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# ABSTRACT

# Usage of Financial Services in South Africa: Perceptions Matter[1]

This study investigates the access to and usage of financial services in South Africa. Financial services are categorised in three types namely; general accounts and services, investment/savings and insurance/assurance. Taking into account the interactions between usage of different types of financial services, we use multivariate simultaneous probit specification to examine the effect of financial perception. Our results suggests that after controlling for endogeneity of choices and a range of control variables, financial perceptions are robust determinant of access to financial services. The impact of financial perception however reduces and gradually disappears as one moves up the financial access ladder towards more advanced financial products and services. In a policy context, targeting demand-side factors to increase access to and use of financial services is advisable. This targeting however can only be successful if it is tuned to specific basic financial services and products.

JEL Classification: O16, N27, R20

Keywords: financial, perception, behaviour, general accounts, investment, insurance, South Africa

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## Background

It has been long recognised that well-functioning financial systems are crucial for ensuring efficient redistribution of financial resources and hence lead to improved development outcomes. The so called finance-growth nexus has been the object of an extensive body of literature. And although there is some disagreement about the exact nature of the causality flows within the above relationship, it is indisputable that finance has an important role in the growth and development process. It is hence worrying when large portions of the population in the developing world are entirely excluded from access to all or some types of financial services. While the supply side of the problem have been extensively researched the potential demand side dimensions have until relatively recently been almost totally ignored. More recently financial inclusion studies have started to dedicate an increasing amount of analytical attention to the demand-side factors (Cole et al, 2011; Bauer et al., 2012; Kostov et al., 2012). The common thread in such studies is the impact psychological and subjective factors such as e.g. self-discipline based on present bias theory (trade-off between current and future preference), financial perceptions, behaviour and attitudes on financial access and inclusion. This paper explores the relationship between perceptions and behaviour and access to and use of different types and levels of financial services. In contrast to the previous studies in this area we acknowledge the overall complexity of measuring access to finance and consider simultaneously several different types of financial services, as well as different level of access within each such service, allowing for interaction effects between these different typologies and levels of financial access.

Supply and demand driven constraints on access to finance can in some sense be related. For example in the case of access to credit, most widely studied in the theoretical literature, the credit rationing in the sense of Stiglitz and Weiss (1981), applied from the supply side, can lead to demand constraint in the form of borrower discouragement, as shown in Kon and Storey (2003). In particular a good borrower may not apply for bank loan either because of previous rejections or the perception of a possible rejection. Such behaviour is consistent with some behavioural financial models such as e.g. the regret theory (Loomes and Sugden, 1982). It is no longer possible to ignore the demand side determinants of access to finance, particularly when opinions have been voiced that the implications of such constraints could be greater than the usual supply side restrictions (Levenson and Willard, 2000). Starting from the theory of the discouraged borrower and extrapolating it to the general (rather than credit specific) access to finance, it becomes clear than personal opinions, attitudes and values

would affect the demand for access to financial services. And while personal characteristics that define individual views of the world such as e.g. education have been routinely applied in empirical studies, we argue that one needs to dig deeper and directly assess opinions and values. These are however unlikely to be formed in isolation and would be conditioned on the overall experience with using financial services. We do therefore include attitudinal variables in addition to personal characteristics as possible demand side determinants of the access to financial services. Provided the integrated nature of the financial services experience and given the possible conditioning of individual values of such experience, it is also advisable to include usage of related financial products as control variables.

**Problem Statement**

Investigating the demand side constraints to access to finance for a specific type of financial service cannot be taken in isolation. Different forms of financial services are interrelated and are just different facets of the overall access to finance. Furthermore due to the nature of provision of such services, usage of a related financial product could affect the realised access to another for a variety of reasons. These could include supply side constraints either in the form of formal requirements, or simply in that such usage signifies established relationship between the provider and the customer and can reduce the screening costs for the provider hence making it more likely that a related financial product will be actively promoted to the customer. Such interactions between customers and providers foster relationships, most importantly trust and can therefore impact of the customers' decisions of whether or not acquire certain financial products. The usage of certain types of financial products can also measure the objective financial needs of the customers and hence demand for related products can be simultaneously determined. Therefore the access to say investment products can be expected to depend on the usage of (i.e. access to) banking services and vice versa. In empirical terms this means that measures for usage of related financial services have to be considered as potential explanatory variables in each model. Hence the model explaining the level of access for banking services (bank accounts) will need to also include the available level of access to both insurance and investments. This formulation does however create an issue of endogeneity, since as discussed above, the corresponding levels of access to different financial services are determined simultaneously. In econometric terms the latter means that the corresponding equations will need to be simultaneously estimated to account for this problem.

## Data

We use data from the FinScope survey for South Africa implemented by FinMark Trust. The FinScope survey provides nationally representative annual cross sectional datasets designed to provide an understanding of consumer perceptions and patterns of financial behaviour. We use the survey data for all years from 2003 to 2009. This data is suitable for investigating the overall landscape of access to financial services since "the overall objective of the FinScope project was to measure effective access to and use of financial services, along with how people manage their money and what drives financial behaviour" (FinScope, 2003; pp. 2).

Each round of the survey interviews 3900 individuals. The initial two rounds of the survey (2003 and 2004) rely on slightly smaller sample sizes of 2984 and 2988 respectively. Furthermore with some small exceptions, restricted mostly to the initial rounds of the survey, the instrument has been largely consistent in terms of type of collected data.

The scope of issues in the FinScope survey has been grouped under the following ten headings; (1) Household register; (2) Financial literacy; (3) Overall financial perception; (4) Banking Penetration (transaction channels, Mzansi and credit and loans); (5) Insurance products and services (Funeral cover and retirement/pension); (6) Investment/Savings; (7) Lifestyles; (8) Access to amenities and use of information, communication and technology; (9) Sources of money; and (10) Personal and household's socio-economic and demographic characteristics. The consistent coverage of issues over time permits the tracking of financial behaviour albeit the different samples. It is worth mentioning that some slight variation exists based on reclassification and depth of issues being explored.

The fourth, fifth and sixth sections of the FinScope instrument, have been used to measure the extent and nature of financial products and services take-up, and this has been termed as financial penetration (FinScope, 2003). The measure of financial penetration is categorised under three broad headings namely; general accounts and services, investment and savings and insurance and assurance financial products. Access to and use of any of these three types of financial services is grouped into eight tiers. The allocation of tiers was based on analysis that examined how product usage patterns correlated within each component using the Burt matrix/correspondence analysis (FinScope, 2003). Finally, a scree analysis based on the product continuum generated is used to allocate persons into tiers, which indicate the depth of use of use for a particular type of financial service.

For the purposes of the present analysis we have re-grouped the original eight FinScope classifications into four (ranging from 0 to 3) based on the order of the original groupings. The resulting four categories were respectively labelled as none, basic, intermediate and advanced access to and use of financial products. As explained above, the criteria for this remapping were to simplify the analysis in focusing on smaller number of measures of financial penetration. Furthermore aggregating these categories also helps avoid variation in the data due to say misinterpretation of some of the questions used to create these measures. With larger number of categories the risk of such effects is more pronounced. The actual mapping from the original FinScope categories onto the ones, used in this study is presented in Appendix 1. This mapping was designed with regard to our prior understanding of what constitutes basic, intermediate or advanced form of access within of each type of financial services. Due to the potential for cultural effects and difference in terminology for financial terms in South Africa and researchers understanding of these, it is however important to avoid misclassification. Hence we have tried to obtain a re-classification that is reasonably close to the original FinScope data, particularly, since the well documented (FinScope, 2003) measure have been elaborated into a great deal of detail and attention in establishing valid and reliable measures of financial penetration. Therefore we have calculated the correlation between the financial penetration score[2] in the original FinScope data and our study. The minimum correlation coefficient recorded across the three measures for each of the rounds of survey was 0.84. This indicates that our reclassification is similar to that of the original survey.

The variables on financial perception were ascertained directly from the instrument based on whether they agree or disagree with the following statements: (1) You can easily live your life without having a bank account and (2) You go without basic things in order to save (TNS Research Survey, 2009). The expectation is that individuals with the perception that they can easily live without having a bank account are less likely to access any of the financial services and in particular, general accounts and services. Individuals who show a strong preference to saving on the other hand are expected to be more likely to access all the financial services especially investment and savings and insurance and assurance products. For the sake of easy interpretation and uniform sign for the coefficients of both variables, the study captures a dummy variable with a response equal to one if the individual disagrees with the notion that one can easily live life without having a bank account signifying a positive

[2] The financial penetration score in the FinScope data is a simple average of the highest score of an individual for each of the three types of financial services (FinScope, 2003).

(i.e. facilitating further access to finance) financial perception - and equal to one also, if the respondent agrees with the statement that one should save at the expense of basic things which is also taken to denote a positive financial perception. This variable coding implies that since we expect positive financial perceptions to increase access to financial services, the coefficients for both these variable are expected to be positive, thus facilitating the description and interpretation of the results. It is worth mentioning that there is an important difference between the above two variables and they are derived from two different parts of the FinScope questionnaire. The former ("You can easily live your life without having a bank account") variable comes from the so called grid 2, which measures financial perception with regard to more abstract statements, while the latter (grid 1) evaluated statement about actual behaviour. For this reason Kostov et al. (2012) term the former *'stated'* and the latter *'revealed'* perception in a terminology reminiscent that of preference theory. Furthermore in analysis of usage of a particular financial product (the Msanzi account which is at the bottom end of the banking accounts) Kostov et al. (2012) found that only *revealed* perceptions affect such choice. Based on this we could expect that the effect of saving preference would be stronger and at the same time would spread further into higher levels of financial penetration (i.e. for higher levels of access).

The study controls for other variables. First, we use a measure of physical access, calculated using the physical distance to formal financial institutions. This variable measures a constraint to access that is expected to be more important for lower levels of financial access where physical proximity to providers of such services and face to face contact are essential. Furthermore more affluent customers will in general be expected to be more capable in overcoming such physical barriers. It is also worth mentioning the role of new technologies that can reduce the need of physical access and since such technologies would be more closely associated with more technology literate customers, they would similarly reduce the effect of physical distance for the higher levels of financial access. Another control variable measures the level of optimism. It is compiled from evaluations of life circumstances, major events, happiness and connectedness (FinScope, 2003). It is a measure of psychological well-being and as such it is closely related to the financial perceptions. It is however a much broader measure. Both the above variables are measured on a scale ranging from one to eight and have been explained in detail in FinScope (2003). Given that these are summary measures, interpretation of coefficients requires caution. Other explanatory variables are: education, income, age, marital status, race and household size. To account for regional

heterogeneity that might affect access and use of any of the types of financial services, we controlled for province effects.

**Econometric details**

We estimate a multivariate probit model of the choice of basic, intermediate or advanced access to each of the three types of financial products, namely accounts, investments and insurance. We specify the dependent variables as 1 if at least the specified level of access is observed. Hence basic access means that at least basic access is observed (i.e. one for basic, intermediate or advanced access and zero for no access). In this way the corresponding three equations for each category replicate the structure of an ordered probit model (without the partial odds assumption) but with added interaction variables (for the other two types of access). Since these interaction variables are measured in the same way as the dependent variables, this facilitates both estimation (by making the endogeneity structure more apparent) and interpretation of the results.

The resulting multivariate probit could in principle be estimated by evaluation of its maximum likelihood function. For identification purposes we constrain the covariance matrix so that the covariance terms for non-adjacent levels of access are zero. Direct maximum likelihood estimation of the resulting model is however difficult, because of the difficulties involved in optimising the high dimensional log-likelihood function. There are two alternatives, namely Markov Chain Monte Carlo (MCMC) and Monte Carlo integration. The former leads to a Bayesian approach relying on the Gibbs sampler, while the latter leads to probability simulation methods, the most straightforward from an implementation point of view of which is Simulated Maximum Likelihood via the GHK (Geweke, Hadjivassiliou and Keane) simulator. Due to the size of the model we have encountered considerable convergence problems in the GHK based estimation. For this reason MCMC estimation has been implemented. We have estimated different models for each separate year in the sample and these results are available upon request. Due to the differences in estimation results and in particular their relative significance across years we also estimated a pooled model in which all years data are pooled together and annual dummies are used to account for annual effects. Results from the pooled data are presented in Table 1. For brevity we supress from the estimation output all coefficients that are not being of primary interest, such as the intercept as well as province and (in the pooled model) year dummies. The results from the

pooled model are easier to interpret and we discuss them hereafter. The separate annual models, which we do not present here, yield a similar picture.

**Results**

When discussing the results we well first look at the interactions between different forms and levels of access to financial services.

With regard to the choice of accounts, availability of higher level of access to investments and insurance products exerts significantly positive impact on the choice of higher level of banking accounts. It is easier to see this pattern from the pooled estimates. For example, the choice of at least basic account is more likely if one already has (at least) basic or intermediate investment. The significance of the intermediate investment may at first sight appear counterintuitive. Note however that since the corresponding access variables are define as “at least”, we are distinguishing between no access and “at least basic access” which is in fact any other level of access. So in this case possessing (at least) intermediate investments helps explain the higher level of access to banking (i.e. account) services. Having advanced investments cannot however explain the decision to move from no to basic account access and hence it is not significant. Similarly for (at least) intermediate account access, basic investments carry no explanatory power. The effect of having intermediate or advanced investment is also much larger for the choice of an advanced account, compared to intermediary account, which is an expected result given the fact that higher level of investment products are to be associated with higher level of transaction (i.e. banking account) needs.

The effect of insurance access is much wider (compared to that of investments). The selection of basic account is only affected by existent access to more basic insurance, while all levels of insurance usage increase the likelihood of moving up to a higher levels of accounts access. Another point to note is that higher level of usage typically has greater impact with the exception of the effect of intermediate insurance in the advanced account equation, which is larger that this of advanced insurance. Bearing in mind that the corresponding level of usage variables are specified as “at least”, the proper interpretation of the corresponding advance insurance coefficient is the additional effect of having advanced insurance (over intermediate, since the coefficient of intermediate insurance measures the joint effect of intermediate and advanced insurance) on the usage of advanced account. Hence the increasing magnitude of

the coefficients of different levels of access to investment and insurance suggests greater differentiation effects of investments and insurance of accounts access.

Looking at the related products effects on investments, surprisingly almost any level of access to banking services increases the likelihood of using investment products. Note however that while the additional impact of intermediate accounts is relatively small (in magnitude) and insignificant at lower levels of access, the additional effect of advanced accounts is much larger. Another point worth noting is that these effects increase with the level of explained access (i.e. the coefficient become larger as we move from basic towards advanced level of usage of investment products.

With regard to the impacts of insurance on investments, similar differentiation of the impacts is observed with lower levels of insurance affecting the lower end of the investments scale and advanced forms of insurance usage affecting the upper end of investments' access.

In what insurance is concerned, the effects are much more widely spread. With exception of the result that basic accounts do not affect advanced forms of insurance usage, all the effects are significant and positive. Having intermediate or advanced accounts increases the likelihood of obtaining higher level (i.e. intermediate or advanced insurance). What is notable however is that the additional impacts, associated with obtaining advanced insurance (i.e. the corresponding coefficients in the advanced insurance equation) are smaller compared to these for intermediate access. This suggests that accounts usage marginal effect reduce with transition from intermediate to advanced insurance. In contrast the corresponding marginal effect for the accounts and investments equations are typically increasing (in that the coefficients for the advanced type of usage equations are typically larger that those for the intermediate usage equations, when both of the above are significant (i.e. with exception of the effects attributable to basic forms of financial access). This is an important observation, since it shows that while access to accounts and investment can have a tendency to become polarised towards the lower and the upper ends of the finance access ladder, the access to insurance services can be much more equitably distributed.

Having any form of investment however exerts considerable impact of the choice of insurance product and these effects generally accelerate with the level of both the insurance and the investment access. The statistical significance of the investment effects on insurance is mainly clustered around the intermediate part of the scales on which both are measure in that intermediate investments impact on all levels of insurance access, and intermediate

insurance is affected upon by all types of investments. Yet again the results agree with the conjecture for more even spread of insurance access.

In a way the examination of these cross-effects suggest that these different types of financial services also can be thought of as representing different levels of the financial access ladder. While investments exert considerable differentiation impacts, insurance effects are much more evenly spread. Therefore one can think of banking services (i.e. accounts), insurance and investments as consecutive layers of financial access.

Next we discuss the impact of the main variables. Physical access impacts positively on accounts and insurance, but does not affect the investments usage. Furthermore while the effect of physical access decreases with higher accounts' levels, it stays uniform over the different levels of insurance usage. Optimism affects positively all levels of insurance usage and its effect increases with the level. With regard to accounts and investments the effects of optimism are less pronounces. In essence it only affects intermediate accounts choice and basic investments. The investments result is to be expected since higher levels of investments require more careful planning, financial understanding and hence are less susceptible to emotional influences. As for the accounts, basic accounts choice is more affected by actual needs, while advanced accounts are probably a combination of financial needs and prestige. The intermediate accounts then become dependent on the individuals' evaluation of their future prospects. With higher levels of optimisms such prospects look better and therefore higher level of access is deemed required.

Education appears to exert significant positive impact on choice of accounts and insurance, but is insignificant in explaining choice of investments. The latter result could be artefact form the categorical nature of the education variable (which is represented as an ordered variable). The next two variables are also ordered categories. Age category has positive effect for investments and insurance implying that older people are more likely to use higher levels of such services. Similarly the age effect is positive for accounts choice but only for the intermediate ones.

Income increases the usage of all financial services (which is of course to be expected). Furthermore the income effects exhibit an inverted U shape for accounts and investments in that they are lower for intermediate access. This kind of effect is likely to lead to a bimodal access structure. For insurance the (additional) income effects are decreasing with the level of usage.

Marriage status increase usage of financial services. This increase materialises only at the bottom of the ladder for account. For investments married status impacts only intermediate investments, while for insurance although marriage effects are present at all levels, they are larger at the top end (for advanced insurance).

The effect of the race dummy on accounts is negative for basic accounts, but positive and increasing for the higher level accounts choice. This means that the black population is more likely to be presented with the choice of basic account vs no account, while the whites are being more often faced with choice at higher levels of access. The same increasing pattern is observed for the other types of financial products.

Household size is typically insignificant. One reason for this could be that the effect of household size might be non-linear.

Finally we come to the tow variables measuring perceptions and attitudes.

Disagreeing with the statement that one can live without a bank account measure direct perception of the need for bank account. It is therefore not surprising that such disagreement increases the likelihood of using bank account. This effect is larger for basic accounts (since this is what it measures) and its effect reduces for intermediate accounts totally disappearing for advanced accounts. And while this evaluation has no impact on the investment usage, it has a positive (though decreasing with the level) effect of insurance, which can be explained similarly to the accounts effects and are consistent with the conjecture that this variable measures attitudes towards perception of financial access needs.

Agreeing with the statement that one can go without basic things in order to save, similarly measures attitude towards financial access. Note however that this savings preference would be expected to have further reaching consequences for access to financial services. Although this variable does not show significant impacts on insurance choice, in addition to the positive impact on basic accounts, it also shows some investment effects, typically for intermediate investments.

**Conclusions**

This paper investigates the demand side determinants of access to finance in South Africa. In addition to personal characteristics we also include measures of financial perceptions. Furthermore we consider a comprehensive system of access to and usage of financial services, broken down by type of financial service and level of access. The results indicate that financial perceptions have considerable impact on the level of usage of financial services.

This impacts however reduce and even disappear as we move towards higher level of access and more sophisticated products. This reconciles two seemingly contradictory stances, namely that of the standard economic theory that denies the role of such perceptions and the alternative economic psychology and behavioural finance models that maintain it. At the lower levels of the hierarchy of access to finance, where deviations from the ubiquitous assumption of perfect markets are widespread, perceptions and attitudes have considerable effect. When we move up this hierarchy we are getting closer to the idealised image of perfect markets and hence the impact of such factors reduces.

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Table 1. Estimation results

| | Accounts | | | | | | Investments | | | | | | Insurance | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Basic | | Intermediate | | Advanced | | Basic | | Intermediate | | Advanced | | Basic | | Intermediate | | Advanced | |
| physical_access | 0.676 | ** | 0.078 | ** | 0.024 | ** | -0.001 | ns | -0.006 | ns | -0.012 | ns | 0.008 | *** | 0.012 | *** | 0.022 | *** |
| optimism | -0.003 | ** | 0.000 | ns | -0.026 | ns | 0.004 | *** | 0.001 | ns | 0.008 | ns | 0.007 | *** | 0.010 | *** | 0.019 | *** |
| education | 0.105 | *** | 0.055 | *** | 0.107 | * | -0.003 | *** | 0.016 | *** | 0.115 | ns | 0.096 | *** | 0.217 | *** | 0.147 | *** |
| agecat | -0.001 | ns | -0.001 | ns | -0.006 | *** | 0.001 | * | 0.002 | *** | 0.003 | ns | 0.009 | *** | 0.009 | *** | 0.007 | *** |
| income_cat | 0.172 | *** | 0.079 | *** | 0.232 | *** | 0.007 | *** | 0.080 | *** | 0.102 | ** | 0.252 | *** | 0.209 | *** | 0.166 | *** |
| married | 0.139 | *** | 0.060 | *** | 0.182 | *** | 0.019 | *** | 0.101 | *** | 0.222 | ** | 0.157 | *** | 0.157 | *** | 0.175 | *** |
| race_1 | -0.489 | ** | 0.061 | *** | 0.419 | *** | -0.001 | ns | -0.117 | *** | 0.088 | ns | 0.405 | *** | 0.686 | *** | 0.939 | *** |
| hhsize | 0.000 | ns | -0.001 | ns | -0.003 | ns | 0.001 | ns | 0.003 | ** | -0.014 | ns | 0.001 | ** | -0.001 | ns | -0.010 | *** |
| live_w_o_bank_dis | 0.370 | *** | 0.105 | *** | 0.097 | ns | -0.011 | *** | -0.023 | ns | 0.002 | ns | 0.069 | *** | 0.101 | *** | 0.156 | *** |
| basic_w_o_save_agr | 0.263 | *** | 0.045 | *** | -0.098 | ** | 0.026 | *** | 0.051 | *** | 0.024 | ns | 0.020 | *** | 0.033 | *** | -0.005 | ns |
| Basic account | | | | | | | 0.139 | *** | 0.440 | *** | 0.317 | ns | 0.641 | *** | 0.306 | *** | 0.096 | ns |
| Intermediate account | | | | | | | 0.016 | *** | 0.120 | *** | 0.493 | ** | 0.416 | *** | 0.571 | *** | 0.559 | *** |
| Advanced account | | | | | | | 0.308 | *** | 0.255 | *** | 0.678 | *** | 3.112 | *** | 3.250 | *** | 0.741 | *** |
| Basic investment | 0.060 | ** | 0.007 | ns | 0.162 | ns | | | | | | | 0.017 | ** | 0.023 | ** | 0.032 | ns |
| Intermediate investment | 0.627 | *** | 0.152 | *** | 0.229 | *** | | | | | | | 0.314 | *** | 0.332 | *** | 0.628 | *** |
| Advanced investment | 0.689 | ns | 0.409 | *** | 0.461 | *** | | | | | | | -0.056 | ns | 0.160 | *** | -0.006 | ns |
| Basic insurance | 1.890 | *** | 0.173 | *** | -0.294 | ns | 0.098 | *** | 0.090 | ** | -1.330 | ns | | | | | | |
| Intermediate insurance | -0.427 | ns | 0.374 | *** | 4.267 | *** | -0.001 | ns | 0.111 | *** | 1.806 | * | | | | | | |
| Advanced insurance | 0.541 | ns | 0.283 | *** | 0.417 | *** | 0.262 | *** | 0.540 | *** | 0.562 | *** | | | | | | |

ns not significant
* significant at 10% level
** significant at 5% level
*** significant at 1% level