Financial Inclusion in South Africa: a Quasi-experimental Approach

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This work has not been previously submitted in whole, or in part, for the award of any degree. It is my own work. Each significant contribution to, and quotation in, this dissertation from the work, or works, of other people has been attributed, and has been cited and referenced.

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Abstract

A regression discontinuity was implemented on the National Income Dynamics Study data in order to assess the impact of an exogenous increase in income, simulated by pension eligibility, on the composition of low-income individuals' financial portfolio composition. This was done to facilitate an investigation into the determinants of demand for various formal and informal financial instruments. It was confirmed that this substantial increase in income has a significant effect on the composition of poor individuals' financial portfolios. In addition, several trends emerged: most notably, a stark difference between the response of males and females to this increase in income. It was concluded that the approach of this study provides an effective way to heighten our understanding of the financial lives of the poor, and so to enhance our efforts to alleviate poverty and inequality in South Africa.

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1. Introduction

South Africa is the most developed economy on the African continent and is internationally competitive in many sectors. Despite this, poverty is rampant, and inequality high. A third of South Africans live in rural areas, and over 40% of the adult population earn less than R2000 per month (FinScope, 2011). Statistically, the country ranks 123rd on the United Nations Development Programme's Human Development Index (HDI) and has an Income Gini Coefficient of 57.8 (UNDP, 2011). Much of the inequality in South Africa is remnant of the injustices of apartheid, and so continues to be largely racially based and exacerbated by vast disparities in the provision of social services and infrastructure. The financial sector, in particular, continues to display the effects of the country's hostile past, with low-income individuals having access to a very different set of products and services to higher-income individuals.

The question of whether increased access to and more appropriate design of financial services for low-income individuals can contribute to development and the alleviation of poverty has gained heightened attention in recent years. Although the theory suggests that this causal link exists, the empirical evidence is mixed. Nonetheless, there is sufficient reason to warrant attempts to enhance access to finance for low-income individuals, which is discussed in this paper.

Increasing access and improving the appropriateness of financial services for the poor requires a deepening of our understanding of the financial behaviour of the poor and a reimagining of financial products and services to suit their needs and

preferences. This paper seeks to contribute to our understanding of the financial behaviour of the poor by exploring how people's financial portfolios, understood broadly to include both formal and informal instruments, change in response to an exogenous increase in income; a major determinant of access to finance. The increase in income is simulated by the advent of eligibility to receive the state Old Age Pension (OAP), which conveniently targets the most vulnerable segment of the population. A quasi-experimental regression discontinuity design is used to determine these changes in portfolio composition in order to gain some insight into the nature of low-income individuals' demand for and the constraints on their access to finance. After an initial analysis of the results, the investigation is repeated with a set of control variables, so as to gain a more detailed picture. The study utilises data from the National Income Dynamics Study (NIDS), which is described later on in the paper.

Previous studies on financial access for the poor have tended to have a very narrow understanding of what constitutes financial access, and so have missed the intricacies of the financial lives of the poor. On the other hand, smaller-scale studies that have been more sensitive to informal innovations are limited by small sample sizes, making generalisations problematic. Furthermore, there has been insufficient focus on the demand-side of financial access: a result of the assumption that constraints on access are predominantly a feature of supply-side inadequacies. This paper contributes to the literature on financial access among the poor by conducting a study of demand-side characteristics on a large dataset. In other words, it takes a broad understanding of financial instruments, as

informed by smaller-scale studies, and combines this with a substantial dataset and a methodology more common to larger-scale studies.

The paper begins by providing an introduction to the history and nature of the financial sector in South Africa, before detailing what we know already about the financial behaviour among the country's low-income households. It goes on to determine the importance of financial access for development and poverty alleviation theoretically, empirically, and philosophically. Next, a brief historical background on the OAP is given, and the existing literature on pension effects is reviewed in order to provide a methodological context for the present study. The data, hypotheses, summary statistics and econometric approach are then described, before an extensive discussion of the findings is conducted. Finally, the implications of these results are briefly explored and recommendations for further research are presented.

It is concluded that the research approach proposed and presented in this paper is a useful way of gaining insight into the determinants of demand for finance among low-income individuals. The study successfully reveals several factors to be instrumental determinants of the demand for finance. The most notable finding, however, is the difference in the responses of males and females to the increase in income represented by eligibility for receipt of the OAP. Based on these gender differentials, it is purported that improved research into the barriers to access is important for the project of innovation of financial instruments and for the effectiveness of policy in facilitating access to finance for poor individuals so that they have the tools to better manage their small and unreliable incomes.

2. Defining financial inclusion

Before embarking on a study around access to finance, it is necessary to establish what is meant by the terms financial access and financial inclusion. The two are closely related. Financial inclusion, here, refers to individuals who have and/or make use of financial products and/or services, both formal and informal (FinScope, 2011: 1). The nature and relevance of informal products and services is crucial for the current paper and will be explored in detail later on. Financial access, then refers to the ability of individuals to gain access to these products and services, taking into account that some individuals self-exclude themselves from financial markets (FinScope, 2011: 1, Porteous, 2004: 47). In other words, an individual might have access to finance, but is not financially included, as she chooses not to make use of the products or services she has access to. The distinction between these two terms is important. However, it should be noted that this choice is very difficult to observe in practice. Claessens (2004: 212) goes further to assert that access to finance is also dependent on "the availability of supply of reasonable quality financial services at reasonable costs" (Claessens (2006: 212). Other authors delineate access even further into several dimensions: availability, cost (including the opportunity costs of travel and time), and variables such as range, type, and quality (Claessens, 2006: 212). Variations include reliability, convenience, continuity and flexibility (Murdoch, 1999).

The following diagram thus describes *financial inclusion*, as it is understood for the purposes of this study. It has been adapted from the FinScope South Africa 2011

report so as to conform to the specifics of the data that is used in the present study.[1]

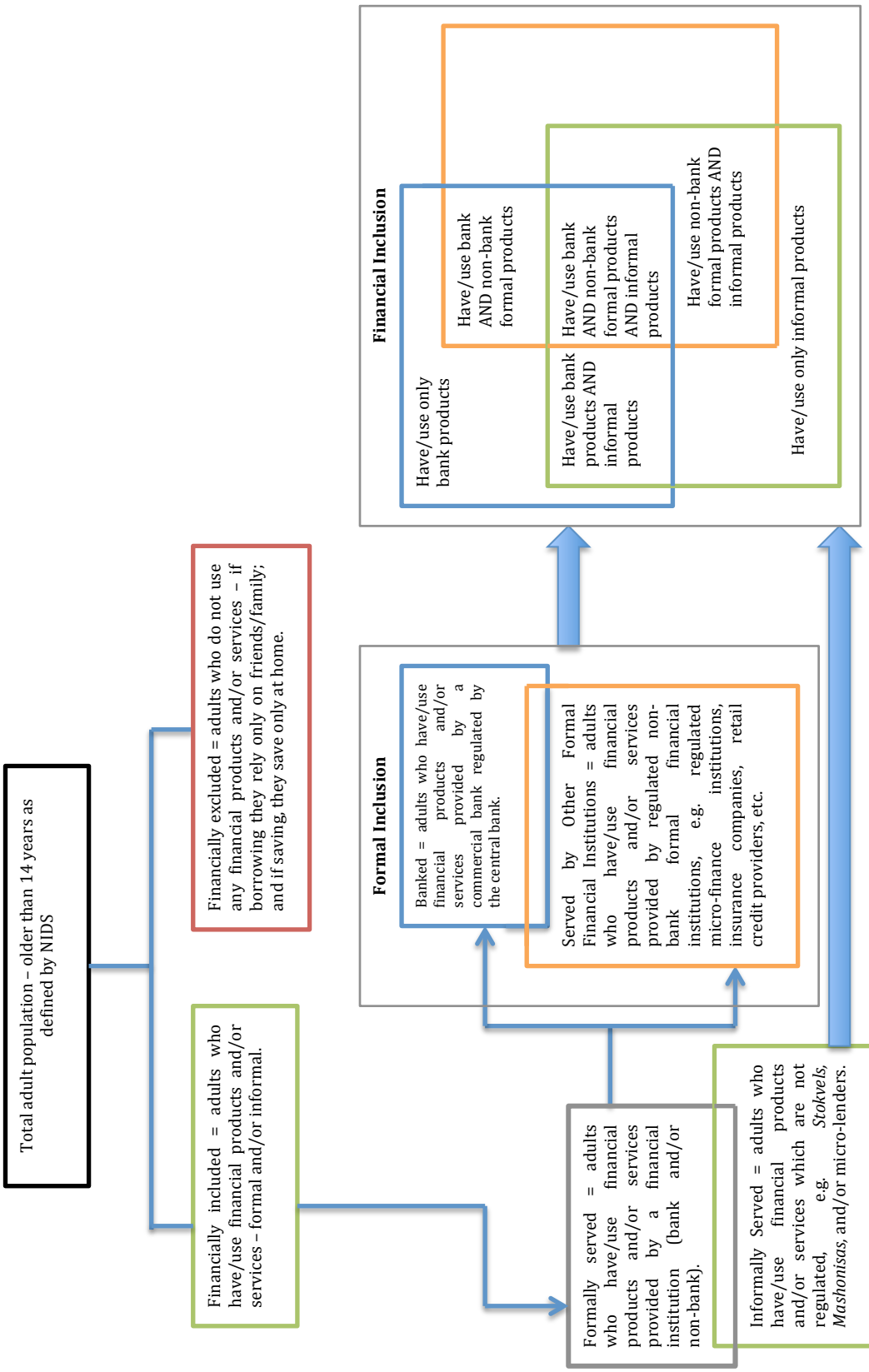

Figure 1: Financial Inclusion (figure adapted from FinScopecope, 2011: 5).

[1] The National Income Dynamics Study (NIDS) is described in Section 9.

3. Background: South African financial sector

In 1994, the democratic government of South Africa inherited a grossly inefficient financial sector that excluded over 60% of the adult population from accessing formal services (Kirsten, 2006: 2). The Usury Act of 1968 had restricted pricing and distorted the products that financial institutions could offer. The first Exemption to the Act, issued in 1992, excluded small loans from interest-rate restrictions, unleashing a surge of micro-lending that welled up in response to massive pent-up demand (Kirsten, 2006: 4). The new government acknowledged the need for liberation of the financial market; the Reconstruction and Development Programme (1994: section 4.1.7) recognised the following:

> "The apartheid system severely distorted the South African financial system. A handful of large financial institutions, all linked closely to the dominant conglomerates, centralize most of the country's financial assets. But they prove unable to serve most of the black community, especially women. Nor do they contribute significantly to the development of new sectors of the economy. Small informal-sector institutions meet some of the needs of the black community and micro enterprise. They lack the resources, however, to bring about broad scale development."

The economy was characterised by a first world financial sector, with well-established infrastructure and technology (though limited participation), and a pressing demand for services. The financial sector was targeted as an important area for reform, which, it was recognised, would help to reduce the gap between the country's first and second economies (Mbeki, 2004).

Throughout the country's post-apartheid history, the government has largely addressed issues of financial inclusion via facilitation and regulation, rather than direct financial service provision (Kirsten, 2006: 11). This has, amongst other things, included the formation of the Micro Finance Regulatory Council (MFRC) in 1999; the decision to make compulsory the registration of all micro finance suppliers with the National Loans Register (NLR); the issuing of the Financial Sector Charter in 2004, which set out targets of banking service provision and empowerment, employment and ownership, as well as support for black entrepreneurship; the promotion of the Mzansi account, which provides small loans with low restrictions to low-income earners through South Africa's four biggest banks and the Post Bank; and enactment of the National Credit Act in 2006, which replaced the Usury Act to increase the level of consumer protection in the financial sector and strengthen the robustness and efficiency of the credit market as a whole.

3.1 Financial inclusion now

The government continues to see financial access as a key tool for sustainable and inclusive development; promoting the aims of the Financial Sector Charter, encouraging entry into the banking sector and undertaking various initiatives to accelerate the inclusiveness of the financial sector (FinScope, 2011: 1).

According to the FinScope annual survey (FinScope, 2011) an estimated 27% of the country's adult (16 years and older) population are still financially excluded from both formal and informal markets; that amounts to 9.1 million individuals.

These are low-income individuals, 15% of whom are dependent on government grants for income and almost a fifth of whom earn less than R1000 a month. The diagram below compares access levels between individuals with different income sources. It is worth noting that those relying on a state OAP are amongst the least served by the formal banking sector.

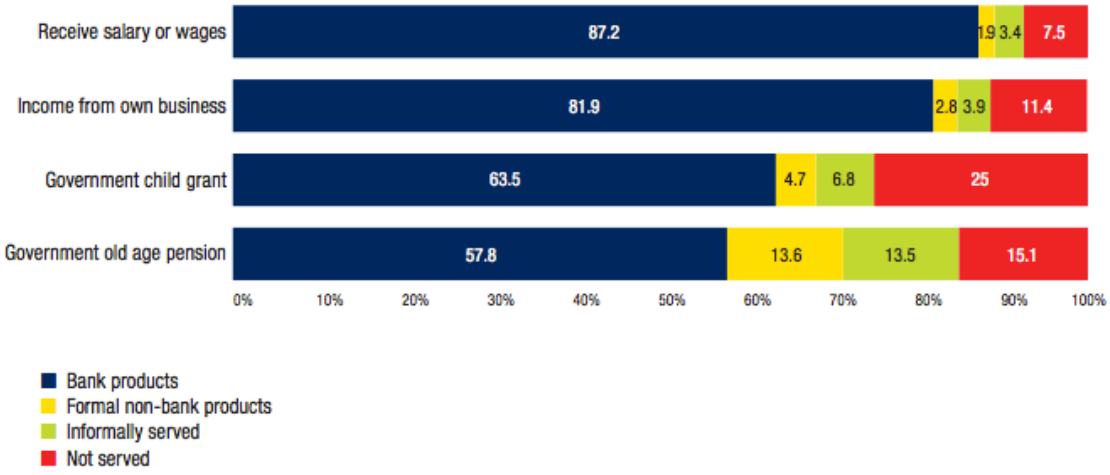

Figure 2: Access based on income source (FinScope, 2011: 11)

Just over 62% of adults are banked, and use banks mostly for transactional purposes. Funeral products, insurance products and credit products are prominent drivers of the non-bank, formal sector. Credit behaviour in the formal sector (bank and non-bank), is driven primarily by consumption and payment of accounts and debts, and 53% who borrow (from any sector), borrow from friends, family and colleagues. The informal sector, made up of 1.6 million people, is characterised by high membership numbers in *Stokvels* and burial societies: almost 90% of adults who only make use of informal services belong to *Stokvels* and 56% to burial societies. About a third of all people saving, save at home. The FinScope survey (2011: 11) findings suggest that financial behaviour amongst the population

without formal financial access - individuals who rely on menial, unreliable incomes – is driven by daily needs. "They are likely to save and borrow small amounts (informally)", which, the report suggests, "is often the reason why these individuals resort to informal mechanisms" (FinScope, 2011: 11). The next section explores the nature of poor households' financial behaviour in South Africa.

4. Poor households' financial behaviour

Collins *et al.* (2009) provide essential evidence of poor households' financial behaviour, having conducted research using the Financial Diaries dataset, a portion of which was collected in South Africa. The study took an anthropological approach to data collection and to the definition of financial portfolios, which resultantly included informal instruments such as holding small cash amounts with a friend, or borrowing small loans from a micro-lender or *Mashonisa* (Collins *et al.,* 2009). Detailed records of households' financial activities were collected every two weeks for a year, exposing the intricate and complex financial activities of poor households in South Africa (Collins *et al.,* 2009: 4). Detailed analyses of these data are provided in Portfolios of the Poor, which tells the stories of some of these households' financial management strategies and exposes very pertinent insights into the financial behaviour of the poor.

The first important insight for this study, from the South African evidence in the book, is that poor households actively manage their money, and more specifically, engage in financial intermediation (Collins *et al.,* 2009: 8). By conducting such intricate research, it was possible for the researchers to observe households' use of

both formal and informal instruments in order to do this. Poor households' balance sheets were found to be characterised by small balances and large cash flows[2], as a result of constant intermediation (Collins *et al.,* 2009: 32). This finding dispels the myth that all poor households live from hand to mouth, which would negate the need for any research around their financial behaviour and highlights a need to focus on cash flows rather than balance sheets when attempting to understand the financial lives of the poor (Collins *et al.,* 2009: 31). Collins *et al.* (2009: 13) purport that, indeed, poor households have a greater need for financial services than do any other group as, over and above the size of their income, the uncertainty and irregularity of their income means that they have to meticulously manage their cash flows so as to ensure their survival. They liken poor households to start-up businesses: where wealthier households are more like large, established companies that borrow in large amounts and earn big profits, poor households are like small businesses that have to constantly and frantically manage their finances through a multitude of instruments in order to stay afloat (Collins *et al.,* 2009).

Second, despite their high usage of formal and informal financial instruments, poor households were found to be almost ubiquitously dissatisfied with the lack of quality and, more importantly, the reliability of the instruments they had to use to manage their money (Collins *et al.,* 2009: 3). Collins *et al.* (2009: 4) argue that assured access to improved financial services would enhance poor households' ability to overcome penury. This view is held throughout this paper, and is central to the approach taken here.

[2] Money being pushed and pulled through instruments.

The Financial Diaries is one of many studies that acknowledge the survivalist financial activities of poor households (see also Rosenzweig and Wolpin, 1993 and Udry, 1990), but the understanding of these activities as comprising 'financial portfolios' (Collins *et al.,* 2009: 14) is of particular interest for the current paper as it facilitates the study of inflows and outflows of various instruments in relation to an increase in income. This provides a foundation for investigating the nature of constraints on behaviour experienced by poor individuals in South Africa, and ultimately could provide an initial indication as to whether there is reason to advocate for the development of formal financial services that are designed specifically for the poor in this country. This potential outcome thus forms a secondary objective of this paper.

Collins *et al.* (2009: 44) found that households who received support from government cash transfer programs had a greater capacity to engage in larger-scale financial intermediation than did other households, as they were more confident in taking on debt, and lenders were more confident in their ability to make loan repayments. Notably, they found that "grant recipients, who are *poorer* than irregular earners[3], still have debt service and debt-to-equity ratios that are nearly the same as regular wage earners" (Collins *et al.,* 2009: 45). This is the effect that this paper seeks to investigate: how do poor households' financial portfolios change with the increase in income represented by receipt of a state OAP?

[3] "Irregular earners" refers to individuals who do not have a regular source of income.

5. The importance of financial access

Having established that, empirically, poor households actively manage their finances through the use of formal and informal financial services, but that these services are not entirely to their satisfaction, the next step is to explore the rationale for adequate access to appropriate financial instruments. Why should we care whether or not people have access to finance?

The theoretical goals of finance are familiar: the mobilisation of savings; efficient allocation of funds to their most productive uses; the facilitation of exchange, risk management, consumption smoothing and investment (Fischer, 2011). The link between reduced financial frictions and the alleviation of credit constraints is extensively theorised (for example: Stiglitz and Weiss, 1981; Besley, 1995), and it is widely accepted that finance has a positive impact on both poverty alleviation and growth, and hence a crucial role to play in development (Beck and Demirgüç-Kunt: 2008: 383; Porteous and Hazelhurst, 2004: 5). There are three broad reasons for this.

First, there is evidence to suggest that increased access to finance brings with it economic growth and job creation, both of which are priorities for South Africa (Porteous and Hazelhurst, 2004: 4). Although there is no consensus on whether or not this association amounts to causality, there are some convincing reasons to believe that increased access will have benefits for growth and job creation. For example, access to finance enables the emergence of small entrepreneurs and businesses, which in turn facilitate new jobs and increased incomes. Access to

housing finance enables individuals to invest in housing, stimulating demand in the housing market and providing more jobs through the consumption of construction, furniture and other household durables.

Second, access to finance should be able to contribute to poverty reduction (Porteous and Hazelhurst, 2004: 4). Recent literature reveals that financial development is not only pro-growth, but is also pro-poor (Beck and Demirgüç-Kunt, 2008: 383) and that "a more developed financial system can reduce poverty and inequality" (Claessens, 2006: 209). We have seen from the Financial Diaries that poor households suffer from lumpy incomes, risk and uncertainty, and finance can help people smooth their incomes and insure against risks such as the illness of a wage-earner or the failure of a crop (Cleassens, 2006: 209; Porteous and Hazelhurst, 2004: 4). These events could otherwise devastate the vulnerable financial lives of low-income households, and push them even further into poverty. In this way, financial access can serve to lessen the blow of income shocks. It can also help to smooth lumpy incomes and spending, where costs like school fees and uniforms pose daunting investments in its absence.

Third, lack of financial access is both a symptom and a cause of social exclusion (Porteous and Hazelhurst, 2004: 5). This is especially the case in South Africa, where a world-class financial sector provides services to about half of the population, leaving the rest to fend for themselves (Porteous and Hazelhurst, 2004: 5). Increased growth does not guarantee to narrow this divide;, financial market frictions and barriers perpetuate income inequalities and poverty traps

and so it is important to study the case for actively increasing access to finance for the poor.

In addition, financial access has come to be important as a political issue, especially in South Africa. As Porteous and Hazelhurst (2004: 6) assert, "even if it had no broader impact or consequences, the fact that it is now squarely on the political and transformation agenda means that it matters – both for policy-makers and for financial institutions" (Porteous and Hazelhurst, 2004: 6).

Despite the lucidity of the theory and broad statements about the causality between financial development and improved economic welfare of the poor, the empirical evidence of these linkages is less convincing. There are several reasons for this. Firstly, the causal link from financial development to growth is difficult to establish due to issues of reverse-causality (Fischer, 2011). Furthermore, measures of financial access tend to focus on oversimplified variables (Fischer, 2011). One such measure of access asks whether or not an individual has a formal bank account, which fails to acknowledge the variety of financial services or processes that are crucial to our understanding of financial behaviour. Another measure assesses the geographical distance to the nearest ATM. Again, this is inadequate as it does not take into account other barriers to access that may exist in spite of physical proximity, such as the lack of formally recognised collateral, or high minimum balances. Narrow understandings of financial access such as these fail to allow the intricacies and complexity of the true financial behaviour of individuals to emerge organically, and to show, as the Financial Diaries study has, the active and dynamic financial lives that people live, and the innovative tools and

mechanisms that they use to manage their money. This leads to an incomplete understanding of the workings of finance (Fischer, 2011).

Even when studies do transcend these inadequacies, as the Financial Diaries research has done, appropriate data is very hard to gather. This goes for both numeric and descriptive data, the latter necessary for a better sense of what financial access actually means in practice. Fischer (2011) explores how best to capture data on financial access so as not to miss the complexities of the issue.

Despite the shortcomings of the empirical evidence for a causal link between financial access and poverty alleviation, access to finance is cited as being crucial to economic growth in developing, transitional and developed economies. "Access to finance empowers people, gives them the opportunity to have an account, to save and invest, to insure their homes or to take a loan and – in many cases – to break the chains of poverty" (Peachy and Roe, 2006: 11).

This brief review of the literature around financial access and welfare shows that there is little consensus found in the evidence. In lieu of such certainty, motivation for the extension of financial access can be found elsewhere. The following section develops an argument for the promotion of financial access as a substantive freedom that forms a crucial component of development.

5.1. An understanding of development

Traditional views of development focus on narrow measures of progress, such as gross national product (GNP), or per capita incomes, industrialisation or technological advancement (Sen, 1999: 3). Nobel Laureate, Amartya Sen offers an alternative conceptualisation of development: one that views development as "a process of expanding the real freedoms that people enjoy" (Sen, 1999: 3). That is not to say that traditional measures are not useful: they can be very important in driving the expansion of the freedoms that are enjoyed by society, but he suggests that it is crucial to recognise that other factors are also instrumental in providing those freedoms. He cites social and economic arrangements such as education and healthcare facilities; and political and civil rights, such as the freedom to participate in public debate, as examples of such freedoms. This section will argue that financial inclusion can be included in our conception of substantive freedom.

Sen (1999) makes a strong case for seeing poverty as the deprivation of capabilities rather than the lowness of income, as traditional economics would see it. Again, this does not deny the importance of income levels as a vital component of our understanding of capabilities, as a lack of income is certainly a source of deprivation of capabilities itself. However, income is only instrumentally important, rather than intrinsically important, as it is what we can do with that income that is of value, not the income itself. Furthermore, central to the understanding of capabilities-poverty, is that low income is not the only such source of deprivation. In this way, Sen's conception of poverty removes the focus from the means (most commonly, income) and onto "the *ends* that people have

reason to pursue, and, correspondingly, to the *freedoms* to be able to satisfy these ends." (Sen, 1999: 90).

Sen (1993: 3) argues that "[d]evelopment requires the removal of major sources of unfreedom" (Sen, 1999: 3). For him, unfreedom can arise either through inadequate processes or through inadequate opportunities. In the former case, he is referring to, for example, the violation of voting privileges or other political or civil rights. It is the latter, however, which is relevant for this study. Inadequate opportunities refer to the absence of people's ability to achieve what they minimally would like to achieve, for example, the inability to escape premature mortality or involuntary starvation. Here, free agency is important for development: freedoms must be facilitated so that individuals can determine their own future through a greater capacity to help themselves, and so to influence those around them (Sen, 1999: 4).

5.2. Financial access as a substantive freedom

Given a capabilities-conceptualisation of poverty, it should be quite logical to include access to finance as one of the substantive freedoms that people might reasonably wish to enjoy. Surely Sen's unfreedoms would include the inability to manage one's income, to intermediate one's finances, for it must be so that access to finance represents an 'expansion of the "capabilities" of individuals to lead the kind of lives they value – and have reason to value.' (Sen, 1999: 18). Sen (1999: 6) recognises the importance of market exchange in his understanding of substantive freedoms. He discusses the freedom to exchange "words, or goods, or gifts" as

natural human interactions. The freedom to enter markets, he proposes, can contribute significantly to development, and has a fundamental role in social living (Sen, 1999: 7). Furthermore, he highlights the importance of "the availability and access to finance" as being "a crucial influence on the economic entitlements that economic agents are practically able to secure." (Sen, 1999: 39).

The broadening of access to finance can thus also be motivated on a philosophical basis, as Sen's approach shows. He also argues that progress needs to be evaluated based on whether people's freedoms are enhanced (1999: 4). So if, as I have argued, access to financial services can be viewed as a substantive freedom, it is important to understand the nature of people's demand for finance, so that policy is best able to promote access. This is what present paper seeks to do.

6. The South African OAP

Having established the importance of financial access for development; and theoretically, if not empirically, the link between financial access and poverty alleviation and inequality reduction, the rest of this paper seeks to gain some understanding of poor people's financial behaviour in South Africa by exploring the demand side of financial inclusion among poor individuals. The study observes changes in individuals' financial portfolios, understood as broadly as is possible given the data set, that result from a relatively substantial increase in income, represented by receipt of the state OAP. The OAP is a useful starting point here for several reasons. First, it allows us to focus on one of the most vulnerable sectors of the population: poor, black, elderly people. Second, it represents a sudden and

exogenous increase in income, allowing us to compare individuals with and those without this additional income. Third, there is an extensive body of literature that explores the effects of receipt of the South African OAP, which provides guidance in setting up a study of this type in a rigorous way. More specifically, the sharp age eligibility rule is conducive to a quasi-experimental regression discontinuity design, which allows us to directly explore the causality between pension receipt and changes in individuals' financial portfolios. This is discussed in more detail later on.

6.1 Background on the OAP

In 1928, the South African government began offering a means tested OAP to whites and coloureds (Woolard and Leibbrandt, 2010: 5). Whites received a higher monthly amount than did coloureds, and blacks were not eligible at all. The OAP was first extended to black people by the Smuts government in 1944, though the amount was, again, much less than for both whites and coloureds (Woolard and Leibbrandt, 2010: 6). It was decided in 1977 that racial parity should be sought and it took until 1992 for this to be achieved under the Social Assistance Act, which did away will all discriminatory requirements (Woolard and Leibbrandt, 2010: 6). All races now enjoy the pension, although take-up is higher amongst blacks, as they are left most vulnerable in post-Apartheid South Africa.

The OAP is allocated according to age eligibility and an income means test, which is such that the majority of black individuals in South Africa, over the age of 60, are eligible for receipt (Ambler, 2011). Initially, men were only eligible for the pension

from the age of 65, but in 2008 a law was passed to equalise the age eligibility for men and women at 60 years by 2010 (Ambler, 2011). According to the NIDS data, over 8,3% of adults of all races in South Africa, male and female, were recipients of the state OAP in 2008. Take-up levels are significant: 83% for men and 91% for women as represented by the sample used in this study, which is detailed in the next section. The maximum benefit in 2008 was R870 for most of the year, but was increased to R940 in the latter part of the year (Ambler, 2011: 7). According to the NIDS data, mean per capita income for blacks of all ages was about R750. The median per-capita income was around R396, which means that the maximum pension benefit was 2.2 to 2.4 times this, and thus represented a significant increase in income for recipients (Ambler, 2011: 8).

6.2 Literature on pension effects

There is a large body of literature confirming that the South African OAP is of a substantial enough size to cause real changes in behaviour.[4] This section briefly introduces the findings of some of these studies in order to illustrate this point.

In one of the first notable papers on the effects of the pension, Case and Deaton (1998) determine that early indications of the pension's effect suggested significant welfare increases, but that pension income was largely treated in the same way as other forms of income, so "a Rand is a Rand" (Case and Deaton, 1998). Duflo (2000), on the other hand, determines that pensions received by women

[4] See Woolard and Leibbrandt (2010) for a good review of the literature on the long run effects of the pension in South Africa.

have positive effects on girls' anthropometric status. Ambler (2011) also finds evidence of gendered effects on spending among pension recipients, with females tending to spend more on durable household goods than male recipients. Furthermore, she finds that women's eligibility makes them more likely to be the primary decision-maker in the household (Ambler, 2011). The shift in decision-making power also correlates with improved nutritional status for young girls and an increase in the ownership of durable consumer goods, especially in households with children (Ambler, 2011).

Bertrand *et al.* (2003) present highly unsettling evidence that the advent of a household member becoming age-eligible for receipt of the pension in South Africa has the effect of reducing the hours of labour supplied by working age individuals in that household. Posel *et al.* (2006) dispute this finding, and conclude that where a female in the household is a pension recipient, the working age women in the household are significantly more likely to be migrant workers. Ardington *et al.* (2009) also dispute the findings of Bertrand *et al.* (2003), presenting evidence that pension receipt induces an increase in the probability that prime-age household members are employed.

Ranchhod (2010) finds that when a pensioner leaves a household, the composition of the household changes in patterned ways. He also finds significant increases in employment rates for middle-aged and older males and females associated with the loss of a pensioner in the household (Ranchhod, 2010). In an earlier study of household composition changes related to pension receipt, Edmonds *et al.* (2005)

also finds that the advent of a new pensioner in a household results changes in household composition.

It is clear, even from this condensed review of the literature, that there is much evidence to suggest that receipt of the pension impacts households' and individuals' behaviour. There is not much literature, however, that seeks to uncover the effects of the pension on individuals' *financial* behaviour, which is what the present study aims to do. Furthermore, several studies find the behavioural responses of males and females to be different from one another. This is thus something to watch out for in the current paper.

7. Data and summary statistics

This study utilises the first wave of the NIDS, which is a nationally representative, biennial panel study. The data describes 28 250 individuals from a total of 7 302 households across all nine of South Africa's provinces. The individual level surveys were administered to adults, aged 14 and above, and children under the age of 14. Amongst other things, it details these individuals' and households' use of financial instruments such as insurance policies, funeral policies, educational policies, medical insurance, various loans, store cards, bank accounts, retirement annuities and shares, as well as membership of *Stokvels*. It also contains information about pension eligibility and receipt.

The convention in the literature for pension effects studies is to restrict the analysis to the black population, because the level of the means test is such that it

captures poor people, the majority of whom are black (Ambler, 2011: 7). In accordance with this, the analysis focuses exclusively on the black population, as age-eligible black individuals are highly likely to be receiving the pension (Ranchhod, 2010: 9).

In line with the majority of studies on the effects of the OAP, I will use age-eligibility as a proxy for take-up of the OAP, as this eliminates the possibility of endogeneity (Ranchhod, 2010: 8). The majority of the NIDS data was collected in mid 2008, before the law to equalise the age eligibility of both genders was passed (Ambler, 2011: 7), so in light of this, I construct age windows from 55-65 for age ineligible men, from 65-75 for eligible men. Similarly, the window for age ineligible women is from 50-60 and from 60-70 for eligible women.

Summary statistics for the sample are presented in Table 1. The weighted observation sizes are fairly substantial for each of the four groups of individuals. As expected, we see that median per capita household income is higher for pension eligible individuals than for ineligible individuals. Nonetheless, incomes are very low, revealing the level of vulnerability of our sample. We see that the most common bracket of education for eligible and ineligible individuals is between six and twelve years of schooling, and tertiary education is not common amongst individuals in either group.[5] Finally, we see that a large proportion of the samples for each group reside in a tribal authority area. Formal urban areas are the next

[5] Note that the education categories do not add up to 100%. This is because the following categories were excluded: "missing"; "don't know"; "refused"; "not applicable"; "other"; "no schooling"; "no higher education".

most common, and percentages in rural formal and urban informal areas are fairly small.

8. *Model specification*

The investigation employs a Regression Discontinuity approach, exploiting the ordinal nature of age as a predictor for receipt of the pension and the sharp rule of age-eligibility as the discontinuity. This provides an unbiased estimate of the effect of the income shock on financial instrument utilisation (Angrist and Prischke, 2008: 190). The intuition behind this type of analysis is simple. Essentially, we are comparing individuals just to the left and just to the right of the age threshold, which enables the assumption that the counterfactual (ineligible) is identical to the treatment group (eligible) on all characteristics other than age.

Below is a generalisation of the specification equation:

$$Y_i = \beta_0 + \beta_1 Eligible_i + \delta_1 Age_i + \delta_2 {Age_i}^2 + \varepsilon_i \quad (1)$$

Where Y_i is a binary variable for the utilisation (or not) of each individual financial instrument, $Eligible_i$ is a dummy equal to 1 if the individual is age eligible and Age_i is a variable for the age of the individual.[6] All regressions make use of post-stratification and sampling weights. The coefficient of interest is β_1, which indicates the extent to which the income shock (receipt of an OAP) affects the

[6] Initial 'eye-balling' was conducted to assess the true relationship between age and each y variable, and various specifications of this polynomial were applied in regression analyses. It was determined that the most appropriate specification was a quadratic in age.

utilisation of the financial instrument in question. The regressions are run separately for male and female respondents, in order to allow for the different pension eligibility ages.

Summary statistics of individuals' utilisation of these instruments are also presented in Table 1. Utilisation levels are quite low across all instruments, the highest utilisation levels being for bank accounts and burial societies. Utilisation of stocks, shares and unit trusts is negligible, most likely because these instruments require much higher incomes, closer proximity and higher education levels than our sample displays. This is not unexpected. Low levels of utilisation, however, mean that sample sizes for analysis will be quite small, compromising the potential for the emergence of significant effects.

One general limitation of the Regression Discontinuity method is that it does not necessarily allow for generalisation of the findings beyond the chosen age interval. In this case, this is not a concern, as the intention is to study the effects of the *income shock* on the 'financial portfolio' of the individual as opposed to the longer-term effects of the pension. Instead, the nature of the pension as a generalizable income shock is of concern later, as it confines the analysis to a very specific age bracket, which has implications for utilisation patterns in itself.

9. Hypotheses

Before exploring the results, it is necessary to outline some of the expected outcomes of the analysis as based on the theory and existing literature, and specifically, the causal relationship between income and access to finance.

Because of the asymmetry of information in financial markets, the cost of formal financial products and services is generally relatively high, and institutions tend to require users to have sufficient financial means in order to purchase or utilise their instruments. It is thus reasonable to assume that a fair proportion of low-income earners, with little non-human wealth, face income barriers to financial access. Indeed, the FinScope South Africa 2010 report lists 'not having money to save'; 'lack of employment'; and 'irregular income' as the most commonly cited reasons for individuals not having formal bank accounts (FinScope, 2010: 25).

However, when a broader definition of access is assumed, the empirical evidence suggests that the relationship between income and demand for finance is not uniform across instruments, as the motivation for holding different instruments is not the same (Bendig *et al.,* 2009: 3). For example, "a household which has recently experienced a sudden drop in income due to a serious shock, such as the illness or death of an income-earning household member, could be expected to be more likely to request a loan, but less likely to request savings and insurance" (Bendig *et al.,* 2009: 4). Nonetheless, they do find that asset endowment and formal employment status enhance financial uptake. "This supports the widespread assumption that poorer households are more likely to be excluded from the formal

financial sector than better-off households" (Bendig *et al.,* 2009: 25). In light of these insights, it is expected that eligible individuals will display an increase in the probability of utilisation of formal instruments, *ceteris paribus,* as they will be more likely to be able to overcome the price barrier of these instruments. It is not clear, however, whether this will also translate into a decline in the probability of utilisation of informal instruments. This will be something to watch out for.

10. Results

Graphs for the regressions with significant eligibility coefficients are presented in Figures 3 to 12. They show, graphically, an estimation of the effect of pension eligibility on the probability of individuals using the respective financial instruments.

The graphical representations of the discontinuities in utilisation probabilities provides some interesting insight into what might be happening to the demand for various instruments as individuals become pension eligible. Figure 3 shows the jump in probability of males utilising bonds/home loans that occurs at 65 years of age. Eligibility is estimated to account for an increase in probability of about 3pp. Before this jump, age has a positive effect on probability until 60 years of age, after which the effect becomes negative and declines rapidly. Despite this change in the effect of age at 60 years, however, the advent of pension eligibility clearly creates a significant jump in the probability of holding a bond/home loan, suggesting that the sudden increase in income that comes with pension receipt facilitates higher usage of this financial instrument.

One might expect to see the same pattern for personal loans from a bank, as these two instruments are both provided by formal institutions. This, however, is not the case. Figure 4 shows the results of equation 1 for this variable. Instead we see a declining probability as age increases, and a negative effect of pension eligibility, suggesting that the additional income gained from the OAP makes males less likely to take out loans from formal banks. Although the coefficients on age and pension eligibility were not significant for this regression, a very similar outcome is observed for females' use of loans from a bank, shown in Figure 5. Perhaps the increase in income represented by pension eligibility relinquishes individuals from the need to hold loans from formal banks, although it would seem more intuitive that it would gain them greater ease of eligibility for formal loans. On the other hand, it may be that individuals prefer informal services to formal ones. There are many reasons why this may be a plausible hypothesis, including ease of access, community trust, less stringent utilisation requirements, to mention a few. The results presented in Figure 6 may support this hypothesis. Females are more likely to make use of loans from family members or friends when they are eligible for receipt of the pension. Although this effect is small (just over 2 percentage points), it is statistically significant. Similarly, pension eligibility has a positive (10 percentage points) effect on the probability of females' utilisation of loans from a *Mashonisa,* shown in Figure 7.

Figures 8 and 9 show the regression discontinuity output for males' utilisation of credit cards and store cards respectively. The two graphs tell a very similar story. Probability of holding each of these instruments declines rapidly with age within

the window of interest, and almost reaches zero at age 65. At 65 years, the probability jumps up by around 8 percentage points for each instrument, and then declines at the same rate as before. Again, this jump suggests that the increase in income represented by the advent of pension eligibility has a positive effect on males' utilisation of these two instruments.

Figure 10 tells an interesting story. Here we see the probability of males' membership of *Stokvels* decreasing by about 3 percentage points as males become age eligible for receipt of the pension. Probability increases with age before 65, where it suddenly jumps down, and then becomes negative around the age of 66 years. This negative pension effect may suggest that the increase in income allows males to make use of more formal services, allowing them to move away from *Stokvels*. Interestingly, the pattern is very different for females, who appear to be 6 percentage points more likely to be members of *Stokvels* with the advent of pension eligibility. This result is shown in Figure 11. Figure 12 tells a similar story, indicating that eligibility increases the likelihood of females' membership of burial societies by around 10pp. Perhaps this dissonance speaks to differing gender preferences.

10.1. Analysis with controls

Having established some of the causal effects of eligibility on utilisation of various financial instruments, the following section seeks to investigate, in more detail, some of the other factors that may have an impact on utilisation of these

instruments. This is done by adding a vector of controls, Xi, into equation 1 as follows:

$$Y_i = \beta_0 + \beta_1 Eligible_i + \delta_1 Age_i + \delta_2 Age_i^2 + \gamma Xi + \varepsilon_i \quad (2)$$

The following controls are added: a set of dummies for the province of residence, a set of dummies for the type of geographic location, and a set of dummies for the level of educational attainment (primary; secondary; or tertiary).[7]

In light of the introduction of controls, some additional hypotheses are suggested. Intuitively, we would expect to see that utilisation of formal instruments is higher in urban areas than in rural areas, and that the reverse is true for informal instruments. This is because, in many cases, informal instruments have emerged to provide a service that does not otherwise exist in those regions. Nonetheless, if this hypothesis is found to be true, it may suggest that individuals' financial inclusion is constrained by geographic inaccessibility. It is acknowledged, however, that in some instances, informal innovations emerge because they are better suited to low-income individuals regardless of their proximity to formal alternatives.

It is difficult to hypothesise the effect of education levels on financial access. One might be tempted to think that higher levels of education would translate into higher usage of formal instruments, as the theory might suggest. However, this may not translate into reduced usage of informal instruments, as this would

[7] Education dummies were created as follows: "primary" is allocated to individuals with 0-7 years of education, "secondary" to individuals with 8-12 years, and "tertiary" to those with between than 13-23 years. Where the nature of qualifications is not directly ordinal, best equivalents were estimated.

assume that informal instruments are somehow misleading individuals with less education.

Table 2 presents the results of equation 2 for males' usage of formal instruments. The effect of pension eligibility is significant for four variables. It is estimated to result in a small increase in the probability of males' utilisation of bonds/home loans, a small decrease in their probability of using vehicle finance, and sizeable increases in the probability that they own credit and store cards. The coefficients on the latter two variables amount to an increase in probability of about 10 percentage points each. Although we do not see significant coefficients on the eligibility dummy for any other dependent variables in this set of regressions, there are some interesting results among the other coefficients. Notice that the effect of living in an urban formal area has a positive effect on the probability of utilisation for several of the formal instruments in comparison to rural areas, supporting the hypothesis that individuals in formal areas have better access to formal products and services. The coefficients on per capita household income are significant and positive for several of the regressions, but their effect is very small. This is interesting as it suggests that, within this age demographic, the effect of income on the utilisation of financial liability instruments, *ceteris paribus,* is almost negligible. A similar pattern is seen for this variable throughout the results for both males and females. Notice also that the effect of higher levels of education on utilisation of formal instruments is, in many cases, positive.

Looking now to males' probability of having a bank account, we see that pension eligibility does not have a significant effect, though the insignificant effect of

eligibility is positive. As we would expect, residence in a tribal authority or an urban informal area makes males less likely to hold a bank account than residence in a formal rural area. Residence in urban formal areas, on the other hand, has a positive, though insignificant, effect on the likelihood of holding a bank account in comparison to formal rural areas, again supporting the hypothesis that physical accessibility is important when it comes to formal services.

Table 3 presents the results of equation 2 for males' utilisation of informal instruments. Here we see that male pensioners are less likely to be members of a *Stokvel* by about 5 percentage points and more likely to be members of burial societies, by about 12 percentage points. Burial societies are an interesting case. The probability that males are members of burial societies is higher in formal rural areas than in any other area-type, *ceteris paribus*. Everything else held constant, males are also more likely to be members of burial societies in the Western Cape than in any other province, bar Limpopo. Furthermore, the results suggest that individuals with higher levels of education are less likely to be members of burial societies than are those with lower levels, *ceteris paribus.*

The eligibility coefficients on loans from micro-lenders and family or friends are both negative, though their standard errors are too high to suggest significance. Interestingly, in the case of loans from micro-lenders, the coefficient is negative on all three of the geographic dummies displayed here, suggesting that males are more likely to make use of micro-lenders (informal financial services) in formal rural areas. This is not unexpected, and again, it has implications for the

hypothesis that people in rural areas are constrained in their usage of formal financial services (most likely due to lack of physical access).

Table 4 contains the results of equation 2 for females' utilisation of formal instruments. The results suggest that pension eligible women are less likely to hold a personal loan from a bank (by about 4 percentage points) and more likely to have vehicle finance (by about 2 percentage points), *ceteris paribus*. Again we see positive effects on probability of utilisation for several variables as a result of residing in an urban formal area, in comparison to a formal rural area. Also, the effects of income are again, apparently negligible, but we do not see the same pattern with the effect of education on formal usage amongst females.

The level of ownership of stocks, shares and unit trusts is too low amongst this demographic to estimate any effects. Again we see a non-significant effect of eligibility on the probability of holding a bank account (although for females it is negative), suggesting that pension eligibility has no significant impact on bank account take-up. Interestingly, for females, age has a positive and significant effect on the probability of holding a bank account, and the size of this effect diminishes with age, becoming negative around the age of 60 years. As with males, of all the area-types, holding a bank account is least likely in rural areas and seems to be more likely in the Western Cape than in most other provinces, *ceteris paribus.* Female individuals with tertiary education are also more likely to hold bank accounts than are those with seven or fewer years of schooling.

Table 5 shows the output for equation 2 for females' utilisation of informal instruments. Eligible females are more likely to hold a loan from a *Mashonisa* (by about 9.6 percentage points), and a loan from a family member or friend (by about 3 percentage points) than ineligible females. It is interesting to note that the probability of females' usage of micro-lenders and *Mashonisas* increases with age at a decreasing rate, with a turning point at 57 and 54 years respectively. Furthermore, the probability of women being members of *Stokvels* and burial societies is increased by about 7.3 percentage points and 8.3 percentage points respectively by the advent of age eligibility. Again, we see no patterned effect of education on the utilisation of informal instruments.

11. Discussion

An overview of the results allows us to identify several trends. First, we can confirm that a sudden and substantial increase in income has an effect on the composition of poor individuals' financial portfolios. Furthermore, we are able to confirm the hypothesis that individuals residing in formal urban areas are more likely to make use of formal instruments and less likely to make use of informal instruments than those residing in rural areas, evidence in support of the theory that physical proximity is a significant determinant of the demand for finance. Third, we see for several instruments that per capita household income has a statistically significant positive impact on the probability of utilisation, though it is indeed, always small. Fourth, not unexpectedly, the changes in portfolio composition for are quite different for males and females. In fact, something very interesting emerges here. The trend among the significant results suggests that

males tend to respond to pension eligibility by increasing their usage of formal instruments and moving away from informal instruments. Females, on the other hand, tend to do the opposite, favouring informal instruments. It is not surprising that the response is gendered, as previous studies have found equally stark differences between the behavioural responses of males and females.

12. Future research and implications for policy

A review of the literature reveals that most investigations into financial access have taken a narrow view of financial instruments, and have thus failed to fully understand the financial lives of the poor. The ability of the current study to reveal pertinent insights into the determinants of poor individuals' demand for both formal and informal instruments confirms that a broader understanding of what constitutes financial products and services for poor individuals is necessary.

In order to further enhance the impact of research, more appropriate data must be gathered in a manner that does not impose the researchers' preconceived idea of finance on the population it profiles. This will enable further empirical research investigating both the existence of the causal link between financial access and development, and the nature of barriers to financial inclusion. Policy, then, needs to be informed by this research, so as to enhance efforts to alleviate poverty and improve welfare.

It does not seem unrealistic that the government's efforts to alleviate poverty, which come mainly from the social security system, could be greatly enhanced by

broadening access to financial services. "[B]ecause lack of access to finance has a continuous impact on income inequality, such redistribution often has to be repeated, with negative repercussions for incentives to save and work" (Aghion and Bolton, 1997, cited in Beck and Demirgüç-Kunt, 2008: 384). Focusing on broadening financial access does not require permanent redistribution – though this is not to suggest that the social security system will become superfluous any time soon – and, it is argued, will enhance poor people's ability to effectively manage these transfers to their own benefit.

The key findings of the current study, namely that income levels effect individuals' financial portfolio composition, and that males and females have quite different responses to pension eligibility, warrant further research. With the release of the second wave of the NIDS data imminent, it would be interesting to investigate these trends in more detail by means of panel study methodologies across the two waves. These findings may be relevant for financial product innovations that seek to effectively capture the preferences of their target users. The fact that females continue to favour informal services in the face of an increase in income may suggest that formal innovations need to simulate certain features of the favoured informal services so as to provide the desired service. These are all important areas that need to be explored if access to finance is going to be effectively increased.

13. Conclusion

By taking a broad understanding of the financial lives of the poor, and applying this to a substantial dataset, this study has been successful in revealing some of the intricacies of the determinants of demand for and access to both formal and informal financial instruments. This was done by implementing a regression discontinuity approach on the NIDS data, using the state OAP to simulate an exogenous increase in income and thus focussing the analysis on vulnerable, low-income individuals. First, the results confirm that a sudden and substantial increase in income has an effect on the composition of poor individuals' financial portfolios. They also confirm that physical proximity; age; per capita household income and education levels are all potential determinants of demand for formal and informal instruments in different ways. Most striking was the evidence suggesting that males and females have very different responses to an exogenous increase in income, and hence contrasting preferences for formal and informal services.

These findings verify the importance of a broad understanding of financial instruments in determining the nature of low-income individuals' demand for and constraints on access to finance. If financial sector reform in South Africa is going to be effective in contributing to the alleviation of poverty and inequality, as this paper has argued it can, it is crucial that the nature of the financial lives of the poor is truly understood and the barriers to financial access empirically determined through sensitive, but wide analysis.

Table 1: Summary Statistics

	Male		Female	
	Not Eligible	Eligible	Not Eligible	Eligible
Average age	59,00	69,04	54,02	64,24
Highest level of education: primary (%)	42,65	33,72	34,26	35,25
Highest level of education: secondary (%)	26,17	28,81	34,15	29,58
Highest level of education: tertiary (%)	2,10	3,51	3,29	5,22
Rural formal (%)	9,53	6,79	6,14	6,08
Tribal Authority Areas (%)	54,28	73,30	60,21	69,83
Urban Formal (%)	30,53	15,46	26,56	18,25
Urban Informal (%)	5,65	4,45	6,44	5,83
Median per capita household income (R)	500,03	632,52	386,75	421,33
Received pension (%)	14,38	85,25	8,31	90,92
Percentage of individuals holding the following:				
Liabilities				
Home loan/bond	3,72	5,15	1,47	0,84
Personal loan with a bank	4,55	0,68	3,97	0,15
Personal loan with a micro-lender	0,75	0,05	0,54	0,40
Personal loan with a *Mashonisa*	1,72	0,99	1,23	4,56
Loan from family member or friend	4,27	0,00	0,66	2,30
Vehicle finance	4,34	0,00	0,91	0,59
Credit card	3,15	5,21	1,51	0,26
Store card	5,24	6,77	8,94	4,36
Hire-purchase agreement	2,65	2,88	4,28	3,05
Assets				
Unit trusts, stocks and shares	0,63	0,00	0,00	0,00
Bank account	39,04	25,96	26,97	18,06
Membership of *Stokvel*	3,78	2,23	10,93	13,18
Membership of burial society	32,95	46,18	40,65	49,87
Weighted observations	925218	655608	2522929	1545759

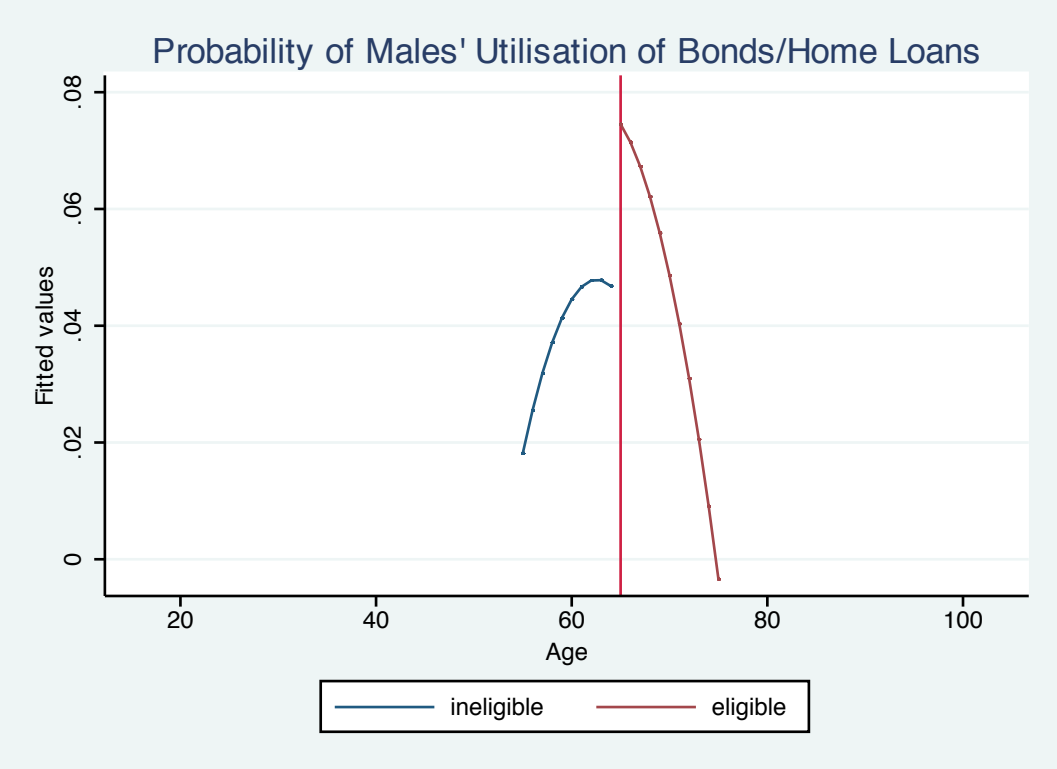

Figure 3: Probability of males' utilisation of bonds/home loans

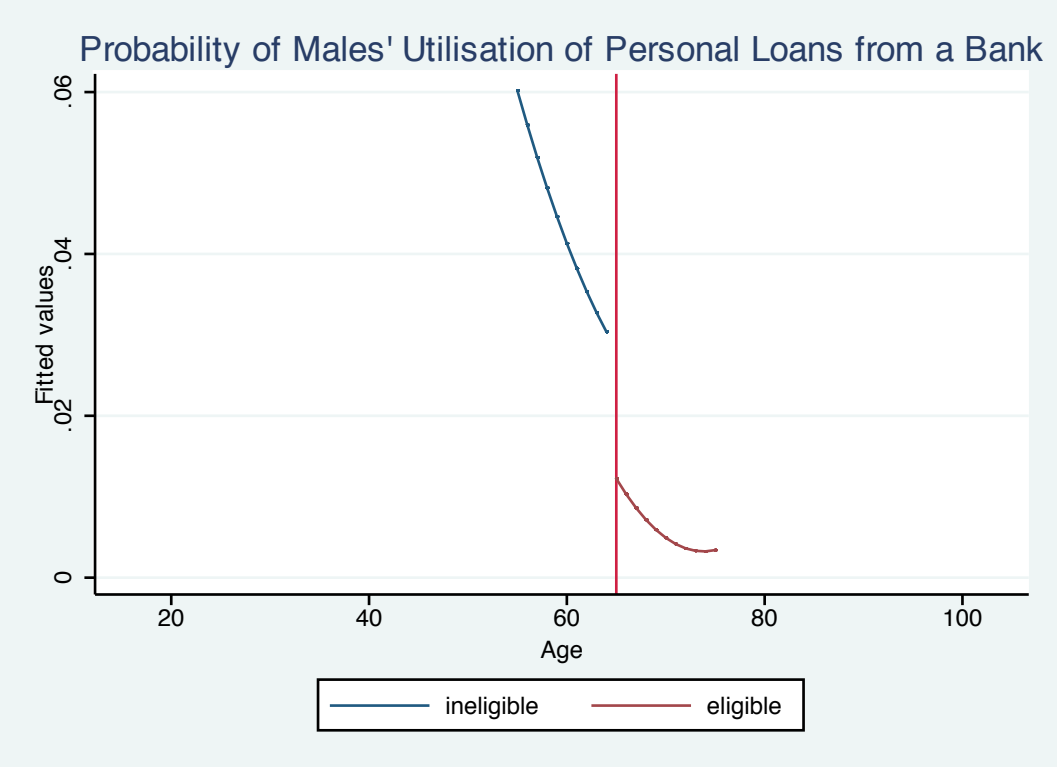

Figure 4: Probability of males holding a personal loan from a bank

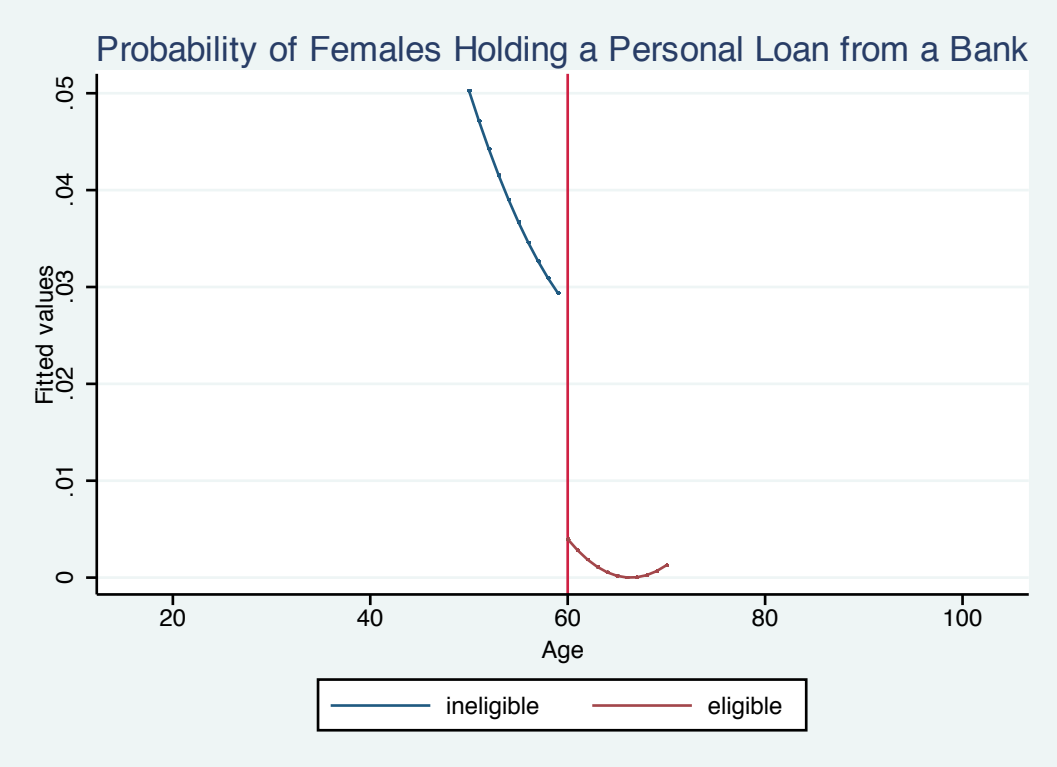

Figure 5: Probability of females holding a personal loan from a bank

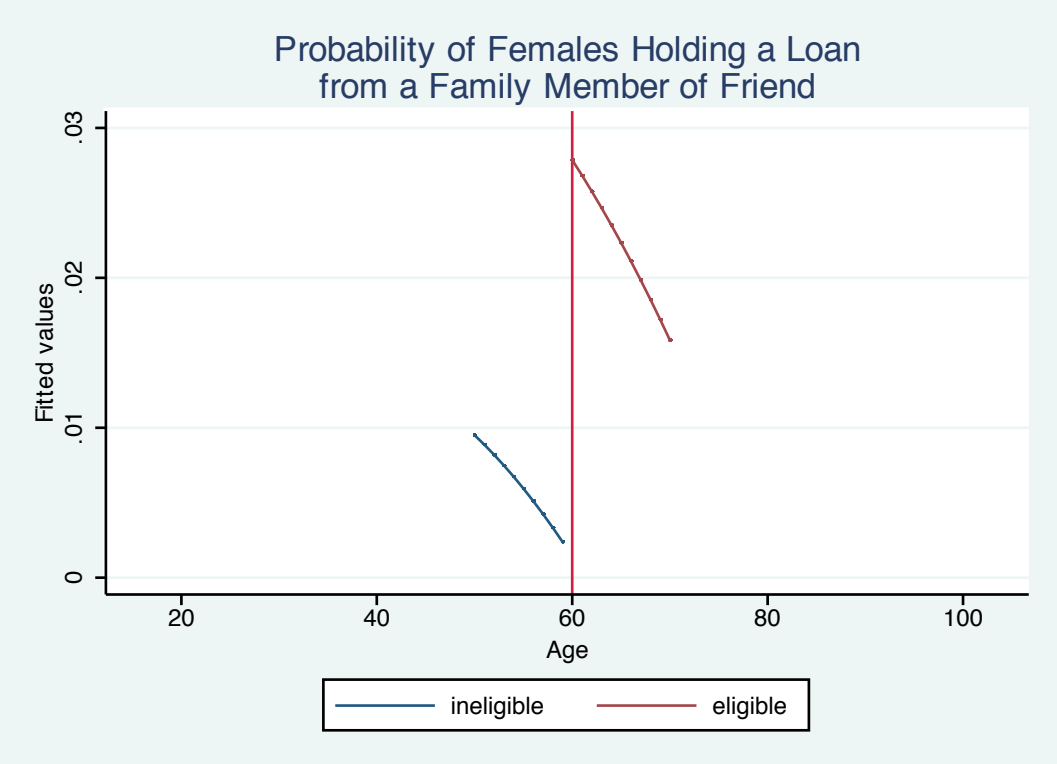

Figure 6: Probability of females holding a loan from a family member or friend

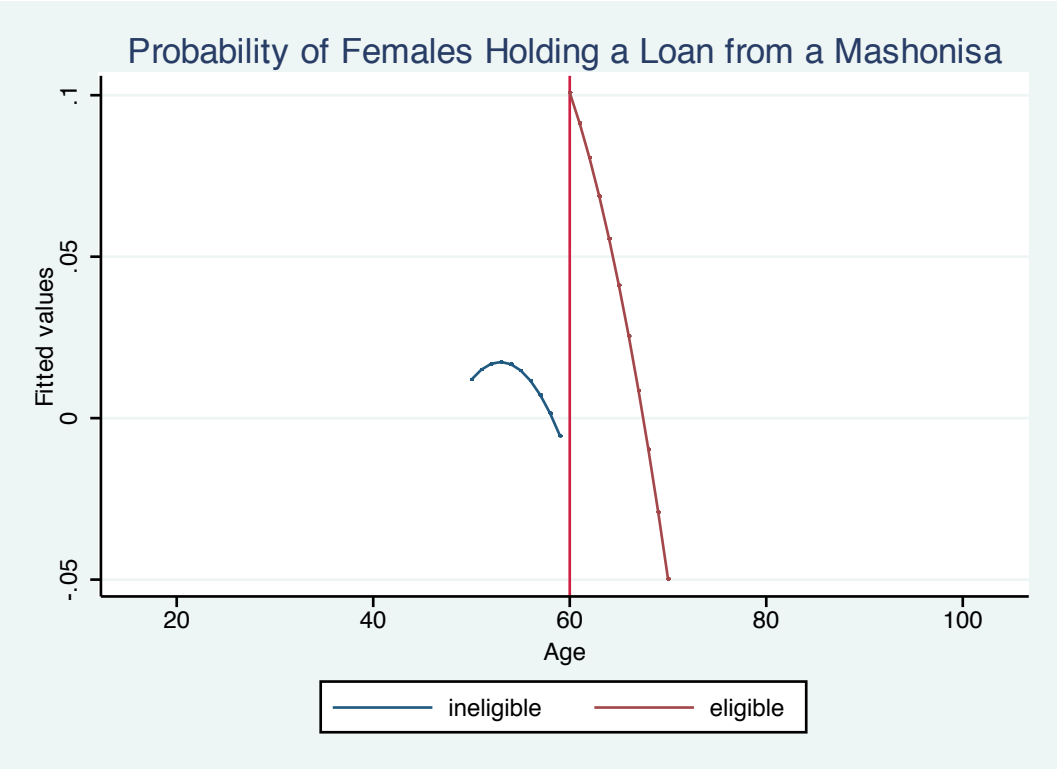

Figure 7: Probability of females holding a loan from a *Mashonisa*

Figure 8: Probability of males holding a store card

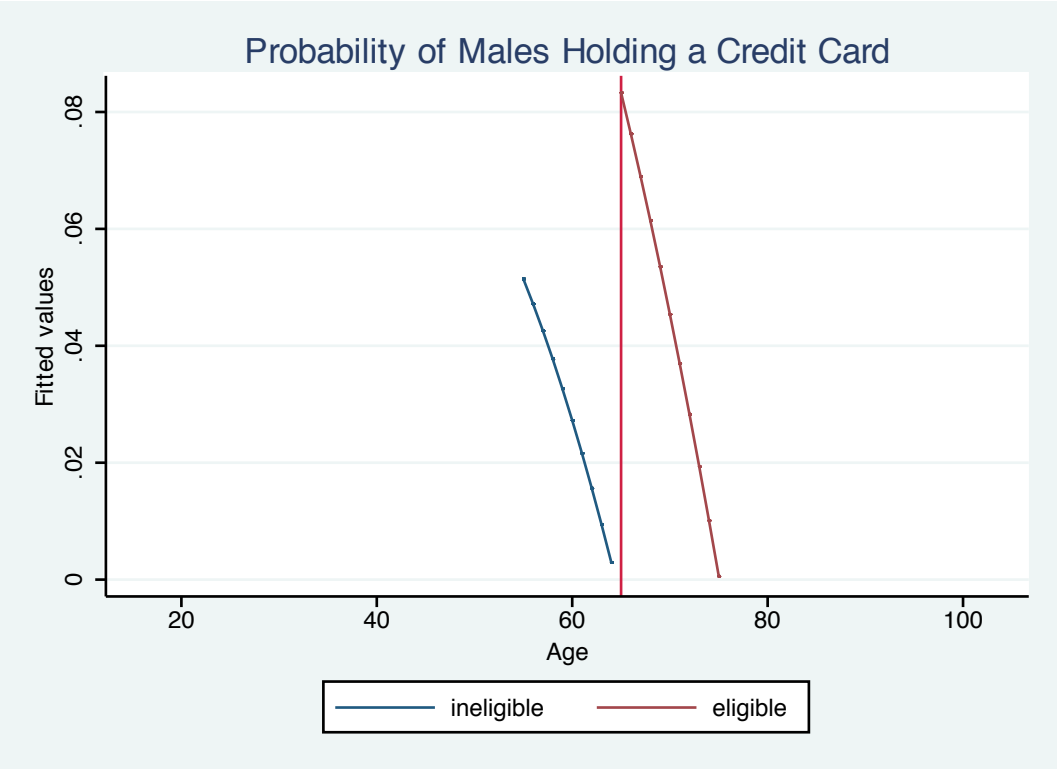

Figure 9: Probability of males holding a credit card

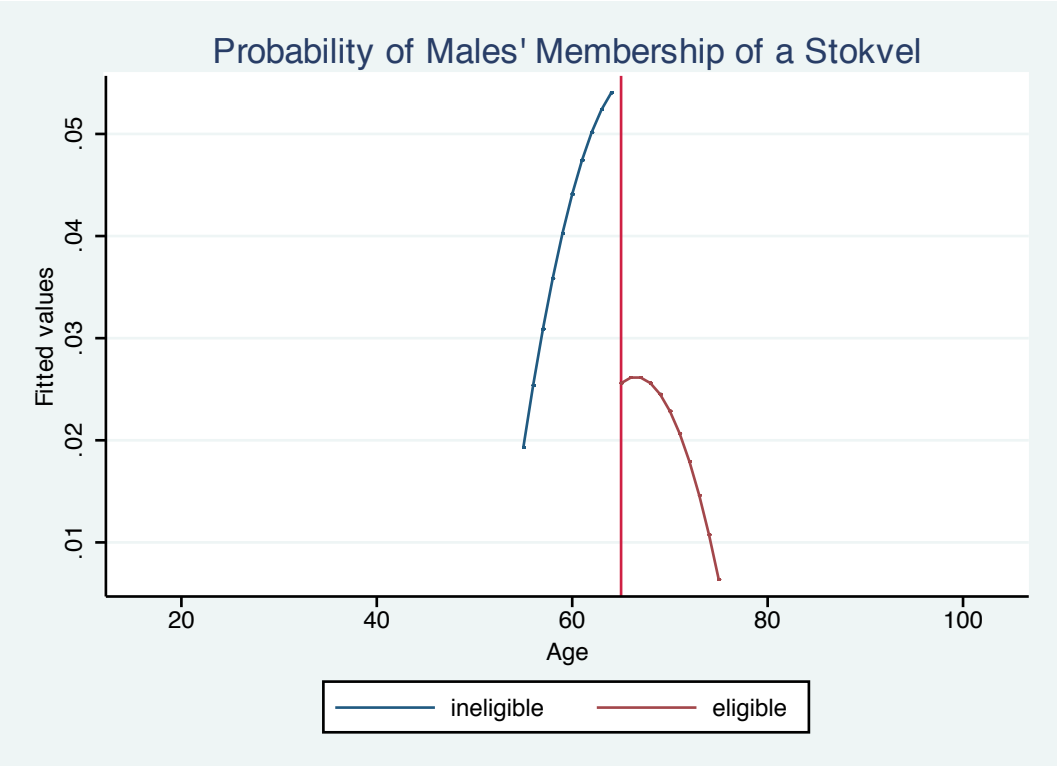

Figure 10: Probability of males' membership of a *Stokvel*

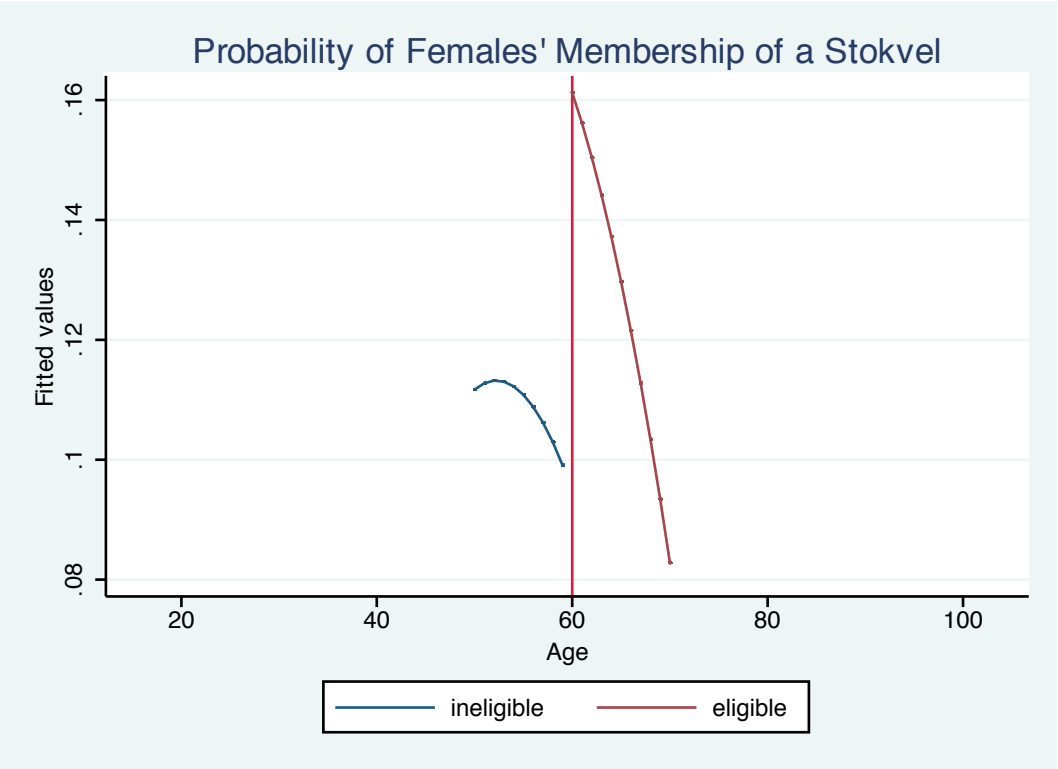

Figure 11: Probability of females' membership of a *Stokvel*

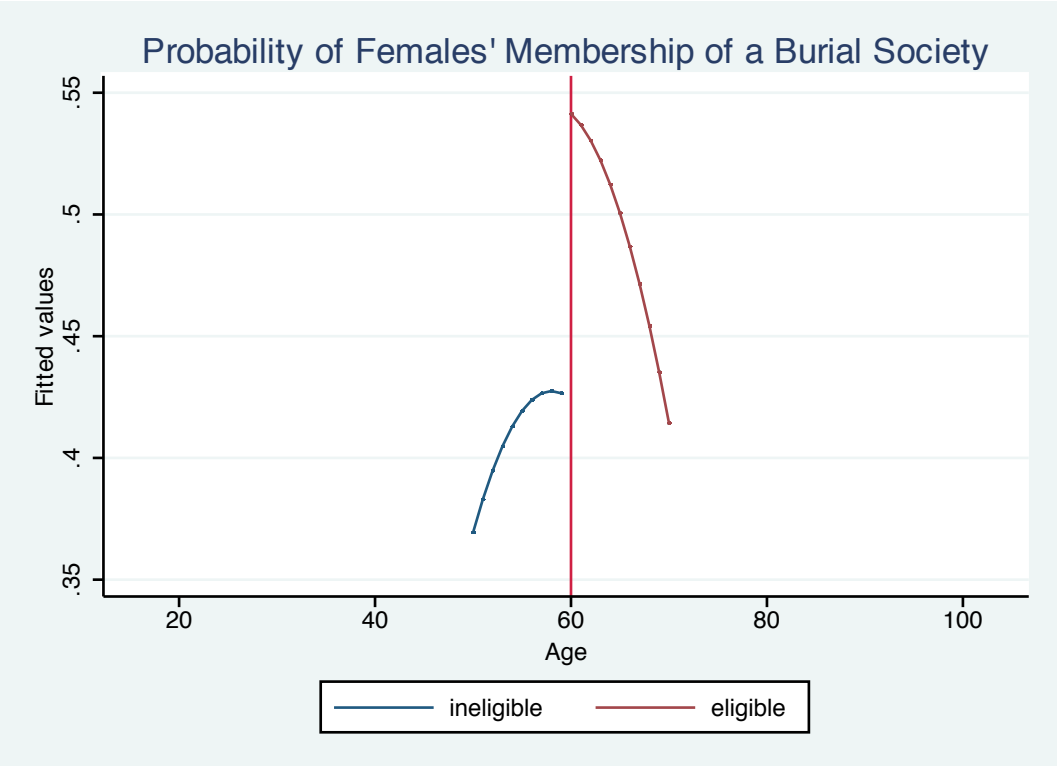

Figure 12: Probability of females' membership of a burial society

Table 2: Males' Utilisation of Formal Instruments

VARIABLES	Bond/Home Loan with a Bank	Personal Loan from a Bank	Vehicle Finance	Bank Account	Credit Card	Store Card	Hire Purchase	Stocks, Shares and Unit Trusts
Eligible	0.0475*	-0.0142	-0.0413*	0.0775	0.107***	0.101***	0.000735	0.00816
	(0.0272)	(0.0285)	(0.0235)	(0.0683)	(0.0296)	(0.0361)	(0.0276)	(0.00795)
Age	0.0765***	-0.0212	0.0140	0.0919	0.00163	-0.0125	-0.0157	-0.0159**
	(0.0277)	(0.0291)	(0.0240)	(0.0696)	(0.0301)	(0.0368)	(0.0281)	(0.00809)
Age^2	-0.000631***	0.000148	-0.000113	-0.000876	-8.88e-05	1.55e-05	0.000131	0.000116*
	(0.000218)	(0.000229)	(0.000189)	(0.000548)	(0.000237)	(0.000290)	(0.000221)	(6.37e-05)
Tribal Authority	0.0136	0.0317	0.0140	-0.215***	-0.0121	-0.00355	0.0555*	0.000838
	(0.0293)	(0.0307)	(0.0253)	(0.0736)	(0.0318)	(0.0389)	(0.0297)	(0.00858)
Urban Formal	0.212***	0.0316	0.0549**	0.0116	0.132***	0.218***	0.0583*	0.000671
	(0.0323)	(0.0338)	(0.0279)	(0.0809)	(0.0350)	(0.0428)	(0.0327)	(0.00946)
Urban Informal	0.0860**	-0.0572	-0.0222	-0.210**	0.0704*	0.196***	0.00893	-0.00988
	(0.0378)	(0.0396)	(0.0327)	(0.0948)	(0.0410)	(0.0502)	(0.0383)	(0.0111)
Eastern Cape	0.183***	0.0146	0.0428	0.0758	-0.0523	0.202***	0.0138	-0.00191
	(0.0433)	(0.0454)	(0.0375)	(0.109)	(0.0471)	(0.0575)	(0.0439)	(0.0126)
Northern Cape	0.0572	0.00846	0.0142	0.257	-0.151*	0.0360	0.231***	-0.00192
	(0.0770)	(0.0807)	(0.0666)	(0.188)	(0.0836)	(0.102)	(0.0780)	(0.0224)
Free State	0.0458	0.0795*	0.0313	0.405***	-0.134***	0.0968	0.0288	-0.00223
	(0.0448)	(0.0469)	(0.0387)	(0.112)	(0.0486)	(0.0594)	(0.0453)	(0.0130)
Kwa-Zulu Natal	0.181***	0.0227	0.0622*	0.273**	-0.0566	0.230***	0.0835*	-0.00187
	(0.0428)	(0.0448)	(0.0370)	(0.107)	(0.0465)	(0.0568)	(0.0433)	(0.0125)
North West	0.129***	0.0597	0.0143	0.331***	-0.106**	0.176***	0.0388	-0.00361
	(0.0449)	(0.0471)	(0.0388)	(0.113)	(0.0488)	(0.0596)	(0.0455)	(0.0131)
Gauteng	0.0147	0.109**	0.0282	0.289***	-0.118***	0.0667	0.0173	0.0123
	(0.0411)	(0.0431)	(0.0355)	(0.103)	(0.0446)	(0.0548)	(0.0416)	(0.0120)
Mpumalanga	0.478***	0.103**	0.0350	0.420***	0.261***	0.500***	0.0198	-0.00358
	(0.0450)	(0.0472)	(0.0389)	(0.113)	(0.0489)	(0.0598)	(0.0456)	(0.0131)
Limpopo	0.204***	0.0109	0.0895**	0.237**	-0.0689	0.198***	0.0325	-0.00348
	(0.0437)	(0.0458)	(0.0378)	(0.110)	(0.0474)	(0.0580)	(0.0442)	(0.0127)
Secondary	0.0494***	-0.0365**	0.0151	0.0763**	0.0599***	0.0426**	-0.00975	0.00502
	(0.0141)	(0.0147)	(0.0122)	(0.0353)	(0.0153)	(0.0187)	(0.0142)	(0.00410)
Tertiary	0.0887**	-0.0592	0.0690**	-0.0902	0.0814**	0.123***	-0.0348	-0.00224
	(0.0357)	(0.0375)	(0.0309)	(0.0897)	(0.0388)	(0.0475)	(0.0362)	(0.0104)
P.C. Household Income	2.28e-05***	1.24e-05***	2.73e-05***	3.04e-05***	-3.09e-06	-6.24e-06	3.57e-06	1.34e-06
	(3.40e-06)	(3.56e-06)	(2.94e-06)	(8.53e-06)	(3.69e-06)	(4.52e-06)	(3.44e-06)	(9.90e-07)
Constant	-2.559***	0.724	-0.502	-2.122	0.246	0.467	0.416	0.535**
	(0.885)	(0.928)	(0.766)	(2.222)	(0.962)	(1.175)	(0.897)	(0.258)
Observations	720	720	720	721	720	719	720	718
R-squared	0.426	0.095	0.204	0.213	0.306	0.258	0.038	0.032
Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1								

Table 3: Males' Utilisation of Informal Instruments

VARIABLES	Loan from micro-lender	Loan from Mashonisa	Loan from Family/Friend	Stokvel	Burial Society
Eligible	-0.000927	0.0105	-0.00817	-0.0491*	0.117*
	(0.0107)	(0.0160)	(0.0193)	(0.0274)	(0.0688)
Age	0.00218	0.00122	-0.0122	0.0265	-0.0256
	(0.0109)	(0.0164)	(0.0195)	(0.0280)	(0.0702)
Age^2	-2.07e-05	-8.61e-06	8.40e-05	-0.000186	0.000213
	(8.59e-05)	(0.000129)	(0.000154)	(0.000220)	(0.000553)
Tribal Authority	-0.0493***	1.23e-05	-0.00209	0.0440	-0.175**
	(0.0115)	(0.0173)	(0.0206)	(0.0295)	(0.0742)
Urban Formal	-0.0534***	0.0128	-0.00174	0.0344	-0.189**
	(0.0127)	(0.0190)	(0.0228)	(0.0326)	(0.0818)
Urban Informal	-0.0584***	-0.0195	-0.0144	0.00597	-0.431***
	(0.0149)	(0.0223)	(0.0266)	(0.0381)	(0.0957)
Eastern Cape	-0.00294	0.0218	0.000792	-0.0158	-0.264**
	(0.0170)	(0.0255)	(0.0305)	(0.0438)	(0.110)
Northern Cape	-0.0113	0.00755	-0.00357	-0.0229	-0.639***
	(0.0303)	(0.0454)	(0.0541)	(0.0754)	(0.190)
Free State	0.00315	0.00773	0.0355	0.0284	-0.412***
	(0.0176)	(0.0264)	(0.0314)	(0.0451)	(0.113)
Kwa-Zulu Natal	-0.00296	0.0140	0.00684	0.0253	-0.370***
	(0.0168)	(0.0252)	(0.0301)	(0.0432)	(0.108)
North West	-0.00589	0.0113	0.00176	0.0742	-0.257**
	(0.0177)	(0.0265)	(0.0319)	(0.0456)	(0.114)
Gauteng	0.00395	0.0463*	0.0758***	-0.00273	-0.206**
	(0.0162)	(0.0242)	(0.0289)	(0.0414)	(0.104)
Mpumalanga	-0.00190	0.0497*	0.0119	-0.0332	-0.488***
	(0.0177)	(0.0265)	(0.0316)	(0.0454)	(0.114)
Limpopo	0.00819	0.0125	0.00338	-0.0323	0.0725
	(0.0172)	(0.0258)	(0.0307)	(0.0441)	(0.111)
Secondary	-0.00547	-0.0277***	0.0134	0.0256*	-0.0886**
	(0.00553)	(0.00829)	(0.00991)	(0.0142)	(0.0357)
Tertiary	-0.0119	-0.0202	-0.0134	0.0220	-0.272***
	(0.0141)	(0.0211)	(0.0251)	(0.0360)	(0.0904)
P.C. Household Income	4.23e-06***	-1.58e-07	-1.04e-06	3.41e-06	-5.52e-06
	(1.34e-06)	(2.00e-06)	(2.39e-06)	(3.42e-06)	(8.60e-06)
Constant	-0.00332	-0.0473	0.434	-0.928	1.602
	(0.348)	(0.522)	(0.623)	(0.892)	(2.242)
Observations	720	720	719	717	718
R-squared	0.057	0.041	0.060	0.048	0.217
Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1					

Table 4: Females' Utilisation of Formal Instruments

VARIABLES	Bond/Home Loan with a Bank	Personal Loan from a Bank	Vehicle Finance	Bank Account	Credit Card	Store Card	Hire Purchase	Stocks, Shares and Unit Trusts
Eligible	0.00623	-0.0381**	0.0175**	-0.0352	-0.00652	-0.0107	-0.0243	0
	(0.0102)	(0.0149)	(0.00816)	(0.0371)	(0.00906)	(0.0222)	(0.0183)	(0)
Age	-0.00345	0.00708	-0.0151**	0.140***	0.0111	0.0129	0.0191	0
	(0.00950)	(0.0139)	(0.00761)	(0.0345)	(0.00845)	(0.0207)	(0.0170)	(0)
Age 2	2.03e-05	-5.94e-05	0.000110*	-0.00118***	-9.43e-05	-0.000135	-0.000141	0
	(8.04e-05)	(0.000118)	(6.44e-05)	(0.000292)	(7.16e-05)	(0.000175)	(0.000144)	(0)
Tribal Authority	0.00558	0.0243	0.00398	0.166***	0.00844	0.0280	0.0176	0
	(0.0115)	(0.0169)	(0.00923)	(0.0419)	(0.0103)	(0.0251)	(0.0207)	(0)
Urban Formal	0.0434***	0.0443**	0.0218**	0.362***	-0.000395	0.114***	0.0718***	0
	(0.0128)	(0.0188)	(0.0103)	(0.0466)	(0.0114)	(0.0279)	(0.0229)	(0)
Urban Informal	0.0134	0.00307	0.00749	0.124**	0.00594	0.0858***	0.0518**	0
	(0.0133)	(0.0195)	(0.0107)	(0.0488)	(0.0118)	(0.0290)	(0.0239)	(0)
Eastern Cape	0.0167	0.0116	0.0210*	-0.264***	-0.00223	-0.0923***	0.0234	0
	(0.0149)	(0.0219)	(0.0120)	(0.0543)	(0.0133)	(0.0326)	(0.0268)	(0)
Northern Cape	-0.00594	0.00719	0.0111	-0.142	-0.00656	-0.0886	0.221***	0
	(0.0248)	(0.0364)	(0.0199)	(0.0901)	(0.0221)	(0.0541)	(0.0444)	(0)
Free State	0.0231	0.0441*	0.0623***	-0.152***	0.0163	-0.0716**	0.0143	0
	(0.0155)	(0.0227)	(0.0124)	(0.0562)	(0.0137)	(0.0337)	(0.0277)	(0)
Kwa-Zulu Natal	0.0265*	0.0256	0.0254**	-0.163***	-0.00572	-0.0621*	0.0798***	0
	(0.0148)	(0.0218)	(0.0119)	(0.0541)	(0.0132)	(0.0324)	(0.0266)	(0)
North West	0.0121	0.0605**	0.0149	-0.0589	-0.00197	-0.00216	0.0499*	0
	(0.0163)	(0.0239)	(0.0131)	(0.0593)	(0.0145)	(0.0355)	(0.0292)	(0)
Gauteng	0.00870	0.0207	0.00529	-0.160***	-0.00889	-0.0975***	0.0634**	0
	(0.0151)	(0.0221)	(0.0121)	(0.0548)	(0.0134)	(0.0329)	(0.0270)	(0)
Mpumalanga	5.65e-05	0.0812***	0.0118	-0.0739	-0.00205	0.0695*	0.0482	0
	(0.0171)	(0.0251)	(0.0137)	(0.0623)	(0.0152)	(0.0374)	(0.0307)	(0)
Limpopo	0.0647***	0.0157	0.0458***	-0.164***	-0.00802	-0.0706**	0.0266	0
	(0.0160)	(0.0234)	(0.0128)	(0.0581)	(0.0142)	(0.0348)	(0.0286)	(0)
Secondary	0.00383	0.0138*	-0.00249	0.0247	0.000502	0.0125	-0.00548	0
	(0.00503)	(0.00738)	(0.00403)	(0.0184)	(0.00448)	(0.0110)	(0.00902)	(0)
Tertiary	-0.0345***	0.0275	-0.00269	0.172***	-0.00181	0.159***	0.00534	0
	(0.0127)	(0.0186)	(0.0102)	(0.0460)	(0.0113)	(0.0277)	(0.0227)	(0)
P.C. Household Income	3.40e-05***	5.47e-05***	2.32e-05***	8.23e-05***	4.26e-05***	7.60e-05***	2.11e-05***	0
	(2.96e-06)	(4.34e-06)	(2.37e-06)	(1.08e-05)	(2.63e-06)	(6.46e-06)	(5.30e-06)	(0)
Constant	0.0764	-0.264	0.454**	-3.967***	-0.341	-0.281	-0.679	0
	(0.279)	(0.410)	(0.224)	(1.016)	(0.249)	(0.609)	(0.500)	(0)
Observations	2,088	2,088	2,085	2,081	2,085	2,085	2,086	2,082
R-squared	0.109	0.140	0.105	0.168	0.135	0.186	0.054	
Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1								

Table 5: Females' Utilisation of Informal Instruments

VARIABLES	Loan from micro-lender	Loan from Mashonisa	Loan from Family/Friend	Stokvel	Burial Society
Eligible	0.00167	0.0960***	0.0326***	0.0730**	0.0826**
	(0.00583)	(0.0133)	(0.0116)	(0.0289)	(0.0415)
Age	0.0107**	0.0616***	0.00351	0.0496*	0.117***
	(0.00543)	(0.0124)	(0.0108)	(0.0270)	(0.0386)
Age 2	-8.92e-05*	-0.000575***	-3.60e-05	-0.000447*	-0.000969***
	(4.60e-05)	(0.000105)	(9.16e-05)	(0.000228)	(0.000327)
Tribal Authority	0.00369	0.0137	0.0129	-0.266***	0.0673
	(0.00659)	(0.0151)	(0.0131)	(0.0327)	(0.0468)
Urban Formal	0.00980	0.0318*	-0.00128	-0.209***	0.0583
	(0.00733)	(0.0168)	(0.0146)	(0.0365)	(0.0520)
Urbank Informal	0.00230	0.0586***	-0.00128	-0.186***	0.0667
	(0.00762)	(0.0174)	(0.0152)	(0.0379)	(0.0541)
Eastern Cape	0.00355	0.0155	-0.0120	0.0765*	-0.413***
	(0.00855)	(0.0196)	(0.0170)	(0.0427)	(0.0607)
Northern Cape	0.174***	0.0604*	0.000107	-0.00740	-0.598***
	(0.0142)	(0.0325)	(0.0283)	(0.0705)	(0.101)
Free State	-0.00356	0.00755	0.0682***	0.132***	-0.408***
	(0.00884)	(0.0202)	(0.0176)	(0.0441)	(0.0628)
Kwa-Zulu Natal	0.00839	0.0341*	0.0115	0.160***	-0.604***
	(0.00849)	(0.0194)	(0.0169)	(0.0424)	(0.0603)
North West	-0.000156	0.00747	-0.0169	-0.0118	-0.374***
	(0.00932)	(0.0213)	(0.0186)	(0.0465)	(0.0662)
Gauteng	-0.00179	0.00872	0.00351	0.0344	-0.196***
	(0.00862)	(0.0197)	(0.0172)	(0.0433)	(0.0612)
Mpumalanga	0.000639	0.0711***	-0.00447	-0.0328	-0.361***
	(0.00980)	(0.0224)	(0.0195)	(0.0489)	(0.0696)
Limpopo	0.00197	0.00896	-0.0196	0.0611	0.00291
	(0.00913)	(0.0209)	(0.0182)	(0.0456)	(0.0648)
Secondary	-0.00416	-0.0215***	0.00168	-0.00918	-0.00102
	(0.00288)	(0.00659)	(0.00574)	(0.0143)	(0.0204)
Tertiary	0.0147**	-0.0217	0.00864	0.0619*	-0.0970*
	(0.00724)	(0.0166)	(0.0144)	(0.0359)	(0.0514)
P.C. Household Income	3.06e-06*	-3.23e-06	6.09e-06*	2.52e-05***	3.77e-05***
	(1.69e-06)	(3.88e-06)	(3.38e-06)	(8.47e-06)	(1.20e-05)
Constant	-0.328**	-1.666***	-0.0913	-1.135	-2.760**
	(0.160)	(0.366)	(0.318)	(0.793)	(1.135)
Observations	2,088	2,088	2,084	2,083	2,086
R-squared	0.101	0.073	0.040	0.090	0.199
Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1					

14. Reference List

AGHION, P. and BOLTON, P. 1997. A theory of trickle-down growth and development, *Review of Economic Studies* 64(2): 151-172.

AMBLER, K. 2011. Bargaining with grandma: the impact of the South African pension on household decision-making. University of Michigan, Population Studies Research Centre Report 11-741.

ANGRIST, J.D. and PRISCHKE, J-S. 2008. Mostly Harmless Econometrics: An Empiricist's Companion. Princeton University Press.

ARDINGTON, C., CASE, A. and HOSEGOOD, V. 2009. Labour supply responses to large social transfers: longitudinal evidence from South Africa, *American Economic Journal: Applied Economics* 1(1): 22-48.

BECK, T. and DEMIRGÜÇ-KUNT, A. 2008. Access to finance: an unfinished agenda, *World Bank Economic Review* 22(3): 383-396.

BENDIG, M., GIESBERT, L. and STEINER, S. 2009. Savings, credit, and insurance: household demand for formal financial services in rural Ghana. Brooks World Poverty Institute working paper 76, University of Manchester.

BERTRAND, M., MULLAINATHAN, S. and MILLER, D. 2003. Public policy and extended families: evidence from pensions in South Africa." *World Bank Research Observer* 17(1): 27-50.

BESLEY, T. 1995. Savings, credit and insurance. Handbook of Development Economics. Behrman, J. and Srinsivasan, T.N. (eds). Amsterdam: Elsevier Science. 3A: 2123-2207.

CASE, A. and DEATON, A. 1998. Large cash transfers to the elderly in South Africa. *Economic Journal* 108(450): 1330-1361.

CLAESSENS, S. 2006. Access to financial services: a review of the issues and public policy objectives. *The World Bank Research Observer* 21: 207-240.

COLLINS, D., MORDUCH, J., RUTHERFORD, S., and RUTHVEN, O. 2009. *Portfolios of the Poor: how the world's poor live on $2 a day*. Cape Town: University of Cape Town Press.

DUFLO, E. 2000. Child health and household resources in South Africa: evidence from the Old Age Pension Program. *American Economic Review* 90(2): 393-398.

EDMONDS, E., MAMMEN, K. and MILLER, D. 2005. Rearranging the family? Income support and elderly living arrangements in a low-income country, *Journal of Human Resources* 40(1): 186-207.

FINSCOPE. 2010. FinScope South Africa 2010. FinMark Trust. [Online]. Available: http://www.finscope.co.za/new/pages/Initiatives/Countries/South-Africa.aspx?randomID=08e8e946-75ae-4749-bea1-9987c8b1049d&linkPath=3_1&lID=3_1_11. [Accessed 2 February 2012].

FINSCOPE. 2011. FinScope South Africa 2011. FinMark Trust. [Online]. Available: http://www.finscope.co.za/new/pages/default.aspx. [Accessed 8 January 2012].

FISCHER, G., 2011. Access to finance: a functional approach to supply and demand. Asia Research Centre Working Paper 42. London School of Economics.

KIRSTEN, M. 2006. Policy initiatives to expand financial outreach in South Africa. Paper delivered at World Bank/Brookings Institute Conference. 30 May 2006.

MBEKI, T., 2004. Address to Parliament. 21 May 2004. Cape Town.

PEACHY, S. and ROE, A. 2006. Access to finance – what does it mean and how do savings banks foster access? A study for the World Savings Bank Institute.

PORTEOUS, D. and HAZELHURST, E. 2004. Banking on Change: Democratising Finance in South Africa, 1994-2004 and beyond. Cape Town: Juta and Co. Ltd.

POSEL, D., FAIRBURN, J., and LUND, F. 2006. Labour migration and households: a reconsideration of the effects of the social pension on labour supply in South Africa, *Economic Modelling* 23: 836-853.

RANCHHOD, V. 2010. Household responses to Adverse income shocks: pensioner out-migration and mortality in South Africa. South African Labour and Development Research Unit working paper no.35.

RECONSTRUCTION AND DEVELOPMENT PROGRAMME, Government of South Africa, 1994.

ROSENZWEIG, M.R. and WOLPIN K.I., 1993. Credit market constraints, consumption smoothing, and the accumulation of durable production assets in low-income countries: investment in Bullocks in India, *Journal of Political Economy* 101(2): 223-244.

SEN, A.K. 1999. *Development as Freedom.* New York: Oxford University Press.

STIGLITZ, J.E. and WEISS, A. 1981. Credit rationing in markets with imperfect information, *American Economic Review* 71(3): 393-410.

UDRY, C. 1990. Rural credit in northern Nigera: credit as insurance in a rural economy. *World Bank Economic Review* 4: 251-269.

UNITED NATIONS DEVELOPMENT PROGRAMME, 2011. *Human Development Report 2011: Sustainability and Equity - A better future for all.* New York: United Nations Development Programme.

WOOLARD, I. and LEIBBRANDT, M. 2010. The evolution and impact of unconditional cash transfers in South Africa. South African Labour and Development Research Unit working paper no. 51.