ε' are error terms.

3.3 Data

In exploring the relationship between FI and FH in South Africa, this study will use FinScope Consumer Survey data. FinScope is a research instrument developed by FinMark Trust to meet the requirement for reliable financial sector data. It is a nationally representative study of individuals' perceptions of financial services and issues that creates insight on how individuals source their income and manage their finances (FinMark Trust, 2016). The FinScope SA survey offers a comprehensive understanding of how individuals generate an income and how they manage their financial lives. Furthermore, it identifies the factors that drive financial behaviour and those that discourage individuals from using financial products and services.

On FI, FinScope sheds light at the use of, and demand for financial services (including informal products) by means of questionnaires and interviews covering attitudes, behaviours, quality of

life factors and consumption patterns. In addition, it identifies factors that hinder and facilitate effective access to financial services; unlike other consumer surveys, such as StatsSA and the National Income Dynamics Survey (NIDS), among others. StatsSA surveys, such as the General Household Survey (GHS) and the South Africa Demographic and Health Survey (SADHS) do not really ask any questions on FI and FH, while NIDS only asks questions on the usage of financial product/services. Furthermore, NIDS did not ask any questions on access and affordability. FinScope surveys are carried out at an individual level, drawing on financial needs and access, as well as profiles of users of financial products and services, and the financial institutions from whom they obtain these products. The products are separated into formal, semi-formal and informal financial products. The data comprises terminologies used in each sub-sector as well as information on the characteristics of respondents, such as age, level of education, sources of income, employment and indicators of economic well-being (income; housing quality and tenure; deprivation; statements on thoughts, feelings and experiences; and asset possession). These questions are used to determine respondents' financial attitudes and understanding of finances as well as their psychological profiles. The period of data to be used in the study will be from 2011 and 2016.

FinScope asked relatively more comprehensive questions on the usage, access and quality dimensions of FI; for this reason, the study will focus on these key dimensions when deriving the FII as discussed earlier. Regarding financial health, FinScope asked more comprehensive questions on the spending, borrowing, planning and savings dimensions of FH.

3.4 Limitations

There are some limitations that come with using FinScope data to measure FI and FH. In some areas, the study will rely on self-report instruments, which are subject to scrutiny in terms of social-desirability bias. Self-report instruments shed light on the individual's level of affective experience and perception of financial services that cannot be derived from objective measures. It is important to note that the limitations explained do not significantly affect the overall findings of the study. Additionally, since there are two indexes (FII and FHI) derived, these measures complement each other and can thus provide a clear picture for reliable conclusions.

3.5 Conclusion

Chapter three discussed the methodology and data employed in this study. The study relies on secondary demand-side data from FinScope for the period 2011 and 2016 as part of the quantitative methodology. The chapter presented an overview and insight into FI and FH measures used. The PCA approach was utilised when deriving the two indices. Thereafter, the chapter concludes with a section highlighting the limitations of the chapter. The methodology has laid the technical foundation for the empirical analysis that follows in the next chapter.

CHAPTER FOUR: EMPIRICAL ANALYSIS

4.1 Introduction

The objective of this chapter is to provide empirical findings and examine the associations of FI and its correlation with FH, using the approaches mentioned in the previous chapter. Section 4.2 provides the descriptive analysis of the survey respondents present in the trimmed FinScope 2011 and 2016 data. Section 4.3 presents a further analysis by means of probit regressions to assess the extent of FI and its effects on FH. Section 4.4 will provide a brief conclusion of the chapter.

4.2 Descriptive Statistic Analysis

4.2.1 Profile of Final Sample

Table 4.1 below presents the summary statistics of the survey participants. Regarding the age categorical variable in 2011 and 2016, those aged 16 – 25 years accounted for over 30% of all survey participants, 31% and 38% respectively, whereas those aged 26 – 35 years accounted for the second highest proportion in both years. In relation to gender, the female share was more dominant in both 2011 (52%) and 2016 (58%). As foreseen, Africans accounted for the greatest share of the participants (78% and 74% respectively), whereas the White and Coloured proportions accounted for the second and third highest proportion in both years, with the White share being slightly greater between the two. Indians/Asians, on the other hand, accounted for the smallest proportion of the final sample.

The individuals in the chosen sample became more educated over time as indicated by the slight upward trend in the proportion of individuals with secondary schooling. Significantly, the share of individuals with no formal education decreased from 3% in 2011 to 2% in 2016. Individuals with a secondary education accounted for the highest proportion in both survey years, at 72% and 73%, respectively. In view of the labour market status, an encouraging trend was seen as the proportion of employed individuals significantly increased from 42% in 2011 to 59% in 2016. Furthermore, a significant proportion of the individuals who declared to be unemployed decreased from 32% in 2011 to 19% in 2016. In relation to the proportion of economically inactive individuals, there was a slight decrease from 26% in 2011 to 22% in 2016.

Table 4.1: Demographic Statistics of Final Sample (%)

	Year	
	2011	**2016**
Age Cohort		
16 – 25 years	31.07	38.49
26 – 35 years	27.16	26.58
36 – 45 years	19.10	18.75
46 – 55 years	12.48	11.63
56 – 65 years	10.18	4.55
Total	100.00	100.00
Gender		
Male	47.68	42.40
Female	52.32	57.60
Total	100.00	100.00
Race		
African	77.77	74.02
Coloured	9.63	10.08
Indian/Asian	2.76	3.34
White	9.86	12.57
Total	100.00	100.00
Educational Attainment		
No Formal Education	3.01	1.71
Primary Education	10.55	11.34
Secondary	71.62	72.45
Vocational/Specialised training/Other	2.59	1.97
Tertiary Education	12.23	12.53
Total	100.00	100.00
Employment Status		
Employed	42.48	58.69
Unemployed	31.87	19.15
Economically Inactive	25.65	22.16
Total	100.00	100.00
Marital Status		
Married/Living Together	34.42	39.57
Divorced/Separated	3.66	4.60
Widowed	4.55	12.06
Single/Never Married	57.35	43.76
Do not Know	0.08	0.08
Total	100.00	100.00
Geographical Location		
Rural/Tribal	33.26	27.30
Urban	66.74	72.70
Total	100.00	100.00
Province		
Western Cape	10.81	13.89
Eastern Cape	13.16	11.45
Northern Cape	2.09	6.98
Free State	5.45	10.15
KwaZulu-Natal	20.76	14.72
North-West	6.55	8.39
Gauteng	23.90	19.00
Mpumalanga	7.40	7.77
Limpopo	9.87	7.68
Total	100.00	100.00

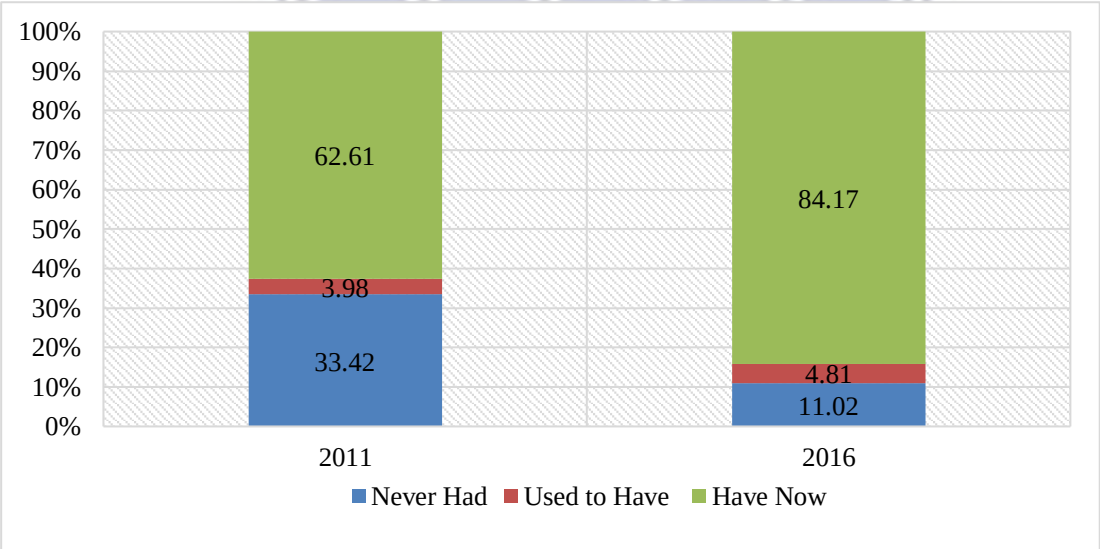
Source: Author's calculations using FinScope data.

Regarding marital status, those who were single/never married accounted for the highest share of the sample in both 2011 (57%) and 2016 (44%). Looking at the geographical location, 33% of the participants resided in rural/tribal settings in 2011 and 27% in 2016. The highest proportion on respondents resided in urban settings in both years; 67% and 73%, respectively. Lastly, turning to the province of residence, the most dominant were Gauteng (24%), KwaZulu-Natal (21%) and the Eastern Cape (11%).

4.2.2 Financial Inclusion Dimensions

The overall banking status for the chosen population is outlined in Figure 4.1 below for the years 2011 and 2016. The results presented below indicate a significant decline in individuals who were unbanked from 33% in 2011 to 11% in 2016. Furthermore, the banking status showed a significant increase in individuals who had any type of account in a financial institution from 62% in 2011 to 84% in 2016.

Figure 4.1: Overall Banking Status



Source: Author's calculations using FinScope data.

Table 4.2 below presents the descriptive statistics for the *access* dimension of FI by the working-age population. In general, the sample members' *access* to financial services improved from 2011 to 2016. In relation to unemployment, the majority of the individuals in 2011 answered 'yes' to being unemployed or retrenched as a reason for never having or used a bank account or card. However, in 2016 there was a significant decline from 30.64% in 2011 to 6.32% in 2016. This indicates that employment levels have increased, as indicated by the downward trend in the unemployment of the sample members.

Table 4.2: Description of data on the access dimension of FI (%)

	2011	2016
Reason: Never had or used to have a bank account or card: Do not have an ID		
Yes	2.25	0.38
No	97.75	99.62
Total	100.00	100.00
Reason: Never had or used to have a bank account or card: Do not have proof of residence		
Yes	1.93	0.15
No	98.07	99.85
Total	100.00	100.00
Reason: Never had or used to have a bank account or card: Have access to someone else's account		
Yes	2.11	0.19
No	97.89	99.81
Total	100.00	100.00
Reason: Never had or used to have a bank account or card: Find the language confusing		
Disagree	33.46	36.53
Neither agree nor disagree	25.30	4.50
Agree	41.24	58.97
Total	100.00	100.00
Reason: Never had or used to have a bank account or card: Too expensive to have an account		
Yes	2.93	0.81
No	97.07	99.19
Total	100.00	100.00
Reason: Never had or used to have a bank account or card: Unemployed or retrenched		
Yes	30.64	6.32
No	69.36	93.68
Total	100.00	100.00
Reason: Never had or used to have a bank account or card: Still a student		
Yes	17.43	0.01
No	82.57	99.99
Total	100.00	100.00
Reason: Never had or used to have a bank account or card: Prefer working with cash		
Yes	15.17	0.89
No	84.83	99.11
Total	100.00	100.00
Reason: Never had or used to have a bank account or card: Bank is too far		
Yes	1.55	0.10
No	98.45	99.90
Total	100.00	100.00

Source: Author's calculations using FinScope data.

Additionally, the proportion of individuals who were still students decreased significantly from 17.43% in 2011 to 0.01% in 2016, indicating that being a student is no longer a major determining factor in not having or using a bank account or card. Lastly, there was a significant decline in the proportion of individuals who answered 'yes' to the preference of dealing with cash from 17.43% in 2011 to 0.89% in 2016. The key results depict that "Find the language confusing" (2011: 41.24%; 2016: 58.97%) reason played a significant role in hindering individuals form having and using a bank account or bank card from 2011 to 2016. The 'yes' share of individuals who found the language confusing was greater than the 'yes' share under the unemployed or retrenched reason in both years, making it the main reason why individuals never had or used to have a bank account or card.

The results in Table 4.2 above demonstrate that more than half of the population is financially illiterate, which is alarming. Financial knowledge should not be a convenience, but an essential tool because inadequate financial knowledge results in poor financial choices and decisions as well as an increase in exclusion (Refera, Dhaliwal & Kaur, 2015). Financial literacy plays a key role in determining access to financial services and it is important as individuals are able to make informed financial decisions, manage their own finances and subsequently achieve financial wellbeing. The Center for Financial Inclusion Action (2013) pointed out that, financial literacy is a primary step for FI, which makes individuals seek and receive financial products and services.

Table 4.3 below presents the descriptive statistics on the *usage* dimension of FI by the working-age population. The usage of a bank card or bank account indicator accounted for the highest share of 'yes' responses in the dimension, which increased from 60.04% in 2011 to 71.37% in 2016. This is consistent with the findings of the FinAccess (2019) study, where account usage of working population increased over the study period. The saving variable had the greatest increase in the 'yes' share, where the proportion of individuals who currently save or put money away, increased from 24.70% in 2011 to 53.04% in 2016. The use of an overdraft facility had the lowest 'yes' share (2011: 2.98%; 2016: 3.77%). Individuals who use a credit card doubled from 5.71% in 2011 to 10.75% in 2016, although this result counts for a small share. Looking at the individuals who answered 'yes' to borrowing, there was a significant decline in this variable from 34.99% in 2011 to 12.71% in 2016. Individuals who have a bank loan remained stable from 2011 to 2016 at 11.07% and 10.98%, respectively.

Table 4.3: Description of data on the usage dimension of FI (%)

	2011	2016
Use a bank account or bank card		
Yes	60.04	71.37
No	39.96	28.63
Total	100.00	100.00
Currently save or put money away		
Yes	24.70	53.04
No	75.30	46.96
Total	100.00	100.00
Have an insurance policy		
Yes	17.64	24.83
No	82.36	75.17
Total	100.00	100.00
Use overdraft facility		
Yes	2.98	3.77
No	97.02	96.23
Total	100.00	100.00
Borrowed in the past year		
Yes	34.99	12.71
No	65.01	87.29
Total	100.00	100.00
Have a credit or store card		
Yes	5.71	10.75
No	94.29	89.02
Total	100.00	100.00
Have a bank loan		
Yes	11.07	10.98
No	88.93	89.02
Total	100.00	100.00
Have a funeral policy offered by a bank		
Yes	10.19	12.15
No	89.81	87.85
Total	100.00	100.00
Funeral cover usage		
Yes	36.67	55.74
No	63.33	44.26
Total	100.00	100.00
Have medical aid or medical expenses		
Yes	8.29	9.77
No	91.71	90.23
Total	100.00	100.00
Have a retirement or pension fund		
Yes	15.98	19.24
No	84.02	80.76
Total	100.00	100.00

Source: Author's calculations using FinScope data.

Table 4.4 below demonstrates the descriptive statistics on the *quality* dimension of FI by working-age population. It is worth mentioning that, unfortunately, no past studies reviewed looked at the *quality* dimension of FI. It is important to note that the "yes" proportion for all four reasons to

never having or used a bank account or card was significantly low in both 2011 and 2016. The only notable statistic is the decline in the proportion of individuals who did not qualify to open an account, which decreased from 4.31% in 2011 to 0.55% in 2016. The findings in the table below suggest that *quality* variables did not play an essential role to hinder the *access* and *usage* of formal financial services.

Table 4.4: Description of data on the quality dimension of FI (%)

	2011	2016
Reasoning: Never had or used to have a bank account or card: Do not understand how banks work		
Yes	1.99	0.12
No	98.01	99.88
Total	100.00	100.00
Reasoning: Never had or used to have a bank account or card: Do not feel comfortable in a bank		
Yes	0.90	0.12
No	99.10	99.88
Total	100.00	100.00
Reasoning: Never had or used to have a bank account or card: Do not understand technology		
Yes	1.27	0.19
No	98.73	99.81
Total	100.00	100.00
Reasoning: Never had or used to have a bank account or card: Do not qualify to open an account		
Yes	4.31	0.55
No	95.69	99.45
Total	100.00	100.00

Source: Author's calculations using FinScope data.

Table 4.5 depicts the descriptive statistics on the *welfare* dimension of FI. The findings indicate that a significant majority of the panel members owned a cell phone, had a computer and an internet facility at home; the "yes" proportion was considerably over 85%. The ownership of the devices, including having access to the internet, enhances access and usage to financial services. Financial institutions can improve their products so they are more inclusive to all potential customers, this can be carried out by including languages other than English and making KYC (Know Your Customer) requirements more flexible. For many years, financial institutions have extended financial services via the internet and mobile applications, albeit simply as a new channel. These channels are designed to replicate the experience of what would otherwise be a face-to-face interaction at a branch, therefore adding value to the individual's welfare.

Table 4.5: Description of data on the welfare dimension of FI (%)

	2011	2016
Own a cell phone		
Yes	96.08	85.83
No	3.92	14.17
Total	100.00	100.00
Have internet facility at home		
Yes	93.35	95.21
No	6.65	4.79
Total	100.00	100.00
Have a computer at home		
Yes	87.32	87.74
No	12.68	12.26
Total	100.00	100.00
Ensured you are financially secure		
Agree	35.33	30.40
Neither agree nor disagree	25.81	11.27
Disagree	38.85	58.33
Total	100.00	100.00
Dealing with personal finances is stressful and a real burden		
Agree	52.68	45.29
Neither agree nor disagree	25.04	33.98
Disagree	22.28	20.73
Total	100	100
Like to be in control of finances and money matters		
Agree	67.60	42.62
Neither agree nor disagree	20.56	35.66
Disagree	11.85	42.24
Total	100.00	100.00

Source: Author's calculations using FinScope data.

With reference to the other three variables, there was a decline in the proportion of individuals who ensured they were financially secure, from 35.33% in 2011 to 30.40% in 2016. Furthermore, the results show that 52.68% of the individuals in 2011 indicated that dealing with personal finances is stressful and a real burden, compared to 45.29% in 2016; this shows that fewer people are struggling to deal with finance issues. Lastly, there was a significant decline in the proportion of individuals who like to be in control of their finances and money matters, from 67.60% in 2011 to 42.62% in 2016. Use of technology is not an immediate act, especially for non-digital natives. Previous experience with technology may lead to positive reception of new digital technologies. People who are knowledgeable about other technology are likely to perceive digital financial services as user-friendly and useful to their lives, by finding user-friendliness as the driver of digital financial services (Msweli & Mawela, 2020). Therefore, it is possible that the older generation struggle to use more efficient and time-saving technology to access and use banking services, as they feel 'excluded'. The elderly group certainly have

special requirements that ought to be communicated to financial service providers and designers in order to accommodate for this growing segment (Msweli & Mawela, 2020).

4.2.3 Financial Inclusion Status

The following section presents the results for the FI status by demographic characteristics. Table A2, which can be located in Appendix, illustrates the first principal components for deriving the FII. Table A2 shows the list of components used to derive the FII. The principal components comprise four dimensions of FI between 2011 and 2016. If, under the *access* dimension, the response is "yes" to the overall banking status of whether the individual has a bank account or bank card dummy variable, it indicates a positive outcome for *access*. The results indicate that the component of this dummy variable was the largest in value and had a positive sign (0.31 in both 2011 and 2016). Notwithstanding, if the response is "yes" for all the other dummy variables in this dimension, the components are projected to have a negative sign, suggesting they are not a desirable outcome for *access.* The results indicate that all components have a negative sign and the "used to have a bank account or card in the past" dummy variable is the largest (0.09 in 2011 and 0.18 in 2016) in absolute terms.

The first component of the *access* dimension is only positively correlated with the "have a bank account or bank card" variable and negatively correlated with all the other dummy variables in the dimension. This correlation suggests that eleven (11) variables vary together and when one increases, the others go up as well besides the "have a bank account or bank card" variable. This could, therefore, be classified as a primary measure of the *access* dimension.

If individuals responded "yes" in all the dummy variables under the *usage* dimension of FI, it implies that it is a positive outcome and it is expected to have a positive sign in the principal components. The results in the *usage* dimension indicate that all the components have positive signs that conform to theory. The first principal components that are the largest in values in 2011 are for variables such as "used a bank account or bank card" (0.31 and 0.33), "used a bank loan" (0.28), "have an insurance policy" (0.33), and "have a retirement or pension fund" (0.31). Similarly, for 2016, the components with the largest values are for variables such as "have medical aid or medical expenses" (0.27), "have an insurance policy" (0.33), and "have a retirement or pension fund" (0.31) dummy variables.

The first component under the *usage* dimension is substantially correlated with the use of a bank account or bank card, having an insurance policy and use of a retirement or pension fund

in a positive direction. In addition, the first component is positively correlated with all other variables under this dimension, which indicates that if one variable increases all other variables will increase as well.

Moving on to the *quality* dimension of FI; if the response is "yes", it indicates that it is an unfavourable *quality* outcome, and the first principal components are foreseen to have negative signs. The results illustrate that the first principal component is the greatest for the "do not qualify to open an account" dummy variable in both 2011 and 2016. All components in the *quality* dimension have expected negative signs. The first principal component is negatively correlated with all the dummy variables and is primarily correlated with "do not qualify to open an account" at 0.06 in 2011 and 0.05 in 2016.

Taking a look at the *welfare* dimension of FI if the response is "yes" on the "Dealing with finances is stressful and a real burden" dummy variable, it suggests that they are not a favourable outcome for the *welfare* dimension and a negative sign is expected; however, the result shows a positive sign. Nonetheless, if the response is "yes" to the "Like to be in control of finances and money matters" and "Ensured you are financially secure" dummy variables, it implies a positive *welfare* result. The results show that the components have the correct and expected signs that conform to the theory, because the signs are positive as expected.

The component for the "ensured you are financially secure" dummy variable had the largest value in 2011 and the "Like to be in control of finances and money matters" dummy variable was the largest in 2016. Moreover, the *welfare* dimension is predominantly correlated with "ensured you are financially secure" at 0.10 and "Like to be in control of finances and money matters" at 0.19 in 2016, both variable in a positive direction. Finally, approximately 16% of the variation is explained by the first principal components in 2011 and decreased slightly to 13% in 2016.

Table 4.6 below demonstrates that the elements have the right sign, in harmony with the theoretical arguments in Section 4.2.2. As mentioned in Section 3.2.2, in 2011, the FII at the 40^{th} percentile is used to distinguish the poorest 40% (they are defined as financially excluded) from the remaining 60% (they are defined as financially included), and the 2011 40^{th} percentile poverty line is used for 2016 as well.

Table 4.6: Likelihood of Financial Inclusion by demographic characteristics (%)

	2011			2016		
	Financially Included	Financially Excluded	Total	Financially Included	Financially Excluded	Total
All	60.00	40.00	100.00	70.98	29.02	100.00
Province						
Western Cape	73.66	26.34	100.00	76.84	23.16	100.00
Eastern Cape	54.65	45.35	100.00	64.31	35.69	100.00
Northern Cape	63.23	36.77	100.00	62.99	37.01	100.00
Free State	53.54	46.46	100.00	57.95	42.05	100.00
KwaZulu-Natal	50.84	49.16	100.00	78.03	21.97	100.00
North-West	54.82	45.18	100.00	58.40	41.60	100.00
Gauteng	73.58	26.42	100.00	80.08	19.92	100.00
Mpumalanga	50.56	49.44	100.00	66.51	33.49	100.00
Limpopo	51.74	48.26	100.00	58.60	41.40	100.00
Age Cohort						
16 – 25 years	39.51	60.49	100.00	71.02	28.98	100.00
26 – 35 years	69.68	30.32	100.00	73.24	26.76	100.00
36 – 45 years	71.35	28.65	100.00	67.99	32.01	100.00
46 – 55 years	63.77	36.23	100.00	72.95	27.05	100.00
56 – 65 years	70.60	29.40	100.00	64.75	35.25	100.00
Race						
African	55.03	44.97	100.00	67.05	32.95	100.00
Coloured	64.48	35.52	100.00	68.91	31.09	100.00
Indian/Asian	70.36	29.64	100.00	77.63	22.37	100.00
White	91.75	8.25	100.00	94.03	5.97	100.00
Gender						
Male	60.98	39.02	100.00	72.56	27.44	100.00
Female	59.07	40.93	100.00	69.65	30.35	100.00
Employment Status						
Employed	84.08	15.92	100.00	82.81	17.19	100.00
Unemployed	42.39	57.61	100.00	40.16	59.84	100.00
Economically inactive	41.91	58.09	100.00	66.30	33.70	100.00
Educational Attainment						
No formal education	33.67	66.33	100.00	40.76	59.24	100.00
Primary education	35.29	64.42	100.00	39.90	60.10	100.00
Secondary education	58.58	41.42	100.00	71.12	28.88	100.00
Other/Vocational Training	82.89	17.11	100.00	94.37	5.63	100.00
Tertiary education	91.10	8.90	100.00	98.81	1.19	100.00
Marital Status						
Married/Living together	73.40	26.60	100.00	78.06	21.94	100.00
Divorced/Separated	70.80	29.20	100.00	82.72	17.28	100.00
Widowed	63.91	36.09	100.00	66.80	33.20	100.00
Single/Never Married	50.88	49.12	100.00	64.45	35.55	100.00
Don't know			100.00			100.00
Geographical Location						
Urban formal/Informal	68.05	31.95	100.00	76.73	23.27	100.00
Rural/Tribal	43.79	56.21	100.00	55.68	44.32	100.00
Financial Inclusion Index Quintile						
Quintile 1	0.00	100.00	100.00	0.00	100.00	100.00
Quintile 2	0.00	100.00	100.00	55.72	44.28	100.00
Quintile 3	100.00	0.00	100.00	100.00	0.00	100.00
Quintile 4	100.00	0.00	100.00	100.00	0.00	100.00
Quintile 5	100.00	0.00	100.00	100.00	0.00	100.00

Source: Author's calculations using FinScope data.

The results show that the financially included share was 60% in 2011 but increased to 70.98% in 2016, which is a positive result regarding FI. An overall reflection of the findings exhibits that the South African financial sector was more inclusive during the study period. Looking at province of residence, the four dominant shares of inclusion were the Western Cape (73.66% in 2011 and 76.84% in 2016), Gauteng (73.56% in 2011 and 80.08% in 2016), KwaZulu-Natal (which had the highest increase in inclusion from 50.85% in 2011 to 78.03% in 2016) and the Northern Cape (63.23% in 2011 and 62.66% in 2016). Looking at geo-type, there was an increase in inclusion for both individuals residing in urban and rural areas. Those residing in urban areas had an inclusion increase from 68.05% in 2011 to 76.73% in 2016; for those residing in rural areas, there was an inclusion increase from 43.79% in 2011 to 55.68% in 2016.

The individuals in the weighted sample became more educated, as indicated by the upward trend in the proportion of financially included individuals with no less than a primary education. The share with no formal education had an increase in FI from 33.67% in 2011 to 40.76% in 2016. Significantly, the share with a secondary education and vocational training had the highest increase in FI from 58.68% in 2011 to 71.12% in 2016; and 82.89% in 2011 to 94.37% in 2016, respectively. In view of the employment status, a discouraging trend can be observed as the proportion of the FI individuals declined. Those economically inactive had an increase in FI from 41.91% in 2011 to 66.30% in 2016; furthermore, the FI of employed individuals slightly decreased from 84.08% in 2011 to 82.82% in 2016. However, it is crucial to note that the employed individuals had the highest probability of being financially included, as the proportions were over 80% both in 2011 and 2016.

In relation to marital status, the results show that being married or living together with a partner is associated with higher FI probability, which increased from 73.40 % in 2011 to 78.06% in 2016. Similarly, the proportion of divorced or separated individuals experienced the highest level of inclusion in 2016, 82.72%. Turning to age groups, individuals aged between 16 – 25 years had the highest increase in FI from 39.51% in 2011 to 71.02% in 2016. Significantly, individuals aged between 56 – 65 years were the only age group to experience a decrease in FI, from 70.60% in 2011 to 64.75% in 2016. Looking at race, Whites were the dominant race regarding FI shares from 91.75% in 2011 and 94.04% in 2016. Africans have the least share of FI for both years; however the Africans had the highest FI increase from 55.03% in 2011 to 67.05% in 2016. In relation to gender, males were more dominant (from 60.98 in 2011 to 72.56% in 2016) than females (from 59.07% in 2011 to 69.65% in 2016) in the likelihood of being financially included in both years; however, there was an increase in FI for both genders.

Finally, the last five rows of Table 4.6 show the relationship between FI and the FI index quintile variable. The results illustrate that the poorest quintiles (40^{th} percentile) had zero possibility to be financially included in 2011, whilst the non-poor quantile (60^{th} percentile) were a 100% most likely to be financially included. However, the poor quantile 2 experienced a significant financial inclusion probability from zero to 55.72% in 2016.

In conclusion, Table 4.6 suggests that the following individuals were associated with a higher likelihood of FI: the profile of a financially included individual shows an included individual as an employed, married, white male, aged 26-35 years, residing in an urban area in either the Western Cape, Northern Cape or Gauteng province, with a tertiary education, and who must come from the upper quintiles.

4.2.4 Financial Health Dimensions

Table 4.7 below presents a description of the data on the *spending* dimension of FH by the working-age population. Overall, the sample members' *spending* behaviour improved from 2011 to 2016.

Individuals who answered "agree" to frequently having problems making ends meet, had the highest "agree" share in 2011 and 2016, 36.58% and 28.03%, respectively. This variable also had the greatest decrease of all the components in this dimension (8.55%), meaning that there is an improvement in FH, followed by individuals who miss or make late payments for things like rent, municipality bills or loan repayments (21,47% in 2011 to 14.01% in 2016). Those who responded "agree" to having considered seeing someone to help with their debt problems had the lowest "agree" share in 2011 (15.27%), whereas those who responded "agree" to considering cancelling policies to cover debts had the lowest "agree" share in 2016 (11.30%). There was a slight decrease in the individuals who considered going to see someone to help them with their debt problems (15.27% in 2011 to 13.25% in 2016), which also had the lowest decrease in the *spending* dimension from 2011 to 2016.

Table 4.7: Description of data on the spending dimension of FH (%)

	2011	2016
You often miss or make late payments for things like rent, municipality bills or loan repayments		
Agree	21.47	14.01
Neither agree nor disagree	19.19	21.69
Disagree	59.34	64.30
Total	100.00	100.00
You frequently have problems making ends meet		
Agree	36.58	28.03
Neither agree nor disagree	22.15	35.03
Disagree	41.27	36.93
Total	100.00	100.00
You have considered going to see someone to help you with your debt problems		
Agree	15.27	13.25
Neither agree nor disagree	13.81	17.74
Disagree	70.92	69.01
Total	100.00	100.00
You have considered cancelling policies to cover debts		
Agree	15.88	11.30
Neither agree nor disagree	16.13	19.47
Disagree	67.99	69.22
Total	100.00	100.00

Source: Author's calculations using FinScope data.

Table 4.8 below depicts the data on the *borrowing* dimension of FH. The findings indicate that there was a drastic decrease in the proportion of individuals who answered "yes" to borrowing in the past year, from 21.37% in 2011 to 5.40% in 2016; this finding implies better financial health. Furthermore, this variable had the highest "yes" share in 2011 (21.37%), whereas individuals who had taken goods on credit had the highest "yes" share in 2016 (8.33%). There was an upward trend in the proportion of people who had taken goods on credit. This finding is not surprising as more and more people rely on credit card purchases nowadays.

Individuals who borrowed for educational purposes had the lowest "yes" share in both 2011 (0.52%) and 2016 (0.06%). This finding implies that less people invested in their education and suggests that levels of financial literacy won't improve without an incentive to invest in education. Individuals who borrowed for the reason of getting a home loan, bond, mortgage or to build had the second largest decrease from 5.23% to 1.42%, suggesting that people prefer to rent rather than to get into a 20-year financial commitment.

Table 4.8: Description of data on the borrowing dimension of FH (%)

	2011	2016
Have you borrowed in the past 12 months		
Yes	21.37	5.40
No	78.63	94.60
Total	100.00	100.00
Have you taken goods on credit in the past 12 months		
Yes	5.38	8.33
No	94.62	91.67
Total	100.00	100.00
Do you owe money that has to be repaid		
Yes	7.71	6.20
No	92.29	93.80
Total	100.00	100.00
Reasons you have borrowed in the past 12 months: To purchase a motor vehicle		
Yes	4.67	1.86
No	95.33	98.14
Total	100.00	100.00
Reasons you have borrowed in the past 12 months: Home loan, bond, mortgage or to build		
Yes	5.23	1.42
No	94.77	98.42
Total	100.00	100.00
Reasons you have borrowed in the past 12 months: Educational or student loan		
Yes	0.52	0.06
No	99.48	99.94
Total	100.00	100.00

Source: Author's calculations using FinScope data.

Table A4 in the Appendix provides supplementary results on the *borrowing* dimension of FH. Individuals had various reasons for not wanting to borrow, mainly because they did not want to have debt or they did not earn enough to qualify them to borrow. Reasons for not borrowing: "I don't want to have debt" had the highest "yes" share in 2011 (24.35%), which increased to 33.95% in 2016 and was also the highest "yes" share. Individuals who responded "yes" to "I earn too little/I don't have a job/I do not earn enough income" decreased from 23.25% in 2011 to 4.72% in 2016, which is a positive result as it implies that lesser individuals don't earn enough or don't have a job.

Table 4.9 below depicts the data on the saving dimension of FH. There was an overall increase in all the variables in this dimension, meaning that people's levels of saving improved from 2011 to 2016. Saving in case of an emergency or unplanned cost drastically increased from 14.21% in 2011 to 28.15% in 2016. This variable had the highest "yes" share in both years, and also had the greatest increase between 2011 and 2016 in the "yes" share. Following this, individuals who save for funeral costs increased from 3.40% in 2011 to 10.72% in 2016, this

was the second highest increase in the "yes" share. Individuals who save to put a deposit on a house had the lowest "yes" share in both years, 0.71% in 2011 to 2.23% in 2016.

Table 4.9: Description of data on the saving dimension of FH (%)

	2011	2016
Reasons for saving: In case of an emergency or unplanned cost		
Yes	14.21	28.15
No	85.79	71.85
Total	100.00	100.00
Reasons for saving: Provide for my family if I die		
Yes	4.98	8.05
No	95.02	91.95
Total	100.00	100.00
Reasons for saving: For medical expenses		
Yes	2.62	5.37
No	97.38	94.63
Total	100.00	100.00
Reasons for saving: Retirement or old age		
Yes	3.33	8.38
No	96.67	91.62
Total	100.00	100.00
Reasons for saving: Deposit on a house		
Yes	0.71	2.23
No	99.29	97.99
Total	100.00	100.00
Reasons for saving: funeral cost		
Yes	3.40	10.72
No	96.60	89.28
Total	100.00	100.00

Source: Author's calculations using FinScope data.

Table A5 located in the Appendix section provides supplementary results on reasons why individuals don't save or put money away. The highest "yes" share came from individuals who responded "I don't have a job" as a reason for not saving, 30.52% in 2011 and decreased to 14.36% in 2016, this implies that unemployment levels also decreased. This variable had the highest "yes" share in both years. The "I don't have money to save or invest" variable had the greatest decrease in the "yes" share, from 23.60% in 2011 to 9.07% in 2016.

Table 4.10 depicts the data on the *planning* dimension of FH. Overall, there was an improvement in this dimension from 2011 to 2016, however, the only negative result came from individuals who ensured that are financially secure. There was a slight decrease from 2011 (35.33%) to 2016 (30.40%) in those who agreed that they are financially secure. Dealing with finances is stressful and a real burden had the highest "agree/yes" share in both 2011 (52.68%) and 2016 (45.29%). It is important to note that individuals who agreed that dealing with their

finances was stressful and a burden, decreased, which implies that more people like to be in control of their finances and money matters.

Table 4.10: Description of data on the planning dimension of FH (%)

	2011	2016
Household contents or possessions insurance		
Yes	8.52	7.73
No	91.48	92.27
Total	100.00	100.00
Income or salary cover (pays out if you get retrenched)		
Yes	1.69	6.24
No	98.31	93.76
Total	100.00	100.00
Life insurance or life cover		
Yes	17.31	21.07
No	82.69	78.93
Total	100.00	100.00
Have a pension fund, provident fund or retirement annuity		
Yes	15.98	19.24
No	84.02	80.76
Total	100.00	100.00
Dealing with finances is stressful and a real burden		
Agree	52.68	45.29
Neither agree nor disagree	25.04	33.98
Disagree	22.28	20.73
Total	100.00	100.00
Ensured you are financially secure		
Agree	35.33	30.40
Neither agree nor disagree	25.81	11.27
Disagree	38.85	58.33
Total	100.00	100.00

Source: Author's calculations using FinScope data.

There was an increase in individuals who took income or salary cover from 1.69% in 2011 to 6.24% in 2016, which pays them out if they get retrenched and that they can use to survive while looking for another job. Furthermore, there was an increase in having a pension fund, provident fund or retirement annuity from 2011 (17.31%) to 2016 (19.24%), implying improved financial health. Table A6 in the Appendix section provides some context into why some individuals don't have insurance. "I earn too little to make it worthwhile" had the highest "yes" share in 2011 (11.35%) and 2016 (12.26%) for individuals who had no household contents or possessions insurance. Furthermore, "It is too expensive" had the highest "yes" share in 2011 (15.92%) and 2016 (41.98%) for individuals who had no life insurance or life cover. These results suggest that if people had disposable income, they would allocate funds to insurance.

4.2.5 Financial Health Status

This section presents the results for the FH status by demographic characteristics. Table A3, which can be located in Appendix illustrates the first principal components for deriving the Financial Health Index (FHI). Table A3 shows the list of components used to derive the FHI. The principal components comprise four dimensions of FI between 2011 and 2016. Table A3 located in the Appendix section shows the list of components used to derive the FHI. The principal components consist of the four dimensions of FH between 2011 and 2016. Regarding the results in Table A3, in general, they align with theoretical arguments and descriptive stats presented earlier, except one surprising result, as seen below.

Under the *spending* dimension, if the answer is "agree", it means it is a bad outcome for *spending* and the principal components are expected to have negative signs. It is important to note that under this dimension, the first principal components have a very small magnitude in absolute terms. The individuals who responded "agree" to the "You have considered going to see someone to help you with your debt problems" dummy variable indicates a good outcome for *spending* as it has a positive sign. Secondly, the people who responded "agree" to the "You frequently have problems making ends meet" dummy variable indicates a bad outcome for spending and has a negative sign, which aligns with the theoretical argument. This result was the greatest (0.05 in 2011 to 0.08 in 2016) in absolute terms. Finally, there was one surprising result for the "You often miss or make late payments for things like rent, municipality bills or loan payments" dummy variable. The results reveal that it was the greatest in value and had a positive sign (0.02 and 0.05). A negative sign is expected for this variable because those who agree they often miss or make late payments are associated with poor FH, hence an expected negative sign.

If individuals answer "yes" in all the dummy variables under the *borrowing* dimension, it means that it is a good *borrowing* outcome and it is expected to have a positive sign on the principal components. The results show that all components have positive signs that conform to theory. The first principal components that are the greatest in values in 2011 are for variables such as owing money that has to be repaid (0.20 and 0.16), to purchase a motor vehicle (0.31), and borrowing for a home loan, bond or mortgage to buy a house (0.33). Similarly, for 2016 the components with the largest values are taking goods on credit (0.19), taking goods on credit (0.17) and to purchase a vehicle (0.14) dummy variables. The first component under the *borrowing* dimension is mostly correlated with owing money to be repaid, purchasing a motor

vehicle, and having a home loan in a positive direction. Also, the first component is positively correlated with all other variables under this dimension which indicates that if one variable increases all other variables will increase as well.

Turning to the *saving* dimension, if individuals responded "yes" in all the dummy variables, it means that it is a good saving outcome and it is expected to have a positive sign in the principal components. The results show that all components have positive signs that conform to theory. The first principal components that are the greatest in values in 2011 and 2016 are for variables such as, "In case of an emergency or unplanned cost" (0.23), "Provide for my family if I die" (0.25), and for retirement or old age (0.26 and 0.33).

Finally, for the *planning* dimension, if the answer is "agree" on the "dealing with money is stressful and a real burden" dummy variable, it means that they are not a good outcome for the *planning* dimension and we expect a negative sign, but somehow it shows a positive sign for 2011. Even so, if the answer is "agree" to the "ensured you are financially secure" dummy variable, it implies a good *planning* outcome, and we expect a positive sign. The results show that the components have correct and expected signs that conform to the theory, because the signs are positive as expected. The component for the "Life insurance or life cover" dummy variable was the greatest in value in 2011 and "Have a pension fund, provident fund or retirement annuity" dummy was the greatest in 2016. Lastly, about 14% of the variation is explained by the first principal components in 2011 and decreased slightly to 11% in 2016.

Table 4.11 shows the percentage of individuals with good and poor FH. As mentioned in Section 3.2, in 2011, the FII at the 40th percentile is used to distinguish the poorest 40% (they are defined as poor FH) from the remaining 60% (they are defined as good FH), and the 2011 40th percentile poverty line is used for 2016 as well. The results show that the financially healthy share was 60% in 2011 but increased to 65.71% in 2016, which is a positive result regarding FH. An over-all reflection of the findings exhibits that individual's in SA improved their FH during the study period. This is in kine with the findings of Brockland et al (2019) where PCA was used, and the results indicated that the FH of the survey respondents improved over the study period.

Table 4.11: Likelihood of Financial Health by demographic characteristics (%)

	2011			2016		
	Good Financial Health	Poor Financial Health	Total	Good Financial Health	Poor Financial Health	Total
All	60.00	40.00	100.00	65.71	34.29	100.00
Province						
Western Cape	69.65	30.35	100.00	68.85	31.15	100
Eastern Cape	50.49	49.51	100.00	51.06	48.94	100
Northern Cape	49.58	50.42	100.00	51.84	48.16	100
Free State	58.67	41.33	100.00	53.04	46.96	100
KwaZulu-Natal	56.29	43.71	100.00	70.74	29.26	100
North-West	44.46	55.54	100.00	60.16	39.84	100
Gauteng	71.38	28.62	100.00	77.86	22.14	100
Mpumalanga	50.54	49.46	100.00	65.47	34.53	100
Limpopo	55.16	44.84	100.00	54.35	45.65	100
Age Cohort						
16 – 25 years	47.21	52.79	100.00	63.36	36.64	100
26 – 35 years	59.44	40.56	100.00	70.07	29.93	100
36 – 45 years	68.24	31.76	100.00	69.10	30.90	100
46 – 55 years	63.53	36.47	100.00	59.16	40.84	100
56 – 65 years	73.43	26.57	100.00	62.88	37.12	100
Race						
African	55.05	44.95	100.00	62.38	37.62	100
Coloured	61.13	38.87	100.00	58.63	41.37	100
Indian/Asian	71.45	28.55	100.00	69.23	40.77	100
White	87.25	12.75	100.00	90.05	9.95	100
Gender						
Male	58.66	41.34	100.00	68.18	31.82	100
Female	59.79	40.21	100.00	63.63	36.37	100
Employment Status						
Employed	75.86	24.14	100.00	75.98	24.02	100
Unemployed	41.38	58.62	100.00	42.13	57.87	100
Economically inactive	53.96	46.04	100.00	58.89	41.11	100
Educational Attainment						
No formal education	52.68	47.32	100.00	44.17	55.83	100
Primary education	47.45	52.55	100.00	36.24	63.76	100
Secondary education	56.18	43.82	100.00	64.88	35.12	100
Other/Vocational Training	81.49	18.51	100.00	98.31	1.69	100
Tertiary education	84.39	15.62	100.00	94.99	5.01	100
Marital Status						
Married/Living together	69.73	30.27	100.00	74.79	25.21	100
Divorced/Separated	65.83	34.17	100.00	83.68	16.32	100
Widowed	68.97	31.03	100.00	59.00	41.00	100
Single/Never Married	51.73	48.27	100.00	57.38	42.62	100
Geographical Location						
Urban formal/Informal	65.09	34.91	100.00	70.36	29.64	100
Rural/Tribal	47.54	52.46	100.00	53.32	46.68	100
Financial Health Index Quintile						
Quintile 1	0.00	100.00	100.00	0.00	100.00	100.00
Quintile 2	0.00	100.00	100.00	36.91	63.09	100.00
Quintile 3	100.00	0.00	100.00	100.00	0.00	100.00
Quintile 4	100.00	0.00	100.00	100.00	0.00	100.00
Quintile 5	100.00	0.00	100.00	100.00	0.00	100.00

Source: Author's calculations using FinScope data.

Looking at province of residence, the four dominant shares of FH were Gauteng (71.38% in 2011 and 77.86% in 2016), the Western Cape (69.65% in 2011 and 68.85% in 2016), KwaZulu-Natal, which had the highest increase in inclusion from 56.29% in 2011 to 70.74% in 2016, and Mpumalanga (50.54% in 2011 and 65.47% in 2016). Turning to age groups, individuals aged between 16 – 25 years had the highest increase in FH from 47.21% in 2011 to 63.36% in 2016. Significantly, individuals aged between 46 – 55 years and 56 – 65 years were the only age group to experience a decrease in FH, from 63.53% in 2011 to 59.16% in 2016; and 70.60% in 2011 to 64.75% in 2016, respectfully.

With regard to race, Whites were the dominant race regarding FH shares from 87.25% in 2011 and 90.05% in 2016. Africans had the least share of FH in 2011 (55.05%); however, Africans had the highest FH increase from 55.05% in 2011 to 62.38% in 2016. The increase in FH for Africans is over 7% whilst for Whites, it is just over 3%. The increase in FH for Africans is more, compared to Whites. Coloureds are the only race group who showed a decrease in their FH from 61.13% in 2011 to 58.63% in 2016. In relation to gender, females were more dominant in 2011 (from 59.79% in 2011 to 63.63% in 2016), however, males took dominance in 2016 (from 58.66% in 2011 to 68.13% in 2016) in the likelihood of good FH; however, there was an increase in FH for both genders.

In view of the employment status, an encouraging trend can be seen as the overall proportion of financially healthy individuals increased. Those economically inactive had an increase in FH from 53.96% in 2011 to 58.89% in 2016; furthermore, the FH of employed individuals was constant at 75% in both years. However, it is crucial to note that employed individuals had the highest probability of good FH as the proportions were over 70% both in 2011 and 2016.

The individuals in the weighted sample became better educated, as indicated by the upward trend in the proportion of financially healthy individuals. The share with no formal education had a decrease in FH from 52.68% in 2011 to 47.32% in 2016. Significantly, the share with a tertiary education and vocational training had the highest increase in FH from 84.39% in 2011 to 94.99% in 2016; and 81.49% in 2011 to 98.31% in 2016, respectively.

In relation to marital status, the results show that being married or living together with a partner is associated with good FH, which increased from 69.73% in 2011 to 74.79% in 2016. Similarly, the proportion of divorced or separated individuals experienced the highest level of FH and had the largest increase from 65.86% in 2011 and 83.68% in 2016. Looking at geo-type, there was

an improvement in FH for both individuals residing in urban and rural areas. Those residing in urban areas had a FH increase from 65.09% in 2011 to 70.36% in 2016, for those residing in rural areas, there was a FH increase from 47.54% in 2011 to 52.56% in 2016. These findings are consistent with the study by FinAccess (2019) where the researchers found that more affluent (urban) segments of the population had better FH than poorer (rural) segments of the population.

Finally, the last five rows of Table 4.11 show the relationship between FH and the FH index quintile variable. The results illustrate that the poorest quintiles (40^{th} percentile) had zero possibility to be financially included in 2011, whilst the non-poor quantile (60^{th} percentile) were a 100% most likely to be financially included. However, the poor quantile 2 experienced a significant FH probability from zero to 56.91% in 2016.

In conclusion, Table 4.11 suggests that the following individuals were associated with a higher likelihood of good FH: the profile of an individual with good FH shows as an employed, married, White male, aged 36 – 45, residing in an urban area in either Gauteng, the Western Cape or KwaZulu Natal, with a tertiary education, and must come from the upper quantile.

4.2.6 Other Descriptive Findings

This following sub-section comprises further analysis to fully answer the relationship between FI and FH. It begins by a 2×2 matrix on the FI and FH status, followed by percentage share of working-age population by FI and FH status by demographic statistics, and finally a probit regression on FH likelihood, including FI dummy as an explanatory variable.

Table 4.12 below indicates that for the financially included individuals, 75.63% of them enjoyed good FH in 2011 and this proportion increased to 79.67% in 2016. When the focus changed to financial exclusion in 2011, 65.28% of the weighted sample had poor FH, this share increased to nearly 70% in 2016. Therefore, this table suggests that good FH likelihoods are more pronounced when an individual has a higher level of FI.

Table 4.12: 2x2 Matrix on the relationship between Financial Inclusion and Financial Health status, row totals

2011			
	Good financial health	Poor financial health	
Financially included	75.63	24.37	100.00
Financially excluded	34.72	65.28	100.00
	60.00	40.00	100.00
2016			
	Good financial health	Poor financial health	
Financially included	79.67	20.33	100.00
Financially excluded	31.56	68.44	100.00
	65.71	34.29	100.00

Source: Author's calculations using FinScope data.

Next, Table 4.13 shows the cell totals of the relationship between FI and FH status. The cell totals show the percentage share difference in FI from individuals' FH status; in other words, given the FH status of individuals, the percentage of them are financially included and financially excluded. The best category, those financially included, who enjoyed good FH – rising from 45.36% in 2011 to 56.55% in 2016, and the worst category, those financially excluded and suffered poor FH – dropping from 26% in 2011 to 19% in 2016.

Table 4.13: 2x2 Matrix on the relationship between Financial Inclusion and Financial Health status, cell totals

2011			
	Good financial health	Poor financial health	
Financially included	45.36	14.62	59.98
Financially excluded	13.89	26.13	40.02
	59.25	40.75	100.00
2016			
	Good financial health	Poor financial health	
Financially included	56.55	14.43	70.98
Financially excluded	9.16	19.86	29.02
	65.71	34.29	100.00

Source: Author's calculations using FinScope data.

Table 4.14: Percentage share of working-age population by Financial Inclusion and Financial Health status by demographic characteristics (%), row totals

	2011				2016			
	[I]	[II]	[III]	[IV]	[I]	[II]	[III]	[IV]
Province								
Western Cape	16.03	10.31	14.32	59.34	16.21	6.95	14.94	61.89
Eastern Cape	31.16	14.19	18.35	36.30	29.60	6.09	19.33	44.97
Northern Cape	26.71	10.06	23.71	39.52	26.55	10.46	21.61	41.38
Free State	31.15	15.30	10.17	43.37	31.67	10.37	15.29	42.66
KwaZulu-Natal	31.90	17.26	11.81	39.03	14.25	7.71	15.00	63.03
North-West	37.25	7.94	18.29	36.52	24.38	17.22	15.46	42.94
Gauteng	15.29	11.13	13.33	60.25	12.04	7.87	10.10	69.99
Mpumalanga	34.03	15.14	15.43	35.13	21.02	12.47	13.52	52.99
Limpopo	28.35	19.90	16.49	35.25	29.34	12.07	16.31	42.28
Age Cohort								
16 – 25 years	40.34	20.15	12.45	27.06	21.15	7.82	15.49	55.53
26 – 35 years	21.53	8.79	19.03	50.65	18.22	8.54	11.71	61.53
36 – 45 years	17.95	10.70	13.82	57.54	19.49	12.52	11.41	56.58
46 – 55 years	21.97	14.26	14.51	49.27	19.30	7.75	21.54	51.41
56 – 65 years	15.45	13.95	11.12	59.48	21.46	13.80	15.66	49.09
Race								
African	29.40	15.56	15.55	39.48	22.33	10.62	15.29	51.76
Coloured	22.37	13.15	16.50	47.99	22.63	8.46	18.74	50.17
Indian/Asian	21.38	8.27	7.18	63.18	17.25	5.12	13.51	64.11
White	5.25	3.00	7.49	84.25	3.78	2.19	6.17	87.87
Gender								
Male	27.12	11.90	14.22	46.76	20.17	7.28	11.65	60.91
Female	25.22	15.71	14.99	44.08	19.60	10.74	16.77	52.88
Employment Status								
Employed	10.54	5.38	13.60	70.49	11.69	5.51	12.34	70.47
Unemployed	40.69	16.91	17.93	24.47	42.94	16.90	14.93	25.23
Economically inactive	33.84	24.25	12.20	29.70	21.55	12.15	19.56	46.74
Educational Attainment								
No formal education	36.53	29.80	10.79	22.88	48.65	10.58	7.17	33.59
Primary education	40.55	24.16	12.01	23.28	42.41	17.69	21.35	18.55
Secondary education	27.66	13.76	16.16	42.42	19.50	9.38	15.62	55.50
Other/Vocational Training	10.11	7.01	8.40	74.49	0.00	5.63	1.69	92.68
Tertiary education	5.52	3.38	10.09	81.01	0.68	0.51	4.32	94.49
Marital Status								
Married/Living together	16.00	10.60	14.27	59.13	13.23	8.72	11.98	66.07
Divorced/Separated	16.91	12.29	17.26	53.54	11.32	5.95	5.00	77.72
Widowed	18.04	18.05	12.99	50.92	22.24	10.97	18.76	48.04
Single/Never Married	33.46	15.66	14.81	36.06	26.14	9.42	16.48	47.97
Geographical Location								
Urban formal/Informal	20.26	11.69	14.65	53.40	15.74	7.54	13.90	62.82
Rural/Tribal	37.90	18.31	14.56	29.23	30.84	13.48	15.84	39.84

Source: Author's calculations using FinScope data.

Group [I]: Financially excluded and poor financial health [Most hopeless group]

Group [II]: Financially excluded and good financial health

Group [III]: Financially included and poor financial health

Group [IV]: Financially included and good financial health [Most privileged group]

To provide even further analysis of the relationship between FI and FH, the working-age population is divided into the following four groups, based on their FI and FH status:

- Group [I]: Financially excluded and poor financial health [Most vulnerable group]
- Group [II]: Financially excluded and good financial health
- Group [III]: Financially included and poor financial health
- Group [IV]: Financially included and good financial health [Most privileged group]

Table 4.14 above presents information on the proportions of the working age population by FI and FH status. The results in the table indicate that, among all provinces, Gauteng and the Western Cape were the best performing provinces, with over 60% of their residents in group [IV] during the study period. Mpumalanga was the most disadvantaged province in 2011, with the lowest proportion of people belonging to group [IV] (35.13%), and highest share belonging to group [I] (34.03%). In 2016, Limpopo was the most disadvantaged province, with the lowest proportion of their residents belonging to group [IV] (42.28%). Free State had the highest proportion of residents in group [I] in 2016 (31.67%). KwaZulu-Natal improved significantly during the study period, as the group [IV] share of residents increased from 39.03% in 2011 to 63.04% in 2016.

The table also offers results by age cohorts. The group [IV] percentage share of individuals aged between 16 – 25 years was lowest in 2011 (27.06%). The group [IV] percentage share ranged between 50% – 59% for individuals aged between 26 – 65 years in 2011. Interestingly, in 2016, the group [IV] percentage share showed significant improvement in the younger age cohorts, particularly those aged between 16 – 25 years (55.53%). Individuals aged 26 – 35 years were the most privileged in 2016 in the group [IV] (61.53%), from having the highest share in group [I] in 2011 (40.34%).

As far as race is concerned, a significantly high proportion of Whites belonged to group [IV] (2011: 84.25%; 2016: 87.87%); they were the most privileged race during the study period. All race groups displayed improvement as group [IV] increased during the study period, Africans had the greatest increase (2011: 39.48%; 2016: 51.76%). Additionally, the group [I] share remained the highest for Africans, despite a decrease from 29.40% to 22.33%. Looking at gender results, the group [I] share decreased for both genders, and the group [IV] share

increased for both male and female during the study period. The group [IV] share was relatively higher for males.

As far as employment status is concerned, the results show that individuals who were unemployed were the most disadvantaged and held the highest share in group [I] (2011: 49.69%; 2016: 42.94%). The unemployed were the most vulnerable group as a very low proportion of them belonged to group [IV] (2011: 24.47%; 2016: 25.23%). On the other hand, those who were employed shared the most privilege in group [IV] (2011: 70.49%; 2016: 70.47%). This indicates that the employed are the most privileged as their group [IV] remained constant over the study period. Individuals who were economically inactive had a significant increase in group [IV] (2011: 29.70; 2016: 47.76%). Therefore, it can be assumed that unemployment is associated with a lower probability of FI and good FH.

As one moves across to educational attainment categories, the group [IV] share increased during the study period, except for primary level education. The group [IV] share for primary level qualification holders decreased from 23.28% in 2011 to 18.55% in 2016. The higher the educational attainment category, the greater the share increase for group [IV]. Individuals with a tertiary level education increased from 81.01% in 2011 to 94.49% in 2016. This suggests that higher educational attainment is associated with a higher FI and FH likelihood. Furthermore, for those who were single or never married, a relatively greater proportion of them belonged to group [I], but a smaller share in group, compared to those who were married/cohabiting or divorced/separated during the study period. Those who were divorced or separated shared a higher proportion in group [IV] (2011: 53.54%; 2016: 77.72%).

As far as geography is concerned, the urban setting was the most privileged geographic location, having the highest share in group [IV] (2011: 53.40%; 2016: 63.82%). While the proportion of individuals residing in rural settings was relatively lower in group [IV] in both years, the share still increased by 10 percentage points (2011: 29.23%; 2016: 39.84%).

In summary, the findings in Table 4.14 suggest that the following individual(s) were more likely to be both financially included and have good financial health: male, White, married/cohabiting, between 26 – 35 years, with a tertiary education, living in Gauteng, KwaZulu-Natal or the Western Cape during the time of the study.

4.3 Econometric Findings

This following sub-section outlines the results for the probit and bivariate probit regressions. The probit regressions are used to test for the financially excluded probability as well as the poor FH probability. The bivariate probit regression is run to test the relationship between financial exclusion and poor FH.

Regarding the OLS regression on the FII located in Appendix, the results in Table A7 indicate that White elderly individuals residing in urban areas in the Western Cape, those with a higher educational attainment, enjoyed a significantly higher FII. The data in the table also shows that the unemployed or economically inactive youth between the ages of 16 – 25 years old had the largest negative coefficients during the study period and thus were the factors largely contributing negatively to the FII. Being an African with a low educational attainment also had a significantly negative impact on the FII.

Table 4.15 below presents the results of the probit regressions on FI likelihood. On a provincial level, the results are somewhat mixed. KwaZulu-Natal residents were significantly less likely to be financially included in 2011, compared to their Western Cape counterparts, and in 2016, they were more likely to be financially included, compared to those from the Western Cape. The KwaZulu-Natal residents showed a significant improvement in FI likelihood over the years. The Free State residents showed the least FI likelihood in 2016 and were less likely to be financially included, compared to their reference Western Cape counterparts in 2016.

Moving over to age cohorts, all the age dummy variables were statistically significant and somewhat similar. Individuals aged between 16 – 25 years old showed the least FI likelihood in 2011, compared to their reference group, followed by the 46 – 55 years age cohort. In 2016, the 36 – 45 years age cohort had the least FI likelihood, followed by the 16 – 25 years age cohort. The 46 – 55 years age cohort showed the greatest improvement in FI likelihood, from having the second least FI likelihood in 2011 to having the most FI likelihood in 2016, compared to their reference age group (56 – 65 years).

Table 4.15: Probit regressions on Financial Inclusion likelihood

	2011	2016	2011	2016
	Coefficient		Marginal effect	
Province: Eastern Cape	0.0548	0.0231	0.0199	0.0069
Province: Northern Cape	0.0206	-0.1009	0.0075	-0.0313
Province: Free State	-0.1996	-0.3405***	-0.0757	-0.1127***
Province: KwaZulu-Natal	-0.2625**	0.3371**	-0.0991**	0.0915**
Province: North-West	-0.0534	-0.2159	-0.0198	-0.0690
Province: Gauteng	-0.0114	0.0878	-0.0042	0.0259
Province: Mpumalanga	-0.1215	-0.0007	-0.0456	-0.0002
Province: Limpopo	0.1386	0.0945	0.0498	0.0275
Age Cohort: 16 – 25 years	-0.8453***	-0.1739	-0.3186***	-0.0529
Age Cohort: 26 – 35 years	-0.4579***	-0.1611	-0.1734***	-0.0496
Age Cohort: 36 – 45 years	-0.4351***	-0.1979	-0.1663***	-0.0619
Age Cohort: 46 – 55 years	-0.4788***	0.2101	-0.1847***	0.0590
Race: African	-0.6783***	-0.3846***	-0.2247***	-0.1069***
Race: Coloured	-0.6485***	-0.5422***	-0.2519***	-0.1854***
Race: Indian/Asian	-0.6838***	-0.8333***	-0.2668***	-0.3031***
Gender: Female	0.2355***	0.1635**	0.0867***	0.0492**
Employment Status: Unemployed	-0.9724***	-0.9842***	-0.3646***	-0.3435***
Employment Status: Economically inactive	-1.1471***	-0.5906***	-0.4309***	-0.1959***
Educational Attainment: No formal education	-1.5647***	-2.0826***	-0.5409***	-0.6874***
Educational Attainment: Primary education	-1.6754***	-2.0027***	-0.5821***	-0.6833***
Educational Attainment: Secondary education	-0.8851***	-1.2865***	-0.2901***	-0.2983***
Educational Attainment: Other/Vocational	-0.3335	-0.6343	-0.1286	-0.2255
Marital Status: Divorced/Separated	-0.0454	0.0208	-0.0169	0.0062
Marital Status: Widowed	0.1176	0.0520	0.0423	0.0154
Marital Status: Single/Never married	-0.2481***	-0.3221***	-0.0905***	-0.0978***
Marital Status: Don't know	Omitted	Omitted	Omitted	Omitted
Geographical Location: Rural	0.3426***	-0.3162***	0.1283***	-0.0996***
Constant	2.8561***	2.8589***	N/A	N/A
Sample Size	3 499	3 153	3 499	3 153
Pseudo R-squared	0.2652	0.2154	0.2652	0.2154
Observed probability	0.5998	0.7098	0.5998	0.7098
Predicted probability	0.6557	0.7752	0.6557	0.7752
Chi-squared statistic	542.82	427.08	542.82	427.08
Prob. > Chi-squared statistic	0.0000	0.0000	0.0000	0.0000

Source: Author's calculations using FinScope data.

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

Note: Reference categories

- Province: Western Cape
- Age cohort: 56 – 65 years
- Race: White
- Gender: Male
- Employment Status: Employed
- Educational attainment: Tertiary
- Marital status: Married/Living together
- Geographical Location: Urban

Looking at race, all dummy variables were statistically significant in both years. It is vital to note that all race groups were less likely to be financially included in 2011 and 2016, compared to their White counterparts. Indians/Asians shared the least FI likelihood in both 2011 and 2016; in fact, the FI likelihood depreciated from 2011 to 2016 in this race group. Africans shared the second least FI likelihood in 2011, which somewhat improved in 2016. Regarding gender, females were significantly more likely to be financially included, compared to their male counterparts. However, the FI likelihood of females slightly decreased from 2011 to 2016, compared to their male counterparts, although having a positive coefficient.

Regarding the employment status of the respondents, those who were unemployed and economically inactive were less likely to be financially included, compared to their employed counterparts in both 2011 and 2016. In 2011, individuals who were economically inactive were significantly less likely to be financially included, followed by individuals who are unemployed. Both labour market status categories were statistically significant.

In terms of educational attainment, all the dummy variables were statistically significant and had negative coefficients. This means that, compared to the reference category (tertiary education), individuals without a tertiary were less likely to be financially included. Individuals with a primary level education had the least FI likelihood in all education groups, compared to those with a tertiary level education. Moving to marital status, individuals who were single or never married were the only statistically significant group and were less likely to be financially included in 2011, but more likely to be financially included in 2016, compared to their reference group (married). Finally, those living in rural settings were more likely to be financially included in 2011 and less likely to be financially included in 2016, compared to individuals residing in urban areas.

The results indicate that, individuals residing in rural areas aged below 46 – 65 years, from the other three (3) population groups, compared to their White counterparts, those who were unemployed or economically inactive, with a low educational attainment, and single or never married, suffered a significantly lower probability of being financially included. Females were more likely to be financially excluded, compared to the reference category, males. There was an overall increase in the level of FI from 2011 to 2016. It can, therefore, be concluded that employment status was significantly associated with FI with negative coefficients. Being unemployed and economically inactive decreases the likelihood of being financially included, compared to the reference category (being employed). It is also observed that all education

dummy variables had a negative sign and were statistically significant; meaning that, individuals without a tertiary level of education were associated with a significantly lower probability of being financially included.

Moving over to FH, the OLS regression in Table A8 on the FHI located in Appendix, the results indicate that White elder individuals residing in urban areas in the Western Cape, those with a higher educational attainment, enjoyed a significantly higher FII. The table on the FHI also shows that the unemployed or economically inactive youth between the ages of 16 – 25 years old had the largest negative coefficients during 2011 and 2016; thus, the factors largely added negatively to the FHI. Being an African, followed by being a Coloured with a low educational attainment also had a significantly negative impact on the FHI. In terms of the overall OLS regressions results, it can be noted that individuals enjoying better FII and FHI share highly similar characteristics.

Table 4.16 below presents the results of the probit regressions on FH likelihood. On a provincial level, the Northern Cape and North-West were statistically significant in 2011. The Eastern Cape, Northern Cape, Free State, KwaZulu-Natal and Gauteng were statistically significant in 2016. Individuals residing in the Northern Cape and North-West province were significantly more likely to have poor Financial Health in 2011, compared to their reference group (Western Cape), with the North-West residents having the poorest FH likelihood. In 2016, the Gauteng and KwaZulu-Natal residents were more likely to have good FH likelihood, compared to the Western Cape, with Gauteng having the greatest FH likelihood.

Regarding age, all age cohorts were statistically significant in 2011, however, none were statistically significant in 2016. All age cohorts were significantly more likely to have poor FH, compared to their reference cohort (56 – 65 years). Individuals aged between 16 – 25 years had the lowest likelihood of enjoying good FH, followed by those aged between 26 – 35 years. Individuals aged between 36 – 45 years had the least poor FH likelihood in both years, compared to the reference age cohort. Moving to race; all race groups were statistically significant in both years and were overall more likely to have poor FH likelihood, compared to Whites. In 2011, Africans had the poorest FH likelihood, Indians/Asians had the least poor FH likelihood. In 2016, Indians/Asians were significantly more likely to have poor FH, compared to Whites, their FH likelihood depreciated drastically, giving them the poorest FH likelihood. With regards to gender, females were more likely to have good FH, compared to their male counterparts. Females FH likelihood decreased slightly over the two years.

Table 4.16: Probit regression on Good Financial Health likelihood

	2011	2016	2011	2016
	Coefficient		Marginal effect	
Province: Eastern Cape	-0.0798	-0.2702**	-0.0307	-0.0983**
Province: Northern Cape	-0.3198***	-0.2690**	-0.1258***	-0.0989**
Province: Free State	0.0245	-0.2756**	0.0093	-0.1010**
Province: KwaZulu-Natal	-0.0601	0.2378*	-0.0231	0.0786*
Province: North-West	-0.3482***	-0.0544	-0.1368***	-0.0191
Province: Gauteng	0.1279	0.2484**	0.0484	0.0835**
Province: Mpumalanga	-0.1135	0.1096	-0.0439	0.0371
Province: Limpopo	0.1165	-0.0694	0.0438	-0.0245
Age Cohort: 16 – 25 years	-0.5069***	-0.2985	-0.1962***	-0.1052
Age Cohort: 26 – 35 years	-0.4733***	-0.1429	-0.1839***	-0.0504
Age Cohort: 36 – 45 years	-0.2872**	-0.0754	-0.1118**	-0.0265
Age Cohort: 46 – 55 years	-0.3203***	-0.1534	-0.1253***	-0.0549
Race: African	-0.5449***	-0.3353***	-0.1949***	-0.1110***
Race: Coloured	-0.4977***	-0.5456***	-0.1957***	-0.2053***
Race: Indian/Asian	-0.4532**	-0.8177***	-0.1787**	-0.3143***
Gender: Female	0.1996***	0.0495	0.0762***	0.0172
Employment Status: Unemployed	-0.7337***	-0.6341***	-0.2827***	-0.2361***
Employment Status: Economically inactive	-0.5646***	-0.4216***	-0.2196***	-0.1538***
Educational Attainment: No formal education	-0.6554***	-1.4202***	-0.2568***	-0.5167***
Educational Attainment: Primary education	-0.8123***	-1.5659***	-0.3152***	-0.5649***
Educational Attainment: Secondary education	-0.5136***	-0.9491***	-0.1869***	-0.2834***
Educational Attainment: Other/Vocational	0.0284	0.4901	0.0108	0.1458
Marital Status: Divorced/Separated	-0.0992	0.2013	-0.0384	0.0663
Marital Status: Widowed	0.0893	-0.0655	0.0337	-0.0231
Marital Status: Single/Never married	-0.1467**	-0.4034***	-0.0558**	-0.1412***
Marital Status: Don't know	Omitted	Omitted	Omitted	Omitted
Geographical Location: Rural	0.1707**	-0.0516	0.0657**	-0.0180
Constant	1.8937***	2.2557***	N/A	N/A
Sample Size	3 499	3 153	3 499	3 153
Pseudo R-squared	0.1358	0.1700	0.1358	0.1700
Observed probability	0.5925	0.6571	0.5925	0.6571
Predicted probability	0.6159	0.7004	0.6159	0.7004
Chi-squared statistic	352.33	379.33	352.33	379.33
Prob. > Chi-squared statistic	0.0000	0.0000	0.0000	0.0000

Source: Author's calculations using FinScope data.

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

Note: Reference categories

- Province: Western Cape
- Age cohort: 56 – 65 years
- Race: White
- Gender: Male
- Employment Status: Employed
- Educational attainment: Tertiary
- Marital status: Married/Living together
- Geographical Location: Urban

All the coefficients and marginal effects were statistically significant for the employment status in both 2011 and 2016. It is important to note that all employment status dummy variables were significantly less likely to have good FH, compared to individuals who were employed.

Individuals who were unemployed had the poorest FH likelihood in both years, compared to those who were employed. Regarding education, all coefficients and marginal effects were statistically significant in both 2011 and 2016. All educational attainment variables were drastically less likely to have good FH, compared to those with a tertiary education. Individuals with a primary school level education had the poorest FH likelihood in both years. Heading over to marital status, those who were single or never married were the only statistically significant group in both years and were less likely to have good FH, compared to their married counterparts. In terms of geographical location, individuals living in rural areas were more likely to have good FH in 2011, compared to those living in urban areas.

The results show that individuals residing in rural areas aged below 56 – 65 years, individuals from the other three (3) population groups, compared to their White counterparts, those unemployed or economically inactive, with a low educational attainment and never married or single, suffered a higher likelihood of poor FH. Provincially, individuals in the North-West were significantly less likely to have good FH in 2011 and in 2016; Gauteng residents were more likely to have good FH, compared to the reference province (Western Cape). There was an overall increase in the likelihood of good FH from 2011 to 2016. Therefore, it can be concluded that employment status was significantly associated with poor FH with negative coefficients. Being unemployed and economically inactive increases the likelihood having poor FH, compared to being employed. All educational attainment dummy variables had a negative sign and were statistically significant, suggesting that when comparing to the reference category, individuals without tertiary level education were associated with a significantly greater probability of having poor FH.

The results of the bivariate probit regressions on FI and FH likelihoods are presented in Table 4.17. This regression is run to test the relationship between FI and FH. One drawback of this bivariate model is that only coefficients (but not marginal effects) can be derived. The results of the coefficients of Table 4.14 remain highly similar with Table 4.15 (probit regression on FI) and 4.16 (probit regression on FH), even after running the regression as a bivariate probit instead of two separate probits. Firstly, the fewer coefficients in both regressions are statistically significant.

Table 4.17: Bivariate probit regressions on Good Financial Health and Financial Inclusion likelihoods

	Good Financial Health		Financial Inclusion	
	2011	**2016**	**2011**	**2016**
Province: Eastern Cape	-0.0737	-0.2693**	0.0713	0.0413
Province: Northern Cape	-0.3127***	-0.2709**	0.0395	-0.1331
Province: Free State	0.0282	-0.2741*	-0.1885	-0.3337**
Province: KwaZulu-Natal	-0.0570	0.2374*	-0.2519**	0.3446**
Province: North-West	-0.3449***	-0.0581	-0.2478	-0.2115
Province: Gauteng	0.1306	0.2490**	0.0079	0.0863
Province: Mpumalanga	-0.1088	0.1080	-0.1004	-0.0021
Province: Limpopo	0.1138	-0.0668	0.1517	0.0848
Age Cohort: 16 – 25 years	-0.5033***	-0.2887	-0.8540***	-0.1417
Age Cohort: 26 – 35 years	-0.4741***	-0.1345	-0.4716***	-0.1301
Age Cohort: 36 – 45 years	-0.2858**	-0.0642	-0.4449***	-0.1781
Age Cohort: 46 – 55 years	-0.3236***	-0.1339	-0.4859***	0.2145
Race: African	-0.5574***	-0.3426***	-0.6915***	-0.4045***
Race: Coloured	-0.5101***	-0.5520***	-0.6539***	-0.5583***
Race: Indian/Asian	-0.4585**	-0.8152 ***	-0.6834***	-0.8429***
Gender: Female	0.1973***	0.0509	0.2311***	0.1499**
Employment Status: Unemployed	-0.7358***	-0.6399***	-0.9875***	-0.9826***
Employment Status: Economically inactive	-0.5694***	-0.4317***	-1.1521***	-0.5814***
Educational Attainment: No formal education	-0.6609***	-1.4133***	-1.5888***	-2.1038***
Educational Attainment: Primary education	-0.8134***	-1.5484***	-1.6821***	-2.0023***
Educational Attainment: Secondary education	-0.5153***	-0.9408***	-0.9083***	-1.2969***
Educational Attainment: Other/Vocational	0.0297	0.4046	-0.3370	-0.6516
Marital Status: Divorced/Separated	-0.1008	0.2143	-0.0797	0.0242
Marital Status: Widowed	0.0925	-0.0747	0.0916	0.0585
Marital Status: Single/Never married	-0.1478**	-0.4083***	-0.2555***	-0.3242***
Marital Status: Don't know	Omitted	Omitted	Omitted	Omitted
Geographical Location: Rural	0.1733**	-0.0494***	0.3461***	-0.3114***
Constant	1.9066***	2.2517***	2.9057***	2.8667***
Sample size	3 499	3 153	3 499	3 153
Chi-squared statistic	753.80	697.66	753.80	697.66
Prob. > Chi-squared statistic	0.0000	0.0000	0.0000	0.0000

Source: Author's calculations using FinScope data.

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

Note: Reference categories

- Province: Western Cape
- Age cohort: 56 - 65 years
- Race: White
- Gender: Male
- Employment Status: Employed
- Educational attainment: Tertiary
- Marital status: Married/Living together
- Geographical Location: Urban

The results of the table indicate that the following dummy variables were used in both regressions to test for FI and FH likelihoods since they were statistically significant during the study period: a woman of any race, who is formally employed, has no formal education or up

to a secondary qualification, single, and who resides in a rural area. The coefficients in the regressions show a positive relationship between FI and good FH, implying that the likelihood of having good FH is if you are financially included. This further implies that poor FH is more stricken with people who are financially excluded.

Table 4.18: Probit regression on Financial Health likelihood, including Financial Inclusion dummy as additional explanatory variable.

	2011	2016	2011	2016
	Coefficient		Marginal effect	
Province: Eastern Cape	-0.0918	-0.3024**	-0.0353	-0.1099**
Province: Northern Cape	-0.3390***	-0.2556*	-0.1334***	-0.0932*
Province: Free State	0.0799	-0.1809	0.0302	-0.0649
Province: KwaZulu-Natal	0.0067	0.1488	0.0025	0.0498
Province: North-West	-0.3549***	0.0201	-0.1394***	0.0069
Province: Gauteng	0.1389	0.2456**	0.0524	0.0819**
Province: Mpumalanga	-0.0849	0.1229	-0.0327	-0.0412
Province: Limpopo	0.0815	-0.1019	0.0308	-0.0359
Age Cohort: 16 – 25 years	-0.3039**	-0.2591	-0.1174**	-0.0906
Age Cohort: 26 – 35 years	-0.3882***	-0.0942	-0.1506***	-0.0329
Age Cohort: 36 – 45 years	-0.1919	0.0012	-0.0743	0.0004
Age Cohort: 46 – 55 years	-0.2181*	-0.2179	-0.0849*	-0.0782
Race: African	-0.4500***	-0.2643**	-0.1631***	-0.0878**
Race: Coloured	-0.4114***	-0.4446***	-0.1616***	-0.1650***
Race: Indian/Asian	-0.3460*	-0.6379***	-0.1362*	-0.2433***
Gender: Female	0.1510**	0.0025	0.0577**	0.0009
Employment Status: Unemployed	-0.5209***	-0.3393***	-0.2014***	-0.1227***
Employment Status: Economically inactive	-0.3049***	-0.2818**	-0.1182***	-0.1008**
Educational Attainment: No formal education	-0.3296	-0.9701***	-0.1296	-0.3715***
Educational Attainment: Primary education	-0.4668***	-1.1611***	-0.1834***	-0.4369***
Educational Attainment: Secondary education	-0.3699***	-0.7631***	-0.1368***	-0.2338***
Educational Attainment: Other/Vocational	0.0870	0.5063	0.0328	0.1482
Marital Status: Divorced/Separated	-0.0899	0.2239	-0.0347	0.0727
Marital Status: Widowed	0.0699	-0.1054	0.0264	-0.0371
Marital Status: Single/Never married	-0.0944	-0.3445***	-0.0359	-0.1198***
Marital Status: Don't know	Omitted	Omitted	Omitted	Omitted
Geographical Location: Rural	0.0918	0.0532	0.0352	0.0182
Financially included	0.7801***	0.9941***	0.2967***	0.3622***
Constant	0.9740***	1.1664***	N/A	N/A
Sample Size	3 499	3 153	3 499	3 153
Pseudo R-squared	0.1813	0.2414	0.1813	0.2414
Observed probability	0.5925	0.6571	0.5925	0.6571
Predicted probability	0.6169	0.7049	0.6169	0.7049
Chi-squared statistic	507.70	539.66	507.70	539.66
Prob. > Chi-squared statistic	0.0000	0.0000	0.0000	0.0000

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

Table 4.18 above is virtually the same as Table 4.13, except a FI dummy is included as an additional explanatory variable to test for FH likelihood. The signs and statistical significance of the explanatory variables are more or less the same between Tables 4.16 and 4.18, even after adding the financial included dummy. More importantly, the sign of the financially included

dummy in the above regression was positive in both 2011 and 2016, and remained statistically significant in both years. This result implies a positive correlation between FI and good FH.

4.5 Conclusion

This chapter presented the empirical findings for this study. First, the financial sector in South Africa was overall inclusive during the study period. The overall majority of individuals were enthusiastic about dealing and being in control of their personal finances.

Gauteng and the Western Cape were the most privileged provinces whereas the Northern Cape and North-West were the most disadvantaged. Additionally, Whites living in urban settings with a high education and who are formally employed, enjoyed better FI and FH. On the other hand, Africans aged 16 – 15 years, residing in rural servings with low educational attainment suffered low FI and poor FH. The overall FI proportion increased from 60% in 2011 to 70.98% in 2016. The results also indicated that the financially healthy proportion increased from 60% in 2011 to 65.71% in 2016. White, married males residing in urban areas in Gauteng, KZN, or the Western Cape enjoyed a higher FI likelihood and FH likelihood. Lastly, the results suggested a positive relationship between FI and good FH.

The regression analysis demonstrated that Gauteng was the most privileged province as its FI likelihoods and FH likelihoods were lower than the Western Cape (reference category). Being African, with low educational attainment, unemployed and single/never married, sharpened the probability of financial exclusion and poor FH. Additional findings demonstrated that FI and FH was dominant among White, elderly individuals of the Western Cape with higher educational attainment.

CHAPTER FIVE: CONCLUSION

5.1 Introduction

This chapter concludes the study. First, Section 5.2 presents the review of findings. This sub-section starts by briefly reviewing key concepts, theories and empirical findings discussed in the previous chapters. This sub-section includes key research gaps concerning this study, the data and methodology applied. Finally, after briefly highlighting the key findings of this study, Section 5.3 concludes the study with the most pertinent recommendations for policy and the areas of future research that were identified in the study.

5.2 Review of Findings

Various key concepts were discussed in Chapter Two, such as FI, financial exclusion, financial literacy, and FH. Additionally, three key theories used to build this paper, include the Consumer Choice Theory, Capability Approach Theory and Behavioural Choice Theory. Upon reviewing the past empirical studies, the researcher identified key research gaps in analysing FI and FH. First, virtually none of the previously conducted local studies examined financial health, although they did examine financial inclusion. Empirical research on financial health in South Africa is limited and far from complete. Additionally, of the local studies that examined FI, the datasets employed did not provide comprehensive information on all possible dimensions of FI, and thus derived the FII using only three dimensions.

The FinScope South Africa datasets of 2011 and 2016 were used to conduct this study. The data provided information on all four possible dimensions for financial health and financial inclusion, facilitating the derivation of the FII and FHI to examine their relationship. PCA was applied to derive the FII and FHI. The 40^{th} percentile FII in 2011 was used to distinguish the financially included individuals from financially excluded in both 2011 and 2016. The same approach was used to distinguish individuals with poor FH from those with good FH. Furthermore, probit regressions were run to measure the likelihood of being financially included and having good FH. Ordinary Least Squares (OLS) regressions were run for FI and FH to identify the nature of the relationship between the independent and dependent variables. Finally, a bivariate regression was run to test the relationship between FI and FH.

When compared to other developing economies, South Africa enjoys better FI likelihood. However, where individuals live in less affluent areas, strained economic conditions supress attempts to manage money through financial strategies, making good FH impossible and not relevant. Therefore, close analyses is required to fully understand the conditions in which financial inclusion contributes to FH in South Africa.

During the study period, it was discovered that the vast majority of South Africans are integrated into the financial system as over 60% of them had bank accounts or bank cards; over 60% of them had good FH. It was also discovered that one if the barriers to FI was dependent on individual characteristics. Unemployment and financial illiteracy negatively impacted access and usage of financial services. On FH, it was also observed that dealing with personal finances proved to be stressful and a real burden, which negatively impacted FH.

Overall, the analysis demonstrates that being an African female with a low educational attainment, residing in rural settings, and unemployed, endorsed lower financial inclusion and financial health likelihoods. A low educational attainment and unemployment were of high influence. On the contrary, being an elderly White male, with a high educational attainment, employed, residing in in the urban areas of Gauteng and the Western Cape, favoured higher FI and good FH likelihoods.

The probit regressions on FI likelihoods and FH likelihoods showed a positive sign for the female dummy, suggesting that females are more likely to be financially included and associated with good financial health. All race dummies showed negative signs, suggesting that Whites were more privileged in both FI and FH likelihoods. In addition, being single/never married is associated with a lower probability of being financially included and being financially healthy. The OLS regressions on FII and FHI indicted that the age cohorts, race, employment status, educational attainment, marital status (single/never married) and geo location dummy variables showed negative signs, meaning that they negatively affected FII and FHI.

The bivariate probit regression on FI and FH likelihoods demonstrated that African, Coloured, Indian/Asian, unemployed, economically inactive, low educational attainment and single/never married variables exhibited a negative sign, indicating that there is a negative association with FI and good FH.

5.3 Conclusion and Policy Recommendations

This study has developed a basis for a more comprehensive understanding of the factors that form the relationship between FI and FH, particularly FH, and the capacity of individuals to experience economic resilience. These significant initial steps lay the foundation for future research that examines not only why individuals make the choices they do, but also the personal, systemic, and structural factors that hinder or enable opportunities.

The ethnic groups, educational attainment levels, and geography of the population appear to be the key fundamental features for FI in the South African context. Presumptively, the financial services uptake figures remained low for poorly educated Africans, considering that many of them reside in rural settings. Financial education should be provided in a more nuanced way to target the specific financial literacy needs of mainly Africans in rural settings (International Labour Office, 2016). Financial literacy can empower individuals by providing them with the understanding of the advantages and risks of using financial services; ensure they are aware of their rights and responsibilities as consumers and build digital capabilities. Policy makers can roll out campaigns that will raise awareness of the benefits and risks of using various financial products, services, and distribution channels to meet specific financial needs (FSCA, 2020). It is important for authorities to ensure that education is intensified for the people in SA so they can effectively participate in the financial sector.

The policy implications from the findings are that FI, as measured in terms of bank account ownership, does not create a significant problem in SA. However, authorities in SA can improve formal account ownership by tackling barriers related to geographical access, electronic access, and product access among others, which are all impactful in the long term. This should also consider economic, social, cultural, gender and religious factors that play a role. Many individuals are not fully acquiring the benefits from the financial products and services currently available. These individuals are, however, promptly gaining access to financial services through innovative financial products, such as mobile phone applications, which leverage technology and allows financial institutions to reach customers in remote areas in a secure and cost-efficient manner (National Treasury, 2020).

Policy makers can create an enabling and resilient digital infrastructure that provides cost-effective access to financial services. Authorities should also consider the definite needs of the underserved and unserved population, especially women and youth, assisted by disaggregated

data and consultation with relevant stakeholders for the most effective policy design. Where relevant, regulatory, and legal reforms should be considered to support a more inclusive digital financial economy that promotes innovation whilst also addressing disparities in access due to socioeconomic and cultural inequalities, as well as barriers to economic empowerment. Whilst identifying the opportunities of digital financial services to advance FI, it is essential to address and mitigate the risks, particularly those who are in vulnerable groups (GPFI, 2020)

Authorities need to provide the foundation for young individuals entering the labour market to address racial, gender, and geographical challenges to educational attainment, and develop the necessary skills needed. Consumer education initiatives can be launched with the aim to help individuals use financial services efficiently and affordably by communicating information about financial products and services and increasing awareness of digital platforms. These initiatives could target low-income individuals and households, include content tailored for unserved and underserved people. Awareness could be raised through edutainment, using digital media, social media, radio, and television, community outreach, and in-branch training. (The Standard Bank of South Africa, 2019).
Expanding affordable, reliable internet connectivity can potentially expand access to digital financial services to underserved individuals, which could boost FI. With internet access, smartphones, and computers, particularly in rural areas, any negative effects from the lack of formal financial products and services are diluted (Friedline, Despard & Birkenmaier, 2018).

The primary factor to overall levels of insurance penetration is the significant degree of uptake of funeral insurance. The uptake of other insurance products, such as vehicle insurance, household content insurance and life cover, are low, and expose individuals to multiple risks. The low penetration of non-funeral insurance products may be based the perceived costs of insurance. This indicates that while the necessity for insurance exists in the market, available products may not serve the needs of people. The uptake of formal savings products remains relatively low, and a significant number of people still use informal channels to save. The prevalence of these informal saving groups exhibits the financial discipline of individuals, who may require formal products that are more flexible, affordable, and suitable to their needs (FSCA, 2020).

As a component of FH, a deeper understanding of FH has the potential to support how we approach economic sustainability and social cohesion. Current attempts to aggregate broad social and economic factors, particular policies (FI) and individual behaviours, attitudes, and

skills into one construct are, however, underdeveloped (Bowman, Banks, Fela, & Russell, 2017).

As a steppingstone, policymakers can begin consistently measuring FH. FH measurement can demonstrate how individuals are actively gaining from their relationship to the financial system; by doing so, it provides perceptions beyond conventional socioeconomic indicators and complements the data on access, usage, quality, and welfare of financial services. The information accumulated from examining FH can give an overview of financial lives that require support or offer opportunities for financial services (Rhyne, 2020). When combined with data on access, usage, quality and welfare, FH measures demonstrate whether broad trends in FI are associated with progression in FH. They can also lead to discussions among policymakers through the scope of welfare issues, because they reveal the interrelatedness of the broad spectrum of policies that create the environment in which individuals conduct their financial lives.

A limitation of this study is that it did not include the balanced panel component, including only individuals who took part in all the years used for this study; this is an area for future research. Secondly, this study was only able to provide preliminary evidence that some of the indicators suggested could assist drive-up access, usage and drive-up FI. One of the findings of the study was that, overall, females were less privileged than males between 2011 and 2016. It would be interesting to get qualitative insights into financial uptake decisions among women as well as getting a better understanding of the barriers that prevent women from taking up formal financial services.

Lastly, the study recommends that future research incorporate more advanced analysis methods such as machine learning, using larger demographic coverage of data, and inclusion of newer variables which could be created from primary sources. Additionally, the future research should support technological innovation that enables FI. Enhancing digital innovation in the present era of the Fourth Industrial Revolution has led to the birth of new financial services and products, and new delivery channels that have the potential to facilitate the increase in FI. This can promote the evolution of innovations that serves the needs of the unserved and underserved population.

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APPENDIX

Appendix A: Description of Variables

Table A1: Description of Variables

Variables	Type of variable	Description
Age	Categorical variable	16 – 25years 26 – 35 years 36 – 45 years 46 – 55 years 56 – 65 years (Reference group)
Gender	Dummy variable	Female Male (Reference group)
Race	Categorical variable	African Coloured Asian/Indian White (Reference group)
Educational attainment	Categorical variable	No formal education Primary education Secondary education Other/Vocational training Tertiary education (Reference group)
Employment Status	Dummy variable	Unemployed Economically inactive Employed (Reference group)
Marital Status	Categorical variable	Married/Living Together (Reference group) Divorced/Separated Widowed Single/Never Married Don't Know
Geographical area type	Categorical variable	Rural/Tribal Urban (Reference group)
Financial inclusion	Dummy variable	Financial inclusion Financial exclusion (Reference group)
Financial health	Dummy variable	Good financial health Poor financial health (Reference group)

Table A2: First Principal Components for deriving the financial inclusion index

	2011	2016
Access Dimension		
Overall banking status: have a bank account or bank card	0.3106	0.3139
Overall banking status: used to have a bank account or card in the past	-0.0918	-0.1896
Never had or used a bank account: No proof of residence	-0.0459	-0.0406
Never had or used a bank account: Bank is too far	-0.0315	-0.0406
Never had or used a bank account: No identity document	-0.0441	-0.0437
Never had or used a bank account: Too expensive to have a bank account	-0.0461	-0.0793
Never had or used a bank account: Have access to someone else's account	-0.0392	-0.2183
Never had or used a bank account: Unemployed or retrenched	-0.1614	-0.0062
Never had or used a bank account: Still a student	-0.1205	-0.0807
Never had or used a bank account: Prefer dealing with cash	-0.1061	-0.0286
Find the language used in financial paperwork confusing: Agree	0.1141	-0.0667
Find the language used in financial paperwork confusing: Neither agree nor disagree	-0.0041	0.1204
Usage Dimension		
Used a bank account or bank card	0.3142	0.3327
Used a credit card	0.2325	0.2555
Used overdraft facility	0.1704	0.1941
Used a bank loan	0.2813	0.2413
Used a funeral policy offered by a bank	0.2165	0.1833
Have borrowed in the past 12 months	0.1819	0.1131
Have an insurance policy	0.3303	0.3382
Have medical aid or medical expenses	0.2847	0.2778
Used a funeral cover	0.2461	0.1702
Have a retirement or pension fund	0.3125	0.3105
Currently save money	0.2558	0.2500
Quality Dimension		
Do not understand how banks work	-0.0366	-0.0361
Do not feel comfortable in a bank	-0.0260	-0.0367
Do not understand technology	-0.0327	-0.0300
Do not qualify to open an account	-0.0655	-0.0532
Welfare Dimension		
Dealing with finances is stressful and a real burden: Agree	0.0278	-0.0515
Dealing with finances is stressful and a real burden: Neither agree nor disagree	0.0108	0.1075
Like to be in control of finances and money matters: Agree	0.1444	0.1979
Like to be in control of finances and money matters: Neither agree nor disagree	-0.1076	0.0580
Ensured you are financially secure: Agree	0.1578	0.1087
Ensured you are financially secure: Neither agree nor disagree	-0.0358	0.0859
Proportion of variation explained by the first principal components	15.62%	13.06%

Source: Author's calculations using FinScope data

Table A3: First Principal Components for deriving the financial health index

	2011	2016
Spending Dimension		
You often miss or make late payments for things like rent, municipality bills or loan repayments: Agree	0.0298	0.0549
You often miss or make late payments for things like rent, municipality bills or loan repayments: Neither agree nor disagree	0.0041	0.0442
You frequently have problems making ends meet: Agree	-0.0529	-0.0898
You frequently have problems making ends meet: Neither agree nor disagree	-0.0267	0.0225
You have considered going to see someone to help you with your debt problems: Agree	0.0089	0.0611
You have considered going to see someone to help you with your debt problems: Neither agree nor disagree	-0.0369	0.0452
You have considered cancelling policies to cover debts: Agree	0.0162	0.0687
You have considered cancelling policies to cover debts: Neither agree nor disagree	-0.0275	0.0410
Borrowing Dimension		
Have you borrowed in the past 12 months	0.0608	0.0708
Have you taken goods on credit in the past 12 months	0.1500	0.1980
Do you owe money that has to be repaid	0.2039	0.1624
Reasons for borrowing: To purchase a motor vehicle	0.3102	0.1701
Reasons for borrowing: Home loan, bond or mortgage to buy a house	0.3374	0.1454
Reasons for borrowing: Educational or student loan	0.0979	0.0491
Saving Dimension		
Reasons for saving(s) motivation: In case of an emergency or unplanned cost	0.2369	0.2395
Reasons for saving(s) motivation: Provide for my family if I die	0.2536	0.2547
Reasons for saving(s) motivation: Medical costs	0.1928	0.2185
Reasons for saving(s) motivation: Retirement or old age	0.2613	0.3324
Reasons for saving(s) motivation: Deposit on a house	0.0757	0.0994
Reasons for saving(s) motivation: Funeral costs	0.1708	0.1633
Planning Dimension		
Household contents or possessions insurance	0.3395	0.2981
Income or salary cover	0.2116	0.2408
Life insurance or life cover	0.3631	0.3707
Have a pension fund, provident fund or retirement annuity	0.3467	0.3949
Dealing with finances is stressful and a real burden: Agree	0.0030	-0.1004
Dealing with finances is stressful and a real burden: Neither agree nor disagree	0.0048	0.1874
Ensured you are financially secure: Agree	0.1734	0.2087
Ensured you are financially secure: Neither agree nor disagree	-0.0516	-0.0791
Proportion of variation explained by the first principal components	14.39%	11.52%

Source: Author's calculations using FinScope data

Table A4: Supplementary results for borrowing dimension of FH

	2011	2016
Reasons for not borrowing: I was declined or did not qualify		
Yes	1.52	0.56
No	98.48	99.44
Total	100.00	100.00
Reasons for not borrowing: Don't know about loans or borrowing		
Yes	2.38	0.46
No	97.62	99.56
Total	100.00	100.00
Reasons for not borrowing: The interest is too high		
Yes	7.63	9.65
No	92.37	90.35
Total	100.00	100.00
Reasons for not borrowing: I earn too little/I don't have a job/I do not earn enough income		
Yes	23.25	4.72
No	76.75	96.28
Total	100.00	100.00
Reasons for not borrowing: I don't want to have debt		
Yes	24.35	33.95
No	75.65	66.05
Total	100.00	100.00
Reasons for not borrowing: I have too much debt		
Yes	0.58	0.88
No	99.42	99.12
Total	100.00	100.00
Reasons for not borrowing: I have been blacklisted at the credit bureau		
Yes	0.29	0.22
No	99.71	99.78
Total	100.00	100.00

Source: Author's calculations using FinScope data

Table A5: Supplementary results for saving dimension of FH

	2011	2016
Reasons you don't save or put money away: I prefer to invest in other things, e.g. property, livestock		
Yes	0.35	0.65
No	99.64	99.35
Total	100.00	100.00
Reasons you don't save or put money away: I save in other ways, e.g. keep cash at home		
Yes	1.50	0.38
No	98.50	99.62
Total	100.00	100.00
Reasons you don't save or put money away: I won't be able to access my money if I need it		
Yes	1.36	0.59
No	98.64	99.41
Total	100.00	100.00
Reasons you don't save or put money away: Don't know about investments or savings		
Yes	3.11	0.46
No	96.89	99.54
Total	100.00	100.00
Reasons you don't save or put money away: I don't have money to save or invest		
Yes	23.60	9.07
No	76.40	90.93

Total	100.00	100.00
Reasons you don't save or put money away: I do not have a bank account		
Yes	3.56	2.23
No	96.44	97.77
Total	100.00	100.00
Reasons you don't save or put money away: I don't have a job		
Yes	30.52	14.36
No	69.48	85.64
Total	100.00	100.00

Source: Author's calculations using FinScope data

Table A6: Supplementary results for planning dimension of FH

Reason for not Household contents or possessions insurance: I earn too little to make it worthwhile		
Yes	11.35	12.26
No	88.65	87.74
Total	100.00	100.00
Reason for not Household contents or possessions insurance: Don't trust insurance companies to pay out if I had a claim		
Yes	2.60	2.59
No	97.40	97.41
Total	100.00	100.00
Reason for not Household contents or possessions insurance: I've never been told about it		
Yes	1.97	1.52
No	98.03	98.48
Total	100.00	100.00
Reason for not Household contents or possessions insurance: I do not qualify		
Yes	7.86	0.26
No	92.14	99.74
Total	100.00	100.00
Reasons you don't have life insurance or life cover: I do not qualify		
Yes	0.89	0.26
No	99.11	99.74
Total	100.00	100.00
Reasons you don't have life insurance or life cover: Do not trust life insurance to pay out when I die		
Yes	1.77	2.59
No	98.23	97.41
Total	100.00	100.00
Reasons you don't have life insurance or life cover: It is too expensive		
Yes	15.92	41.98
No	84.08	58.02
Total	100.00	100.00
Reasons you don't have life insurance or life cover: The language used and conditions are too confusing		
Yes	0.60	0.35
No	99.40	99.65
Total	100.00	100.00
Reasons you 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	2.03	1.52
No	97.97	98.48
Total	100.00	100.00

Source: Author's calculations using FinScope data

Table A7: OLS regressions on Financial Inclusion Index

Dependent variable: Financial Inclusion Index		
	2011	**2016**
Province: Eastern Cape	0.0154	0.2488*
Province: Northern Cape	-0.0010	-0.1512
Province: Free State	-0.1185	-0.2758*
Province: KwaZulu-Natal	-0.2984**	0.3563***
Province: North-West	-0.1071	-1.1825
Province: Gauteng	0.0358	0.3010**
Province: Mpumalanga	-0.0222	0.2228
Province: Limpopo	0.0668	0.0978
Age Cohort: 16 – 25 years	-1.2695***	-0.4191**
Age Cohort: 26 – 35 years	-0.7632***	-0.4025**
Age Cohort: 36 – 45 years	-0.6256***	-0.5230***
Age Cohort: 46 – 55 years	-0.4210***	0.1516
Race: African	-1.4908***	-1.0163***
Race: Coloured	-1.3061***	-1.0561***
Race: Indian/Asian	-0.9327***	-0.9115***
Gender: Female	0.1742**	0.1877***
Employment Status: Unemployed	-1.7174***	-1.6053***
Employment Status: Economically inactive	-1.8204***	-1.2048***
Educational Attainment: No formal education	-2.3211***	-2.4862***
Educational Attainment: Primary education	-2.5652***	-2.6222***
Educational Attainment: Secondary education	-1.5481***	-1.8628***
Educational Attainment: Other/Vocational	-0.4505*	-0.2629
Marital Status: Divorced/Separated	-0.3479**	-0.0244
Marital Status: Widowed	0.0481	-0.0482
Marital Status: Single/Never married	-0.4574***	-0.5968***
Marital Status: Don't know	Omitted	Omitted
Geographical Location: Rural	0.3672***	-0.3070***
Constant	4.5564***	3.6020***
Sample Size	3 499	3 153
R-squared	0.5182	0.4487
Adjusted R-squared	1.5819	1.548
F-statistic	95.37	74.33
Prob. > F-statistic	0.0000	0.0000

Source: Author's calculations using FinScope data

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

Note: Reference categories

- Province: Western Cape
- Age cohort: 56 - 65 years
- Race: White
- Gender: Male
- Employment Status: Employed
- Educational attainment: Tertiary
- Marital status: Married/Living together
- Geographical Location: Urban

Table A8: OLS regressions on Financial Health Index

Dependent variable: Financial Health Index		
	2011	**2016**
Province: Eastern Cape	-0.2561**	0.2316*
Province: Northern Cape	-0.2619**	-0.0809
Province: Free State	-0.2254	-0.0109
Province: KwaZulu-Natal	-0.2645**	0.4468***
Province: North-West	-0.3106**	0.1391
Province: Gauteng	-0.0006	0.4887***
Province: Mpumalanga	-0.0825	0.3055**
Province: Limpopo	-0.2133	0.3020**
Age Cohort: 16 – 25 years	-0.7290***	-0.0198
Age Cohort: 26 – 35 years	-0.6523***	0.1061
Age Cohort: 36 – 45 years	-0.3145**	0.1595
Age Cohort: 46 – 55 years	-0.1502	0.0738
Race: African	-1.7718***	-1.4461***
Race: Coloured	-1.5252***	-1.3478***
Race: Indian/Asian	-1.0699***	-1.4864***
Gender: Female	0.0477	0.0018
Employment Status: Unemployed	-0.9351***	-0.8714***
Employment Status: Economically inactive	-0.9590***	-0.7900***
Educational Attainment: No formal education	-1.9242***	-1.5837***
Educational Attainment: Primary education	-2.0659***	-1.9053***
Educational Attainment: Secondary education	-1.4639***	-1.4662***
Educational Attainment: Other/Vocational	-0.5625**	-0.2454
Marital Status: Divorced/Separated	-0.2562	0.0042
Marital Status: Widowed	-0.2373*	-0.1855**
Marital Status: Single/Never married	-0.4807***	-0.5310***
Marital Status: Don't know	Omitted	Omitted
Geographical Location: Rural	0.1089*	-0.1758**
Constant	4.2717***	2.8678***
Sample Size	3 499	3 153
R-squared	0.4061	0.4037
Adjusted R-squared	1.5529	1.3928
F-statistic	43.37	53.48
Prob. > F-statistic	0.0000	0.0000

Source: Author's calculations using FinScope data

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

Note: Reference categories

- Province: Western Cape
- Age cohort: 56 - 65 years
- Race: White
- Gender: Male
- Employment Status: Employed
- Educational attainment: Tertiary
- Marital status: Married/Living together
- Geographical Location: Urban