An analysis of financial inclusion in South Africa

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Abstract

South Africa is notorious for numerous persistent economic problems of inequality, poverty and high unemployment. The country is simultaneously praised for a well-developed financial sector that provides a sophisticated array of financial products. Financial inclusion plays an important role to eradicate poverty and boost economic prosperity, yet financial inclusion is an under-researched topic in South Africa. This study examined the usage of financial services and products using the first four waves of the National Income Dynamics Study (NIDS) data. We conducted OLS and probit regressions to examine the impact of various personal- and household-level characteristics on the financial inclusion index and the probability of households being completely financially excluded, respectively. We found that households headed by more educated, older individuals enjoyed significantly higher financial inclusion index, whereas households residing in rural areas, mostly constituted by black people, in Eastern Cape, KwaZulu-Natal and Limpopo, with low real per capita income and fewer employed members, were associated with a significantly greater likelihood of complete financial exclusion. Lastly, the empirical findings suggested that poverty was associated with financial exclusion, including discrimination by banks against the poor. Not only is financial inclusion observed to be associated with systemic inequalities in South Africa, there is also a clear need for its pursuit that is aimed at avoiding the widening of inter-group inequalities. These findings call into question the holy grail in development economics.

Keywords: Financial inclusion; financial services; NIDS; South Africa.

1. Introduction

Financial inclusion has become a topic of interest for the global community, governments, financial institutions, banks and policy makers. Most established economies have acknowledged the social and political importance of financial inclusion, which has become one of the key socioeconomic challenges on the agenda of major institutions in most economies globally. Widely regarded as a path for pursuing inclusive development, achieving universal financial inclusion is one of the World Bank's objectives to be achieved by the year 2020 (World Bank, 2018).

South Africa provides a good test case for these claims. Not only is the country one of the most unequal, it has also developed the most complex financial system in Africa. Research has shown that 70% of South African adults have transaction accounts (Kessler *et al.*, 2017), a very important instrument of financial inclusion, and this indicates the country is somewhat financially inclusive, compared to other counterpart countries. While this may be evidence of the adoption of financial products, usage and sustainability of such products is weakened by factors relating to costs and convenience. As a result, the country remains mostly a cash society (Kessler *et al*., 2017). The weak usage of financial products shows that there is a need to investigate the usage of financial products in the country.

The benefits of a financially inclusive environment are not only seen through direct access to and use of financial services, but also through the indirect yet positive effects that financial development has on the population at the lower end of income distribution, especially through labour markets. This has been shown by empirical studies that the regulation of bank branching not only improves competition and performance of banks, but also positively impacts the income of the poor, in the process intensifying income distribution by increasing relative wages and work hours of less skilled labour (Jayaratne & Phillip, 1996).

It is, however, very important to point out that, the relationship between financial development and economic development seems quite unclear, as the literature also shows both in South Africa and internationally. Financial development does not always lead to economic development; at times the poor are left worse off after some financial development initiatives (De Haan & Sturm, 2017; Bateman, 2019). In fact, the reality that South Africa has a very sophisticated financial sector and high levels of poverty makes this relationship questionable.

Nonetheless, the role played by the financial system is often said to be axiomatic, with research (Babajide *et al.*, 2015) suggesting that it promotes economic growth and development through financial intermediation by channelling funds from surplus to deficit units. Poverty and inequality are reduced through financial inclusion, as people can invest in future, smoothen consumption and manage financial risks (Demirguc-Kunt *et al.*, 2017). Even the smallest amounts of financial assets provide one with a cushion from economic shocks and possible income loss later in life. Research has also shown that financial exclusion can deprive households from taking part in various ways of saving and limit their ability to accumulate wealth (Searle & Koppe, 2014). This can range from interest earning to saving through paying bills via direct debit, as well as having access to favourable credit (Kempson & Collard, 2012). Access to financial services such as credit is usually said to improve the quality of life for poor households in South Africa (Ntsalaze & Ikhide, 2016).

However, such formal financial inclusion products are generally offered by commercial banks and other regulated financial service providers. The problem that most emerging economies face is that, commercial banks traditionally do not provide services to consumers who are regarded as uncreditable or not credit worthy and these mainly consist of emerging or small entrepreneurs, low-income earners and the poor (Schoombee, 2004).

It is because of the high cost that comes with the risk of rendering financial services to this group, namely unbanked, that makes it unattractive. It is only until the beginning of the 1990s that commercial banks considered entering this segment of the market and be more open in offering some of their goods and services to the unbanked population (Schoombee, 2004). While the number of unbanked adults decreased from 17 to 14 million between 2003 and 2017 (Schoombee, 2004; authors' calculations using the 2017 GHS data released by Statistics South Africa, 2018), the latter number remains high, representing 38% of the working-age population. With the emergence of the National Income Dynamics Study (NIDS) as an alternative data source, this study aims to examine the extent and trend of financial inclusion in South Africa in 2008-2015, focusing on usage of financial services and products. We found that households headed by more educated, older individuals enjoyed significantly higher financial inclusion index, whereas households residing in rural areas, mostly constituted by black people, in Eastern Cape, KwaZulu-Natal and Limpopo, with low real per capita income and fewer employed members, were associated with a significantly greater likelihood of complete financial exclusion. Lastly,

the empirical findings suggested that poverty was associated with financial exclusion, including discrimination by banks against the poor. Not only is financial inclusion observed to be associated with systemic inequalities in South Africa, there is a clear need for it to be pursued in a manner that avoids the widening of inter-group inequalities. These findings call into question the holy grail in development economics, complementing recent critiques (e.g. Obeng-Odoom, 2018) that it is out of touch with the realities in Africa.

  These findings are fleshed out in the following three sections.

2. Literature review
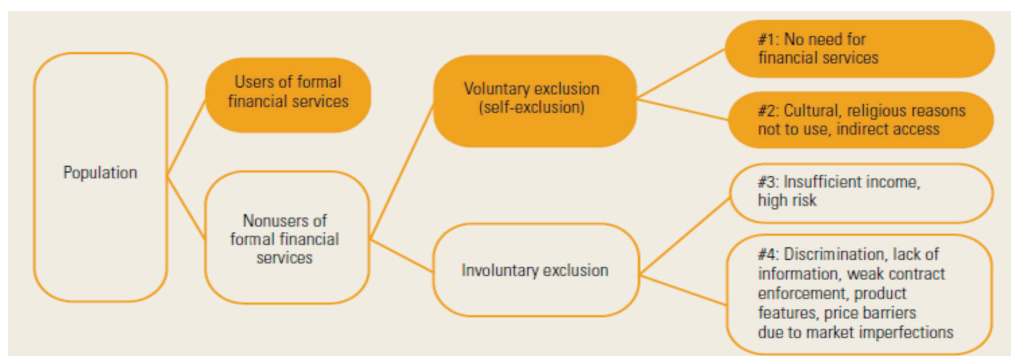
2.1. Conceptual framework

Financial inclusion is defined by scholars in different but related ways. Kim, Yu, and Hassan (2018) distinguish financial inclusion as the ease of accessibility and availability of the formal financial services; Sinclair *et al.* (2009) define it as the ability to access essential financial services in an appropriate form, whereas the World Bank (2008) claims that financial inclusion means the absence of price barriers in the use of financial services (i.e. broad access to financial services and products). Access to financial services refers to the supply of these services, while use of these services is determined by both demand and supply factors (World Bank, 2008).

  There are some complications that come with understanding financial inclusion. One challenge is to distinguish individuals who are involuntarily from those who are voluntarily financially excluded (World Bank, 2008). The latter group refers to those who are excluded because they are poor or regarded as asymmetric problems, and those who are excluded as they see no need for the financial services or choose not to use the services due to cultural or religious reasons (Demirgüç-Kunt *et al.*, 2008). As such, through these concepts a bridge is created between those who have access to financial services and those who are the actual users of these services.

  Figure 1 provides a clear picture of access to and use of financial services. It expresses the narrative that some consumers may be excluded involuntarily from using financial services. One prominent group consists of households and firms that are earlier distinguished as unbankable. This group is excluded as they have insufficient income or represent an excessive lending risk. In this case, lack of use may not be caused by market or government failure. Another group stands for those who may not have access due to other reasons, ranging from discrimination, lack of information, shortcomings in contract enforcement, an

environment with poor information and shortcomings in product features that may make a product inappropriate to customers, to price barriers due to market imperfections, religion, ill-informed regulations, culture and political capture of regulators (World Bank, 2014).

FIGURE 1: USE OF AND ACCESS TO FINANCIAL SERVICES

Source: World Bank, 2014:16.

In South Africa, while there is a high rate of adoption of financial product compared to other developing countries, making it appear as if most people are banked on the surface, the usage of these products is very low, and the country largely remains a cash society (Kostov et al., 2015). This is mostly due to the fact that consumers have little trust in financial services and are wary of service fees (Kessler *et al*., 2017). This trajectory is also pointed out by Kostov *et al.* (2015), when studying the contribution of the Mzansi account initiative to financial inclusion in South Africa, they point out that, the Mzansi account only addresses the penetration question and it is not sufficient to cater for the unrealised demand for financial services for the people it is directed to.

A somewhat more detailed definition of financial inclusion can be extracted from Finscope (2010). According to that study, two groups are distinguished, based on the usage of financial products: financially included and financially excluded. The former represents adults who have or use financial products and services in either the formal or informal sector, while the latter refers to individuals who do not have or use any financial products and services. The financially excluded segment manages their financial lives without using any financial mechanism external from their personal relationships.

The financially included is further divided into two groups: the formally served and informally served segments. The first group represents individuals who have or use financial products and services provided by a financial institution

(e.g. banks), whereas the second group includes those who have or use financial products and services which are not regulated (e.g. private money lenders) (Grundling and Kaseke, 2010). In South Africa there is a high participation in the informal financial market, especially within the Africans (Ardington *et al*., 2004). Informal credit from loan sharks, stokvels and between family and friends make up a fraction larger than the formal channel in the local credit market. In fact, the South African informal personal credit growth rate is higher than that of the country's GDP (World Bank, 2016; Abrahams, 2017).

2.2. Theoretical framework

Stiglitz and Weiss (1981) develop a prominent theory of financial inclusion known as credit rationing. This theory essentially speaks to the act of providers of credit (banks) limiting the supply of additional funds to borrowers who demand credit, even though the borrowers are willing to pay at a higher interest rate. The theory depicts that, in the presence of imperfect information, a competitive loan market may be characterised by credit rationing. This suggests that among borrowers of the same identity, some receive loans while others do not, even though the rejected potential borrowers can pay higher than the market interest rate. There are two reasons why banks would not raise interest rate for borrowers as a response to the excess demand for loanable funds: at a higher interest rate the non-risky borrowers are discouraged from borrowing, thereby resulting in a higher loan default risk; secondly, a high interest rate leads to borrowers investing in riskier projects. While the lack of access to credit does not necessarily suggest that one is financially excluded, credit is a very important financial inclusion variable and has been observed to improve the lives of poor households, as shown by Ntsalaze and Ikhide (2016).

The theory also argues that in the existence of excess demand for credit, some unsatisfied borrowers bargain to borrow at a higher interest rate. The banks would, however, not lend to these borrowers, because they know that the borrowers undertake a riskier project when facing higher interest rate or that there is a change in the mix of people applying for the loan. In either case, a higher interest rate lowers the bank's expected return (Stiglitz and Weiss, 1981). Credit rationing is therefore an outcome of the sorting and incentive effects of interest rate, as this rate affects quality of the loan, but doesn't clear the market.

Other theories of financial inclusion are, amongst others, the free market model and the theory of asymmetric information. According to the free market model, the market economy has an inherent tendency to move closer to Pareto

optimum. If the government intervenes, the economy is taken away from the path of attaining growth followed by the removal of all type of imbalances (Kumar, 2013). Regarding the theory of asymmetric information (Stiglitz, 1975), absence of correct information may lead to financial exclusion. Information tends to be asymmetric when one party has more information about a financial product; should the situation persists, it adversely affects the exchange of financial products in the economy. As a result, some groups of individuals are denied usage of these products (Stiglitz, 1975). Another way in which imperfect information exists is the case where the potential borrowers provide misleading credit worthiness information to lenders and in so doing raising the loan default rate. This results in financial institutions being extra vigilant and end up excluding people who would otherwise be included.

2.3. Review of past empirical studies

At the time of writing, only few local studies were conducted to briefly examine financial inclusion using the NIDS data, but none of these studies used a vast cohort of financial inclusion related variables to develop an index that captures the subject in depth. First, Nyaruwata and Leibbrandt (2009) provide a descriptive overview of the NIDS data on personal debt and access. The study only used the wave 1 data to examine personal debt and access to finance with a specific focus on race. They found that 90% of white-headed households had access to a bank account whilst this proportion was 43% for African-headed households. A greater proportion of white households had private pensions (29%) and investments (11%) compared to African households (3% and 1% respectively). Also, 26% white households reported they had a bond compared to 4% of African respondents. Ocran (2015) used the same data to conduct a logistic model focusing specifically on the likelihood of holding risky financial assets (which included direct ownership of unit trust and shares) and found that this probability was significantly higher for married high-income earners with at least Matric.

Orthofer (2016) used the wave 2 NIDS data together with a novel sample of almost 1.2 million personal income tax records in the 2010-2011 fiscal year to specifically assess the South African wealth distribution. The author found that the wealth share for the top 10% of the population was about 95%. The study also derived total wealth by considering individual assets on pension/life (private pension, life insurance), other financial items (cash on hand, bank account, trusts, stocks, shares) and non-mortgage liabilities (personal loan, study loan, vehicle finance, hire purchase, credit card, store card, Mashonisa

loan, micro loan), as well as household-level wealth (real estates, livestock, mortgages). Wealth was found to be more unequally distributed compared to income distribution. While the author conducted a fairly good assessment of wealth, however, the study did not comprehensively investigate the extent of financial inclusion and profile of people who were financially excluded.

The deeper impact of the effects of financial services on the livelihood of the less privileged was observed by Ntsalaze and Ikhide (2016). The authors also used the NIDS data to study financial inclusion by looking at the effects of household indebtedness threshold on multidimensional poverty in South Africa. They found that a debt threshold below 42.5 percent of income was important for improving the welfare of households. Hence the authors argued that appropriate levels of debt should be encouraged as it smoothens consumption and improves the quality of life of many households. The study also showed that government grants were not an effective tool to eradicate multidimensional inequality in South Africa.

Empirical literature also shows that, while it may be, as indicated by Ntsalaze *et al*. (2016), that access to credit plays an important role in eradicating poverty and empowering disadvantaged groups, the control of the distribution of such a service is even more important, as it can lead to over-indebting and exploitation of the impoverished group (Bateman, 2019). The 2019 Bateman study conducted a post-apartheid microcredit experiment in South Africa, to examine the effect of the microcredit institutes in the betterment of the previously disadvantage population, particularly the black South African community. The study revealed that the microcredit channels that were apparently directed at improving the lives of the poor post-apartheid era were rather impoverishing them. It is particularly because these channels were set to deliberately benefit the tiny financial elites who operated these institutions, which has led to the indebtedness and worsened conditions for black South Africans. The study further expressed that this has also dispossessed the black community of their scarce financial resources, opportunities and livelihoods.

Bateman (2019), also emphasises that, while the micro lending model may have seemed to initially make policy sense, it has in recent years proven to, in practice, have zero impact on poverty reduction. In fact, the only people who, in practice, benefit from microcredit is mainly the elite who are in finance and business supplying microcredit to the poor, and the political elites, who implement neoliberal policies in favour of microcredit.

Financial development in South Africa has many advocates, but so are its critics. The country has one of the most sophisticated financial sectors in the world, hence it is no surprise that there have been several financial inclusion initiatives adopted over the recent years. However, such initiatives, in particularly Shoprite and Pick'n Pay money transfer as well as the Mobile banking platforms (M-Pesa, FNB e-wallet, Standard Bank and Capitec money transfer, etc.) are mostly providing services as payment platforms, and do not offer other important financial services such as saving and accessing credit (Abrahams, 2017), which also make it appear as if most people are financially included on the surface, while these products are mainly used only for cash transfer purposes. Wentzel *et al.* (2016) argue that the difference in geographies and socioeconomic conditions is the reason why the impact of financial inclusion on the livelihood of the poor often varies.

The effect of spatial externalities on financial development is observed by Bara *et al.* (2017). The study analyses the effect of spatial externalities on the Southern African development community's (SADC) financial development and the results show that, in South Africa, the financial development is responsive to spatiality. However, the responsiveness varies with the specific aspect of financial development. It indicates that monetary measures, particularly, Liquid Liabilities and Broad Money are highly responsive to proximity and elicit positive spatial economies of scale. The Finscope survey has dedicated itself in making data on financial inclusion in Africa available while the Global Findex has done so on a global scale. For this reason, the majority of the empirical work done on financial inclusion internationally used the Global Findex data and the Finscope has been fairly used locally as well around the African continent. In terms of local studies, Makina *et al.* (2015) used the Finscope Small Business Survey to analyse the effect of access to credit on firm size. The study discovered that access to formal credit by small- and medium-sized enterprises (SMEs) constituted as sole proprietorship had a positive relation with firm size. It was also found that informal credit access had no significant effect on the size of SMEs. A general observation was that access to credit, whether formal or informal, had a local dimension. Access to formal credit was more prominent in the SMEs in the more urbanised provinces, while those in rural provinces relied more on informal credit. The authors argued a fairly clear narrative of firms' access to credit. However, being a firm-level study, it did not really investigate the extent of financial inclusion and the characteristics of financially excluded individuals.

Ardington *et al.* (2004) reviewed the extent of financial inclusion in three broad areas, namely savings, insurance and debt. The review essentially summarised literature that was available in South Africa over the post-apartheid period and prior to 2004. The review indicated that the formal matrix of savings, lending and insurance institution did not cater for poorer households and the situation worsened over time, especially in rural areas. Moreover, households with access to at least one form of savings institutions were able to access other additional forms of savings, borrowing and insurance institutions; in contrast, those households without access to at least one form of financial institution tended not to have access to any form at all. Ardington *et al.* (2004) support the findings by Bateman, (2019), that the poor households were left worse off by the financial inclusion channels initiated post the apartheid period. This dynamic entrenches inequality which, in turn, weakens financial development (Gwama, 2014).

The Ardington *et al*. (2004) study further shows that informal traditional options of saving and borrowing (such as stokvels) were accessed mainly by Africans who resided primarily in rural areas. The literature, however, indicated that access to stokvel was significantly low across all income deciles; it was mainly accessible to households in the middle of income distribution and those in the bottom decile were excluded. Households in bottom deciles were the largest group that purchased funeral insurances and mainly through membership of burial societies as opposed to formal funeral insurance policies. One shortcoming of the Ardington *et al.* study is that, while it provides detailed review on access to basic financial inclusion services, it is somewhat outdated and did not thoroughly investigate the usage of basic financial services. Comparable studies in Africa are rare, although ethnographic studies that are similarly spirited can be found elsewhere in Africa (see, Kotir, and Obeng-Odoom, 2009).

At the international level, financial inclusion is mostly observed in comparison with other countries. Honohan and King (2009), for instance, used the Finscope survey to explore the potential of the data on a cross-country analysis and review the nature of evidence that has been assembled. The study revealed an overall low penetration percentage, with an average of 29% banked across the aggregate sample (it was 15% in Rwanda and 62% in South Africa). There was evidence of a positive correlation between mean income and penetration, and the proximity of households to financial services played a crucial role in the usage of these services. The study further regressed several demographic variables against the probability of being unbanked; it was found that highly educated middle-aged individuals with mobile phones enjoyed a significantly

greater likelihood of being banked. The empirical findings also indicate that trust in banks, financial sector knowledge and broader economic infrastructure increased the likelihood of being banked.

Demirgüç-Kunt *et al.* (2017) conducted an overview of financial inclusion globally and review of recent empirical evidence on how usage of financial products may contribute to inclusive growth and economic development. The evidence suggests that financial inclusion allows individuals to efficiently and safely conduct their daily transactions and broadens their investment and options of financial risk management through the use of formal financial system. In addition, use of certain financial products such as digital payment and inexpensive savings account was more effective in reaching development goals (e.g. reducing poverty and inequality), as compared to other financial products.

Other international empirical research conducted either across countries or in comparison with other countries, generally found financial inclusion to play a major role in economic development and growth. Usage of financial products from the formal financial system in particular was found to have a significant positive effect on eradicating poverty, reducing inequality gaps and improving people's standard of living. Fungáčová and Weill (2015) analysed China's financial inclusion in comparison to other BRICS countries, using the World Bank's Global Findex (2011) database. The study found that there was greater financial inclusion resulting from the use of formal account and formal savings in China than other BRICS countries and the financially included were able to invest in education and launch their own businesses, thereby leading to poverty reduction and economic growth. Furthermore, the more educated, older males and high-income earners were significantly associated with greater usage of formal accounts and credit in China, whilst use of alternative channels of borrowing was highly influenced by education and income.

The findings of Fungáčová *et al.* (2015) were confirmed by Zins and Weill (2016) who used the same data source to investigate the determinants of financial inclusion in 37 African countries. They found that older and more educated male high-income earners were significantly more likely to be financially included. There was also a difference between determinants of informal finance and formal finance, and that mobile and traditional banking were driven by similar determinants. The study emphasised the need for the design of policies aimed at fostering financial inclusion in Africa and that there was a high use of informal financial services in the continent, whereas informal finance was found not to be a substitute of formal finance in all financial inclusion aspects in Africa.

Another general observation from empirical literature that seek to study or compare financial inclusion across countries is that, financial inclusion was mostly found to be low in underdeveloped economies, as compared to advanced economies. This is also shown by Sarma and Pais (2011), who derived a financial inclusion index (FII) at country level for 49 countries and compared it to the Human Development Indices (HDIs). The study found that countries with high and medium FIIs belonged to the group that was classified as countries with high human development (HDI > 0.7). Sarma (2012) derived the same FII as proposed by Sarma and Pais (2011) for 94 countries in 2004-2010. A general improvement in the level of financial inclusion took place during the period, as average FII increased from 0.373 to 0.478. While low-income and lower middle-income countries dominated the low FII countries, the medium and high FII countries were dominated by upper middle- and high-income countries. Hence, financial inclusion and income levels in general moved in the same direction.

Park and Mercado (2015) adopted a similar approach to derive the FIIs for 37 Asian countries, to study the link between financial Inclusion, poverty and inequality at country level. Higher per capita income, sound rule of law, large population size, low dependency ratios, good governance and high institutional quality had significant positive impact on financial inclusion. Also, financial inclusion significantly reduced poverty and there was some evidence on the role of financial inclusion to reduce income inequality. Finally, Kim, Yu and Hassan (2018) provided evidence on mutual causal relationship between financial inclusion and economic growth, in 55 Organization of Islamic Cooperation (OIC) countries.

Hlophe (2018) investigates whether financial development translates into financial inclusion in the Kingdom of Eswatini right next to South Africa. The study reveals that in Eswatini financial development translates to considerably increasing financial inclusion. It also stresses the importance of the innovation of digital financial services in expanding channels for increased financial inclusion. The study however looks at financial inclusion as the ability to receive and make payment or simply circulate funds and does not look at the access to other key financial inclusion services that can lead to human development and reduction of poverty. It is important to consider multiple important variables that will positively contribute the livelihood of people, when studying financial inclusion.

While it may seem as if there is a consensus that financial inclusion in greatly associated with economic development, there is an existence of literature that proves otherwise. De Haan and Sturm (2017) for instance, looks at the

relationship between financial development and income inequality in 121 countries. The study shows that, increased level of financial development, financial liberalization as well as banking crises all lead to increased income inequality. These findings are evidently in contrast with vast existing literature that associates financial development to economic development in general. Taylor (2012), argues that the political economy is a key factor in determining how financial inclusion interventions impacts the lives of the poor.

To conclude, the general observation of empirical literature available on financial inclusion is that it is somewhat "superficial", in particular the local studies. This is because in most cases, only few finance variables are selectively examined, whereas the more comprehensive studies have become somewhat outdated and, hence, incapable of providing insights about new forms of finance and credit. There is also lack of studies that provide a long-term trend on the extent of the usage of financial products and the profile of individuals who are completely financially excluded, especial at country level. In our study we observe a wide range of financial inclusion variables, which will provide a more detailed examination of the usage of these products in South Africa. This study, therefore, helps to address the remaining gaps in the literature, especially in the local context.

3. Data and methodology

3.1. Data

The first four waves of the NIDS data (wave 1: 2008; wave 2: 2010/2011: wave 3: 2012; wave 4: 2014/2015) are used for this study. NIDS is South Africa's first national panel data study and is conducted biannually by the Southern Africa Labour and Development Research Unit (SALDRU), based at the University of Cape Town.

Traditionally, data aimed at examining financial inclusion can be provided through two channels: demand-side data and supply-side data. The former provides information concerning financial services users, while the latter is usually gathered through household and firms' surveys. Through the demand-side data, one can measure financial service users' socio-economic, demographics and problems encountered when seeking formal financial services. Supply-side data provides information on regulated financial services providers. Such information helps us understand the geographical accessibility, pricing, penetration and usage of financial products and services. Supply-side data is usually gathered as a set of broad indicators of formal and regulated financial service providers (World Bank, 2014).

The existence of these two channels in which financial inclusion data is presented as well as the manner in which financial inclusion should be measured has become a topic of concern amongst most researchers and policy makers. Most researchers have approached the measurement of financial inclusion mainly by using supply-side data to look at the usage and access to formal financial services (see Sarma, 2012; Chakravarty and Pal, 2010). There has also been some work done using demand-side data, in most cases these studies relied on individual level demand side data, with a focus on indicators related to usage and barriers individually (see Demirgüç-Kunt and Klapper, 2013).

As mentioned earlier, the Finscope survey has dedicated itself in making data on financial inclusion available around Africa. It is, therefore, no surprise that the Finscope survey is commonly used by scholars who seek to analyse financial inclusion in Africa. This has, as a result, created the need for alternative views using different data source. The NIDS survey, on the other hand, provides quite detailed data on the household usage of financial inclusion.

The NIDS data primarily provide information on demand-side indicators, since the survey is conducted on households who demand and consume financial services and products. The questions on finance focus on ownership, value of payment and outstanding balance. Our study focuses on ownership, as the questions were asked as "do you personally have …?" Only households with at least one adult member are included for the analysis, and the number of households observed in each wave is as follows: 7 274 in wave 1, 6 749 in wave 2, 8 023 in wave 3 and 9 597 in wave 4. Households are divided into deciles with per capita income in December 2016 prices, using consumption price index data (Statistics South Africa, 2017).

Additional to the primary objective of the study, which is to measure the extent of household financial inclusion, we further examine the relationship between financial inclusion, labour market outcomes and poverty. For poverty analysis, we make use of the Statistics South Africa (2015) lower bound poverty line of R501 per capita per month in 2011 February prices, equivalent to R689 in 2016 December prices. This poverty line is derived using the consumption basket from the 2010/2011 Income and Expenditure Survey (IES) data. All the empirical results are weighted using the post stratified weights.

3.2. Methodology

In this study, we use the PCA method to derive a financial inclusion index, which is derived by considering the 14 finance assets questions in the NIDS

adult questionnaire. The PCA is a data reduction method to re-express a large number of variables into fewer dimensions. The PCA approach aims to change the dataset in such a way that, a multitude of variables can be combined into relatively fewer components that capture the best possible variation from the original variables. The PCA is also useful when identifying similar or related patterns across variables (Vyas & Kumaranayake, 2006). Each of the components that the PCA decomposes the variance of the set of variables into is a weighted summation of the individual variables. PCA is conducted in such a way that the weighting of every single variable is proportional to the share of total variance that it represents.

In equation terms, it means $P_1 = \sum_{i=1}^{n} a_{1i} X_{1i}$, where $a_{ki} = \frac{\sum_{i=1}^{n} r_{x_1 x_i}}{\sum_{i=1}^{n} \sum_{j=1}^{n} r_{x_j x_i}}$.

In the above equation, $P_1 = \sum_{i=1}^{n} a_{1i} X_{1i}$ is the principal component, while $a_{ki} = \frac{\sum_{i=1}^{n} r_{x_1 x_i}}{\sum_{i=1}^{n} \sum_{j=1}^{n} r_{x_j x_i}}$ represents its sample variance given by the variance of linear combinations of the indicators which takes the sample variances of the indicators and the sample covariance's across indicators into account. Originally, the components are calculated in turn, where the previous component captures the elimination of successive variation. The second principal component is calculated in such a way that it is based on a matrix with elements equal to $r_{x_i x_j} - a_{1i} a_{ij}$. To identify the number of variables included in the index, the eigenvalue ratios are used. These ratios show the proportion of all the variance that is explained by each principal component (Van der Berg *et al.*, 2003).

Other methods to derive a composite index include, amongst others, Factor Analysis (FA) and Multiple Correspondence Analysis (MCA). There is no definite answer on which statistical approach is the best; nonetheless, the PCA was designed essentially for continuous variables whereas the MCA is more suitable for categorical variables. Blasius and Greenacre (2006) assert that one important difference between PCA and MCA is that the MCA imposes a fewer constraints on the data. Booysen, Van der Berg *et al.* (2007) observed both methods and noted that the two methods arrived at similar weighting of index components.

The final set of analyses that we undertake is to fit a series of multivariate regression models to our data. We first conduct Ordinary Least Squares (OLS) analysis by regressing the financial inclusion index on the demographic characteristics (such as gender, race, age, education, geographical type, province,

household size, employment status and level of income) of the household heads. This is followed by the probit regressions to examine the impact of these explanatory variables on the likelihood of the household being completely financially excluded. In other words, the dependent variable is a binary variable, which is equal to one when the household is completely financially excluded (i.e. the answer is "no" to all 14 financial asset questions) but zero otherwise.

3.3. Limitations

There are some limitations that come with using the NIDS data to measure financial inclusion, in particular the fact that NIDS did not ask questions on barriers, access and affordability. Hence, we cannot conduct the two-stage PCA approach as done by a few past empirical studies as reviewed earlier. Moreover, the stokvel indicator is excluded from the analysis as it was only captured by the NIDS survey in waves 3 and 4. Another limitation is that, it is not possible to distinguish between voluntary and involuntary financial exclusion.[1] Lastly, for this study, we do not examine the changes (if any) of the extent of financial inclusion of each household across the four waves. To do this, we need to only include the balanced panel component of the date (i.e., households taking part in all four waves). This would require a separate, more in-depth study of its own.

4. Empirical Findings

4.1. Descriptive statistics

Table 1 presents the proportion of households with at least one adult member having some form of the observed financial services. The results indicate that there has been an increase in the usage of most financial services between waves 1 and 4. The proportion of households having at least one member with a bank account increased from almost 57% in wave 1 to over 78% by wave 4, while those with a personal loan from a bank nearly doubled (8.63% to 16.41%) between the first and last waves.

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[1] It is unfortunate that the NIDS did not ask questions to clearly distinguish voluntarily from involuntarily financially excluded individuals, and it is not possible for us as authors to make any assumptions or impose criteria to assume certain individuals belong to a particular group. Nonetheless, the empirical findings in Tables 1 and 2 as well as Figure 1 suggest an increasing proportion of households are banked (having a bank account). This may imply the likelihood of involuntary financial exclusion has been decreasing over time.

TABLE 1: PROPORTION OF HOUSEHOLDS (%) WITH AT LEAST ONE MEMBER HAVING EACH
SOURCE OF FINANCE (WAVE 1 − WAVE 4)

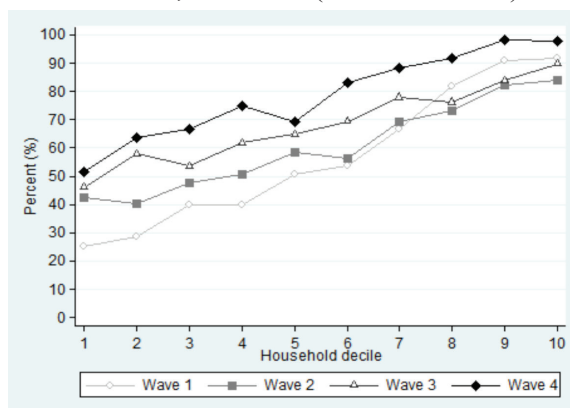| Item	Wave 1	Wave 2	Wave 3	Wave 4
Home loan or bond	8.57	7.13	7.25	5.68
Personal loan from a bank	8.63	6.77	10.78	16.41
Personal loan from a micro-lender	0.93	0.95	0.65	1.73
Loan with a Mashonisa	1.69	1.82	2.05	2.97
Study loan with a bank	0.99	0.70	0.47	0.86
Study loan with an institution other than a bank	0.62	0.56	0.48	0.69
Vehicle finance (car payment)	7.34	4.88	3.99	6.29
Credit card	12.50	8.06	9.76	9.74
Store card	22.07	15.84	21.37	31.30
Hire purchase agreement	5.40	3.98	4.90	6.52
Loan from a family member or friend or employer	2.85	3.44	2.24	8.76
Bank account	56.89	60.48	68.13	78.50
Pension or retirement annuity	8.36	10.14	4.46	13.12
Unit trusts, stocks and shares	2.71	2.35	1.11	2.76

Source: Authors' own calculations using the NIDS waves 1 to 4 data.

We also considered variables from informal financial sources, such as loans from Mashonisa (loan sharks) which have increased from 1.69% in wave 1 to 2.97% in wave 4, and loans from a family member, friend of employer which increased from less than 2.85% to 8.76%. The usage of other important services, such as hire purchase agreements, store cards and pension or retirement annuity also increased across the four waves. Furthermore, there is a decrease in the use of some of the major financial services. For example, households where at least one member reported to have home loans or bonds were at 8.63% in wave 1 and it gradually declined over the years ending up at 5.68% by wave 4. There was also a slight decline with regard to the study loans with a bank and vehicle finance variables.

One finance source that particularly stands out is the use of credit cards, which decreased from 12.50% (wave 1) to 9.74% (wave 4). Even though this output is meant to indicate the change or trends of use of financial services, the changes over the four waves may have come about as a result of change of attitude, behaviour or interest of the recipients towards the service, as opposed to the

accessibility of those services, Since factors such as services fees negatively affect the attitude towards services such as credit cards (Kessler *et al.* 2017).

FIGURE 2: PROPORTION OF HOUSEHOLDS (%) WITH AT LEAST ONE MEMBER HAVING A BANK ACCOUNT, BY DECILE (WAVE 1 – WAVE 4)

Source: Authors' own calculations using the NIDS waves 1 to 4 data.

Figure 2 shows the proportion of households with at least one member having a bank account by decile. In all four waves there was a substantial increase in the share of members with bank accounts, especially for the poorest seven deciles. Between waves 1 and 4, there was an increase in the percentage of households with at least one member having a bank account in all deciles, and this proportion in general increased across the richer deciles in all waves.

Table 2 shows the proportion of households with at least one member having some form of the observed financial services by poverty status. The general findings in the table suggest that poverty is associated with financial exclusion; in all four waves, households who were regarded as poor had relatively lower rates of usage of each source of finance. These findings are in line with the earlier reviewed past empirical studies that associates poverty with financial exclusion (e.g., Fungáčová and Weill, 2015; Sarma and Pais, 2011).

TABLE 2: PROPORTION OF HOUSEHOLDS (%) WITH AT LEAST ONE MEMBER HAVING EACH SOURCE OF FINANCE, BY POVERTY STATUS (WAVE 1-WAVE 4)
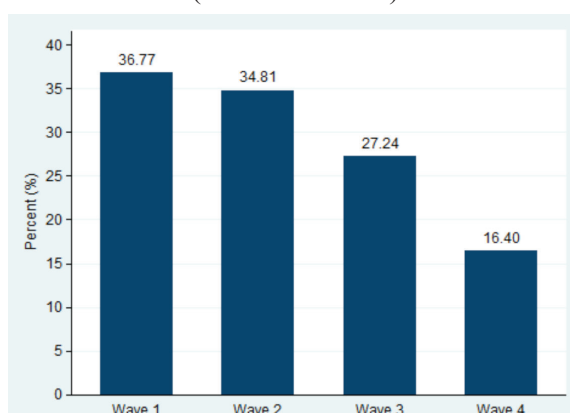
Item	Wave 1		Wave 2		Wave 3		Wave 4	
	Poor	**Not poor**	**Poor**	**Not poor**	**Poor**	**Not poor**	**Poor**	**Not poor**
Home loan or bond	0.1	11.8	0.2	9.6	0.3	8.8	0.2	6.7
Personal loan from a bank	1.4	11.4	2.0	8.5	1.9	12.8	6.5	18.3
Personal loan from a micro-lender	0.8	1.0	0.1	1.2	0.1	0.8	3.0	1.5
Loan with a Mashonisa	1.0	1.9	3.1	1.4	2.3	2.0	5.1	2.6
Study loan with a bank	0.3	1.3	0.3	0.8	0.0	0.6	0.0	1.0
Study loan with an institution other than a bank	0.3	0.7	0.2	0.7	0.1	0.6	0.8	0.7
Vehicle finance (car payment)	0.1	10.1	0.1	6.6	0.0	4.9	0.3	7.4
Credit card	1.0	16.9	0.6	10.7	0.5	11.8	1.3	11.3
Store card	6.9	27.9	7.3	18.9	8.2	24.3	17.5	33.9
Hire purchase agreement	2.5	6.5	2.0	4.7	3.0	5.3	6.1	6.6
Loan from a family member or friend or employer	3.1	2.8	4.5	3.0	3.2	2.0	12.2	8.1
Bank account	30.5	67.0	42.3	67.0	50.8	72.0	56.4	82.7
Pension or retirement annuity	0.4	11.4	0.6	13.5	0.8	5.3	0.9	15.4
Unit trusts, stocks and shares	0.0	3.7	0.1	3.1	0.1	1.3	0.4	3.2

Source: Authors' own calculations using the NIDS waves 1 to 4 data.

The results in Table 2 confirm the findings derived by recent empirical literature (Ocran, 2015; Orthofer, 2016), as high-income (or non-poor) household enjoy greater usage of financial services as opposed to poor households. The analyses show that the proportion of poor households who had members with bank accounts was 30.5% in wave 1 but increased continuously to 56.4% in wave 4. For the non-poor households, this share increased from 67.0% to 82.7%. Other strong indicators of financial inclusion such as having a home loan, personal loan from a bank, credit card, vehicle finances and store cards are also seen in very high proportions in the households which are not poor as opposed to the poor households, once again implying that poverty is associated with financial exclusion.
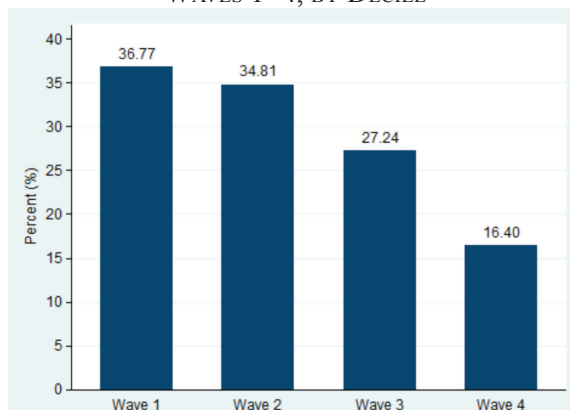
Figure 3 shows the proportion of households that were completely financially excluded (i.e. not having any of the 14 sources of finance), and it can be seen that it more than halved between the first (36.77%) and fourth (16.40%) waves. In addition, Figure 4 and Table 3 provide a more detailed breakdown of the extent of complete financial exclusion by household decile (using the real per capita income variable); as expected, the proportion of households that were completely financially excluded was higher in the poorer deciles, but this share declined across all deciles between waves 1 and 4. Table 3 also presents information on the decile share of the financially excluded households, and the results suggest that the shares of the poorest three deciles increased between waves 1 and 4.

FIGURE 3: PROPORTION OF HOUSEHOLDS (%) COMPLETELY FINANCIALLY EXCLUDED
(WAVE 1-WAVE 4)

Source: Authors' own calculations using the NIDS waves 1 to 4 data.

FIGURE 4: PROPORTION OF HOUSEHOLDS (%) COMPLETELY FINANCIALLY EXCLUDED IN
WAVES 1- 4, BY DECILE

Source: Authors' own calculations using the NIDS waves 1 to 4 data.

TABLE 3: FINANCIAL EXCLUSION BY HOUSEHOLD DECILE (WAVE 1-WAVE 4)

Decile	% of households that are financially excluded in each decile		Decile share of the financially excluded households	
	Wave 1	**Wave 4**	**Wave 1**	**Wave 4**
1	69.68	37.09	18.95	22.68
2	65.05	29.09	17.71	17.79
3	50.91	24.07	13.87	14.59
4	50.84	19.33	13.79	11.89
5	41.63	24.58	11.36	14.89
6	40.31	13.52	10.93	8.24
7	26.40	9.17	7.17	5.60
8	11.74	5.37	3.20	3.26
9	6.34	1.33	1.72	0.81
10	4.78	0.40	1.30	0.24
All	36.77	16.40	100.00	100.00

Source: Authors' own calculations using the NIDS waves 1 to 4 data.

Table 4 shows the list of components used to generate the financial inclusion index. The principal component includes 14 variables across the four waves. This is done in such a way that the principal components have a mean of zero. The standard deviation for the components is given and it is the sequence of the eigenvalue. What we are interested in is which variables are strongly correlated with the component. We do this by pointing out the number that is large in magnitude, such that, the farthest the number is from zero in either direction the stronger is the variable correlated to the component. We deem a correlation above 0.4 as important and the first principal component is the biggest (above 0.4) for variables such as home loan/bond, pension or retirement annuity and credit card.

TABLE 4: FIRST PRINCIPAL COMPONENTS FOR DERIVING THE FINANCIAL INCLUSION INDEX IN EACH WAVE

Item	Wave 1	Wave 2	Wave 3	Wave 4
Home loan / Bond	0.3681	0.3960	0.3723	0.4000
Personal loan from a bank	0.3018	0.2179	0.2803	0.3179
.Personal loan from a micro-lender	0.0545	0.0787	0.0961	0.0383
Loan with a Mashonisa	-0.0206	-0.0240	-0.0045	-0.0460
Study loan with a bank	0.0850	0.1147	0.1860	0.1489
Study loan with an institution other than a bank	0.1092	0.0431	0.0198	0.0348
Vehicle finance (car payment)	0.3602	0.3790	0.3686	0.3868
Credit card	0.4391	0.4276	0.4535	0.3977
Store card	0.3280	0.3337	0.3364	0.2862
Hire purchase agreement	0.1181	0.0796	0.1012	0.0282
Loan from a family member or friend or employer	0.0363	0.0453	0.0390	-0.0280
Bank account	0.3225	0.3056	0.2919	0.2840
Pension or retirement annuity	0.3665	0.4047	0.3466	0.4234
Unit trusts, stocks and shares	0.2591	0.2656	0.2585	0.2463
Proportion (%) of variation explained by the first principal components	20.92	18.76	17.19	17.73

Source: Authors' own calculations using the NIDS waves 1 to 4 data.

4.2. Econometric analysis

Table 5 presents the findings of the OLS regressions, regressing the financial inclusion index (derived by the PCA method as discussed earlier) on numerous demographics, education and labour market characteristics. Table 6, on the other hand, presents the corresponding estimates of the probit regressions to test for the likelihood of a household being completely financially excluded. Note that in both regressions, only households with real per capita income of less than R1 million per annum (or R83 333 per month) are included, to prevent the inclusion of 'outliers' (or households with excessively higher income) from affecting the robustness of the econometric findings.

TABLE 5: OLS REGRESSIONS ON FINANCIAL INCLUSION INDEX

	Wave 1	Wave 2	Wave 3	Wave 4
Gender of household head: Male	0.0109	0.0608	-0.0622	0.0504
	[0.0538]	[0.0643]	[0.0606]	[0.0529]
Race of household head: African	-0.2927**	-0.6239***	-0.2047	-0.2383
	[0.1474]	[0.2039]	[0.1872]	[0.1944]
Race of household head: Coloured	-0.1022	-0.1426	-0.1863	-0.0888
	[0.1536]	[0.3024]	[0.2364]	[0.2046]
Race of household head: Indian	-0.3811	-0.0669	0.3808	0.1943
	[0.3207]	[0.4231]	[0.3314]	[0.3746]
Age of household head	0.0622***	0.0656***	0.0280***	0.0542***
	[0.0080]	[0.0093]	[0.0082]	[0.0078]
Age squared of household head	-0.0006***	-0.0007***	-0.0002***	-0.0005***
	[0.0001]	[0.0001]	[0.0001]	[0.0001]
Years of education of household head	-0.0518**	-0.0651***	-0.0409*	-0.1015***
	[0.0254]	[0.0258]	[0.0248]	[0.0222]
Years of education squared of household head	0.0104***	0.0085***	0.0071***	0.0134***
	[0.0021]	[0.0022]	[0.0020]	[0.0017]
Geo type: Urban	0.3472***	0.2254	0.0920*	0.1478***
	[0.0621]	[0.0603]	[0.0558]	[0.0494]
Province: Eastern Cape	-0.1072	0.2785	-0.1615	0.0724
	[0.1110]	[0.2247]	[0.1615]	[0.1162]
Province: Northern Cape	0.0021	0.0861	-0.1259	-0.0223
	[0.1129]	[0.1842]	[0.1566]	[0.1047]
Province: Free State	-0.1638	0.1373	-0.0636	-0.0590
	[0.2127]	[0.2255]	[0.1460]	[0.1822]
Province: KwaZulu-Natal	-0.0641	0.1248	-0.4135***	-0.1506
	[0.1291]	[0.2132]	[0.1596]	[0.1138]
Province: North West	0.0946	-0.0210	-0.2799	0.0546
	[0.1740]	[0.2327]	[0.1802]	[0.1602]
Province: Gauteng	-0.3118	0.3057	-0.1433	0.1149
	[0.1123]	[0.2170]	[0.1465]	[0.1268]
Province: Mpumalanga	-0.0761	0.4304*	-0.1686	-0.0165
	[0.1197]	[0.2256]	[0.1738]	[0.1212]
Province: Limpopo	0.0696	0.2915	-0.2005	0.1027
	[0.1295]	[0.2248]	[0.1596]	[0.1316]
Household size	0.1117***	0.1073***	0.1013***	0.1201***
	[0.0120]	[0.0123]	[0.0115]	[0.0106]
Number of employed	0.2926***	0.3012***	0.3891***	0.3283***
	[0.0393]	[0.0503]	[0.0431]	[0.0389]
Log real per capita income	0.5159***	0.4059***	0.4191***	0.4548***
	[0.0400]	[0.0357]	[0.0377]	[0.0363]
Constant	-6.3187***	-5.2592***	-4.6643***	-5.9735***
	[0.4441]	[0.4326]	[0.4414]	[0.4060]
Sample size	7 228	6 734	8 012	9 577
R-squared	0.4730	0.3884	0.3493	0.4423
Prob. > F	0.0000	0.0000	0.0000	0.0000

Source: Authors' own calculations using the NIDS waves 1 to 4 data.

Notes: Standard errors in parentheses
*** Significant at 1%   ** Significant at 5%   * Significant at 10%
Reference categories: gender: female; race: whites; geotype: rural; province: Western Cape

TABLE 6: PROBIT REGRESSIONS ON FINANCIAL INCLUSION INDEX

	Marginal effects			
	Wave 1	**Wave 2**	**Wave 3**	**Wave 4**
Gender of household head: Male	0.0109 [0.0187]	0.0007 [0.0213]	0.0130 [0.0178]	-0.0048 [0.0083]
Race of household head: African	0.1534*** [0.0539]	-0.0011 [0.0598]	0.0386 [0.0451]	-0.0086 [0.0339]
Race of household head: Coloured	0.1857*** [0.0763]	-0.0250 [0.0603]	0.0754 [0.0647]	0.0703 [0.0574]
Race of household head: Indian	0.2416 [0.1621]	0.0907 [0.1332]	-0.1764*** [0.0354]	-0.0285 [0.0359]
Age of household head	-0.0144*** [0.0032]	-0.0113*** [0.0034]	0.0004 [0.0026]	-0.0057*** [0.0012]
Age squared of household head	0.0001*** [0.0000]	0.0001*** [0.0000]	0.0001 [0.0000]	0.0001*** [0.0001]
Years of education of household head	0.0033 [0.0070]	-0.0175** [0.0089]	-0.0150** [0.0077]	0.0055* [0.0034]
Years of education squared of household head	-0.0025*** [0.0006]	0.0001 [0.0007]	-0.0005 [0.0006]	-0.0015*** [0.0003]
Geo type: Urban	-0.1305*** [0.0215]	-0.0690*** [0.0237]	-0.0467** [0.0201]	-0.0317*** [0.0106]
Province: Eastern Cape	0.2073*** [0.0448]	0.1286*** [0.0422]	0.1057*** [0.0282]	0.0736*** [0.0309]
Province: Northern Cape	-0.0155 [0.0341]	-0.1339 [0.0353]	-0.0904 [0.0273]	0.0235 [0.0247]
Province: Free State	-0.0308 [0.0421]	-0.1656 [0.0389]	-0.1149 [0.0278]	0.0208 [0.0278]
Province: KwaZulu-Natal	0.0294 [0.0407]	0.0822* [0.0432]	0.0673* [0.0341]	0.0684*** [0.0294]
Province: North West	-0.0376 [0.0424]	-0.1171 [0.0469]	-0.0108 [0.0505]	0.0308 [0.0290]
Province: Gauteng	0.0088 [0.0399]	-0.2273*** [0.0388]	-0.1532*** [0.0307]	0.0168 [0.0244]
Province: Mpumalanga	-0.0356 [0.0424]	-0.2262 [0.0299]	-0.0924 [0.0331]	-0.0154 [0.0215]
Province: Limpopo	-0.0057 [0.0445]	0.1452*** [0.0427]	-0.1160*** [0.0323]	0.0017 [0.0240]
Household size	-0.0349*** [0.0043]	-0.0418*** [0.0047]	-0.0315*** [0.0041]	-0.0229*** [0.0026]
Number of employed	-0.0993*** [0.0121]	-0.0889*** [0.0173]	-0.1239*** [0.0145]	-0.0561*** [0.0077]
Log real per capita income	-0.1355*** [0.0112]	-0.1076*** [0.0139]	-0.0617*** [0.0114]	-0.0611*** [0.0068]
Sample size	7 228	6 734	8 012	9 577
Observed probability	0.3664	0.3485	0.2730	0.1642
Predicted probability	0.2880	0.3151	0.2234	0.0778
Pseudo R-squared	0.2937	0.1670	0.1745	0.2791
Prob. > Chi-square	0.0000	0.0000	0.0000	0.0000

Source: Authors' own calculations using the NIDS waves 1 to 4 data.

Notes: Standard errors in parentheses
*** Significant at 1%   ** Significant at 5%   * Significant at 10%
Reference categories: gender: female; race: whites; geotype: rural; province: Western Cape

The two tables show some interesting and, in some instances, expected findings. For example, the OLS regressions indicate that both the household head age (positive sign) and household head age-squared (negative sign) variables are significant in all four waves, meaning households headed by middle-aged people are associated with higher financial inclusion index. In contrast, these two explanatory variables have exactly the opposite sign in the probit regressions (with the exception of wave 3), meaning a convex relationship between age and financial exclusion likelihood. This implies that households headed by middle-aged people are associated with significantly lower likelihood to be financially excluded. Our findings are consistent with a number of previous findings that also associate older individuals with greater financial inclusion (Honohan and King, 2009; Fungáčová and Weill, 2015; Zins and Weill, 2016).

For the other explanatory variables, the male coefficients are almost always positive, yet insignificant in all regressions in both tables. With regard to race, only the African dummy is statistically significant with a negative sign in waves 1 and 2 of Table 5, meaning Africans are associated with significantly lower financial inclusion index. Both African and Coloured dummies are significant with positive marginal effects in wave 1, meaning households headed by these two races are significantly more likely to be completely financially excluded, compared to their white counterpart. In contrast, the Indian dummy is significant with negative marginal effects in wave 3. These results are consistent with other findings about the South African financial inclusion across race groups (Nyaruwata and Leibbrandt, 2009).

The results in Table 5 in general show a convex relationship between years of education and financial inclusion index, implying that the index increases at a non-linear, increasing rate as the household head becomes more educated. The relationship between education and probability of complete financial exclusion is somewhat mixed in Table 6; years of education is significant with negative marginal effects in waves 2 and 3, while years of education squared is significant (also with negative marginal effects) only in waves 1 and 4. The positive relationship between financial inclusion and education is not surprising, as it is consistent with the literature (Fungáčová and Weill, 2015; Zins and Weill, 2016; Honohan and King, 2009).

As far as the impact of the geographical type and province variables are concerned, households residing in urban areas enjoy significantly higher financial inclusion index and significantly lower likelihood of being completely financially excluded. This outcome, however, is not simply a case of 'urban

rich, rural poor'. As recent research shows (Obeng-Odoom, 2020), there is an uneven socio-economic relationship between the urban propertied classes and rural tenants in South Africa. The provincial dummy variables in general are statistically insignificant in Table 5. In contrast, the results in Table 6 suggest that, comparted with Western Cape (reference category), households from Gauteng are associated with a significantly lower probability of complete financially exclusion but this likelihood is significantly higher for Eastern Cape, KwaZulu-Natal and Limpopo residents, in some waves.

Finally, bigger household size, the presence of more employed household members and higher log real per capita income are associated with significantly higher financial inclusion index but lower odds of complete financial exclusion. These findings imply financial exclusion is associated with higher poverty likelihood (or lower real income). While there is empirical evidence that indicates that financial inclusion doesn't always lead to the betterment of the poor, the association of poverty with financial exclusion is consistent with majority of the existing empirical literature both locally and internationally (Ardington, *et al.* 2004; Demirguc-Kunt *et al.* 2017; Fungáčová and Weill, 2015; Park and Mercado 2015; Ntsalaze *et al.* 2016).

5. Conclusion

This is the first local study using the first four waves of data from the NIDS, which comprehensively captures information on financial asset ownership, to examine the levels and trends on the usage of financial products and services in South Africa. The empirical analysis showed that there was a general increase in the use of financial goods and services across the waves in 2008-2015. There was, however, strong indication that financial inclusion was mostly associated with households with higher income. The likelihood of complete financial exclusion was more prevalent in poor rural households living in Eastern Cape, KwaZulu-Natal and Limpopo provinces. Almost invariably, these households were made up of black people. The study also found that households with low real per capita income and fewer employed members were associated with greater likelihood of financial exclusion. Furthermore, households bigger in size and headed by middle-aged persons were associated with significantly higher financial inclusion index and lower likelihood of complete financial exclusion.

The key policy implication is that more financial services targeted at low-income households should be prioritised as there is generally a high rate of exclusion among the poor. There is evidence in the empirical literature that

affordability limits poor households from accessing formal financial services, which avails a need for affordable financial services that can service particularly the low-income households. Supporting alternative, black finance models is one possibility. This may range from low-cost bank accounts and products, to advanced technologies that deliver financial services to the excluded in a swift, affordable and efficient manner. Other countries can be used as a case study. For instance, in India, the government and private providers have worked together to grow access to financial products such as insurances at a lower cost. The Indian government founded a social security fund that finances insurance companies to subsidise insurance premium policies offered to the poorer households. This initiative has provided over two million poor Indians access to insurance policies (International Labour Office, 2001). While in the united states the creation and expansion of the freedman's bank in the nineteenth century, thereby creating bank accounts for the predominantly freed black slaves, resulted to the increase in their real estate wealth, schooling, labour participation, literacy rate and income (Stein and Yannelis, 2019).

There is also a clear indication that, financial inclusion initiatives directed at the poor should be closely monitored, as empirical literature has shown that financial inclusion does not always positively impact the poor (Bateman, 2019).

The promotion of money pools is also another option to be considered. A study conducted from five Caribbean Countries shows that, money pools, where poor people pool their money and create collective banks, where found to actually enrich people in ways that the mainstream banking system will never be able to (Hossein, 2016). While in Cameroon, the practice of lending and serving through kinship and financial networks was found to be more trusted than the mainstream. As a result, such practices keep increasing despite the existence and availability of formal financial channels (Ojong and Obeng-Odoom, 2017). This clearly, calls for a proactive financial system that promotes such channels and one that the trusted by the general public, especially low-income earners.

Finally, more thorough empirical analysis is required to examine the financial inclusion further, in particular using the balanced panel component of the data to examine whether the financial inclusion or exclusion of the households is chronic or transitory over time, but this requires a separate study of its own.

Biographical notes

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Acknowledgements

References

Abrahams, R. (2017). Financial inclusion in South Africa: a review of the literature. Proceedings of the Southern Africa Accounting Association Biennial International Conference, Drakensberg, 28–30 June.

Ardington, C., Lam, D., Leibbrandt, M. & Levinsohn, J. (2004). Savings, insurance and debt over the post-apartheid period: a review of recent research. *South African Journal of Economics*, Vol 72, no. 3, pp. 604–640.

Babajide, A.A., Adegboye, F.B. & Omankhanlen, A.E. (2015). Financial inclusion and economic growth in Nigeria. *International Journal of Economic and Financial Issues*, Vol. 5, no. 3, pp. 629–637.

Bateman, M. (2019). Introduction, *Forum for Social Economics*, 48:1, 2-21

Bateman, M. (2019). South Africa's post-apartheid microcredit experiment: moving from state-enforced to market-enforced exploitation. *Forum for Social Economics*, Vol 48, no. 1, pp. 69–97.

Bara, A. Mugano, G. & Le Roux, P. (2017). Spatial externalities, openness and financial development in the SADC. *African Review of Economics and Finance*, 9(1), 245-271.

Booysen, F., Van Der Berg, S., Burger, R., Von Maltitz, M. & Du Rand, G. (2008). Using an asset index to assess trends in poverty in seven Sub-Saharan African countries. *World Development*, Vol. 36, no. 6, pp.1113–1130.

Blasius, J. & Greenacre, M. (2006). *Multiple correspondence analysis and related methods*. Chapman and Hall/CRC, Boca Raton.

Chakravarty, S. & Pal, R. (2010). Measuring financial inclusion: an axiomatic approach. Indira Gandhi Institute of Development Research. Working Paper No. WP 2010/003. Indira Gandhi Institute of Development Research, Mumbai.

De Haan, J. & Sturm, J-E. (2017). Finance and income inequality: a review and new evidence. *European Journal of Political Economy,* Vol 50, no. 1, pp. 171–195.

Demirgüç-Kunt, A. Honohan, P. & Beck, T. (2008). *Finance for all? Policies and Pitfalls in Expanding Access*. World Bank, Washington DC.

Demirgüç-Kunt, A. & Klapper, L. (2013). Measuring financial inclusion: explaining variation in use of financial services across and within countries. *Brookings Papers on Economic Activity*, Vol. 2013, no.1, pp. 279–340.

Demirguc-Kunt, A., Klapper, L. & Singer, D. (2017). Financial inclusion and inclusive growth. Policy Research Working Paper 8040. World Bank, Washington, DC. Fungáčová, Z. & Weill, L. (2015). Understanding financial inclusion in China. *China Economic Review*, Vol 34, pp. 196–206.

Fungáčová, Z., & Weill, L. (2015). Understanding financial inclusion in China. *China Economic Review*, 34, 196-206.

Grundling, I. & Kaseke, T. (2010). Finscope South Africa small business survey 2010. [Online]. Available: http://www.finmark.org.za/wp-content/uploads/pubs/FS-Small-Business_-reportFNL1.pdf [Accessed: 06 November 2018].

Gwama, M. (2014). Explaining weak financial development in Africa. *African Review of Economics and Finance*, 6(2), 69-87.

Hlophe, N. (2018). Does financial development mean financial inclusion? A causal analysis for Eswatini. *African Review of Economics and Finance,* Vol 10, no. 2, pp. 120–133.

Honohan, P. & King, M. (2009). Cause and effect of financial access: cross-country evidence from the Finscope surveys. Banking the world: empirical foundations of financial inclusion, pp. 45–84.

Hossein, C. S. (2016). Money pools in the Americas: The African diaspora's legacy in the social economy. In *Forum for Social Economics* (Vol. 45, No. 4, pp. 309-328). Routledge.

International Labour Office (2001). *Women organising for social protection: The Self-employed Women's Association Integrated Insurance Scheme*. International Labour Office, Geneva.

Jayaratne, J. & Philip, E.S. (1996). The finance growth nexus: evidence from bank branch deregulation. *Quarterly Journal of Economics*, Vol. 111, no. 3, pp. 639–670.

Kempson, E. & Collard, S. (2012). *Developing a vision for financial inclusion.* University of Bristol for Friends Provident Foundation, Bristol.

Kessler, K., Ikdal, A.S., Naidoo, E., Portafaix, A., Hendrickson, J., Boje, A. & Rabec, D. (2017). Improving financial inclusion in South Africa. [Online]. Available: https://www.bcg.com/publications/2017/globalization-improving -financial-inclusion-south-africa.aspx [Accessed 1 August 2019].

Kim, D.W., Yu, J.S. & Hassan, M.K. (2018). Financial inclusion and economic growth in OIC countries. *Research in International Business and Finance*,Vol 43, no. 3, pp. 1–14.

Kostov, P., Arun, T. & Annim, S. (2015). Access to financial services: the case of the 'Mzansi' account in South Africa. *Review of Development Finance*, Vol 5, no. 1, pp. 34–42.

Kotir, J. H., & Obeng-Odoom, F. (2009). Microfinance and rural household development: A Ghanaian perspective. *Journal of Developing Societies*, 25(1), 85-105.

Kumar, B.P. (2013). Financial exclusion among the scheduled tribes: A study of Wayanad district in Kerala. Unpublished Masters dissertation, Mahatma Gandhi University, Kerala.

Makina, D., Fanta, A.B., Mutsonziwa, K., Khumalo, J. & Maposa, O. (2015). Financial Access and SME Size in South Africa. University of South Africa, Pretoria.Ntsalaze, L. & Ikhide, S. (2017). The threshold effects of household indebtedness on multidimensional poverty. *International Journal of Social Economics,* Vol 44, no. 11, pp. 1471–1488.

Ntsalaze, L., & Ikhide, S. (2017). The threshold effects of household indebtedness on multidimensional poverty. *International Journal of Social Economics*.

Nyaruwata, G. & Leibbrandt, M. (2009). Personal debt and financial access: analysis of the NIDS wave1 dataset. NIDS Discussion Paper 2009/08. Southern Africa Labour and Development Research Unit (SALDRU), University of Cape Town, Rondebosch.

Obeng-Odoom, F. (2020). *Property, Institutions, and Social Stratification in Africa.* Cambridge University Press.

Obeng-Odoom, F. (2018). The intellectual marginalisation of Africa. *African Identities*, 17(3-4), 211-224.

Ocran, M. (2015). Household demand for risky financial assets in South Africa. Paper presented at the Economic Society of South Africa (ESSA) Conference, Cape Town, 2–4 September.

Ojong, N. & Obeng-Odoom, F. (2017). Resilience and dynamism of embedded financial transactions in Cameroon. *Journal of Economic Issues*, 51(1), 181-200.

Orthofer, A. (2016). Wealth inequality in South Africa: evidence from survey and tax data. REDI3×3 Working Paper 15. Research Project on Employment, Income Distribution and Inclusive Growth (REDI), University of Cape Town, Rondebosch.

Park, C-Y. & Mercado, R.V. (2015). Financial inclusion, poverty, and income inequality. ADB Economic Working Paper Series No. 426. Asian Development Bank, Manila.

Sarma, M. & Pais, J. (2011). Financial inclusion and development. *Journal of International Development*, Vol. 23, no.5, pp. 613–628.

Sarma, M. (2012). Index of financial inclusion – a measure of financial sector inclusiveness. Working Paper No. 07/2012. Competence Center on Money, Trade, Finance and Development, Berlin.

Searle, B.A. & Koppe, S. (2014). Assets, savings and wealth, and poverty: a review of evidence. Final report to the Joseph Rowntree Foundation. Personal Finance Research Centre, Bristol.

Sinclair, S., McHardy, F., Dobbie, L., Lindsay, K., & Gillespie, M. (2009). Understanding financial inclusion using action research and a knowledge exchange review to establish what is agreed, and what remains contested. Friends Provident Foundation, Dorking.

Schoombee, A. (2004). South African banks and the unbanked: progress and prospects. *South African Journal of Economics*, Vol. 72, no, 3, pp. 581–603.

Statistics South Africa (2015). Methodological report on rebasing of national poverty lines and development of pilot provincial poverty lines. Technical Report. Statistics South Africa, Pretoria.

Statistics South Africa (2017). CPI history. [Online]. Available: http://www. statssa.gov.za/publications/P0141/CPIHistory.pdf? [Accessed: 13 January 2019].

Statistics South Africa (2018). 2017 General Household Survey data. [Online]. Available: http://www.statssa.gov.za/ [Accessed 31 January 2019].

Stein, L. C. & Yannelis, C. (2019). Financial Inclusion, Human Capital, and Wealth Accumulation: Evidence from the Freedman's Savings Bank. Human Capital, and Wealth Accumulation: Evidence from the Freedman's Savings Bank (March 31, 2019).

Stiglitz, J.E. (1975). The theory of "screening," education, and the distribution of income. *The American Economic Review*, Vol 65, no.3, pp. 283–300.

Stiglitz, J.E. & Weiss, A. (1981). Credit rationing in markets with imperfect information. *The American Economic Review*, Vol 71, no.3, pp. 393-410.

Taylor, M. (2012). The antinomies of 'financial inclusion': debt, distress and the workings of Indian microfinance. *Journal of Agrarian Change*, Vol 12, no. 4, pp. 601–610.

Van der Berg, S., Nieftagodien, S. & Burger, R. (2003). Consumption patterns and living standards of the black population in perspective. Paper presented at the Economic Society of South Africa Conference, Somerset West, 3–5 September.

Vyas, S. & Kumaranayake, L. (2006). Constructing socio-economic status indices: how to use principal components analysis. *Health Policy and Planning*, Vol. 21, no. 6, pp. 459–468.

Wentzel, J.P., Diatha, K.S. & Yadavalli, V.S.S. (2016). An investigation into factors impacting financial exclusion at the bottom of the pyramid in South Africa. *Development Southern Africa*, 33(2), 203–214.

World Bank (2008). Finance for All? A World Bank Policy Research Report. World Bank, Washington DC.

World Bank (2014). Global Financial Development Report 2014: Financial inclusion. World Bank, Washington DC.

World Bank (2016). Achieving effective financial inclusion in South Africa: a payments perspective. World Bank, Washington DC.

World Bank (2018). Universal financial access initiative 2020. [Online]. Available: https://www.worldbank.org/en/topic/financialinclusion/brief/ achieving-universal-financial-access-by-2020 [Accessed 11 October 2019].