Credit Access and Savings Mobilization: Evidence from Kenya and Tanzania

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Abstract
This paper examines access to credit and savings mobilization in Kenya and Tanzania. The economies of these countries are closely interlinked and any shocks to one economy could have a contagion effect on the other. While savings and access to credit play a significant role in securing investment, available evidence shows low savings rates in Kenya and Tanzania. The paper utilizes cross-sectional data obtained from the FinAccess and FinScope surveys of 2013 in Kenya and Tanzania respectively. The Seemingly unrelated regression equations (SURE) approach is used to develop a policy framework for intervention. Estimation results reveal that socioeconomic and demographic factors are key determinants of access to savings and credit in the two countries. Specifically, education, income, age, social capital, location and gender were found to be the most significant determinants of access to and use of credit and savings products in both countries.
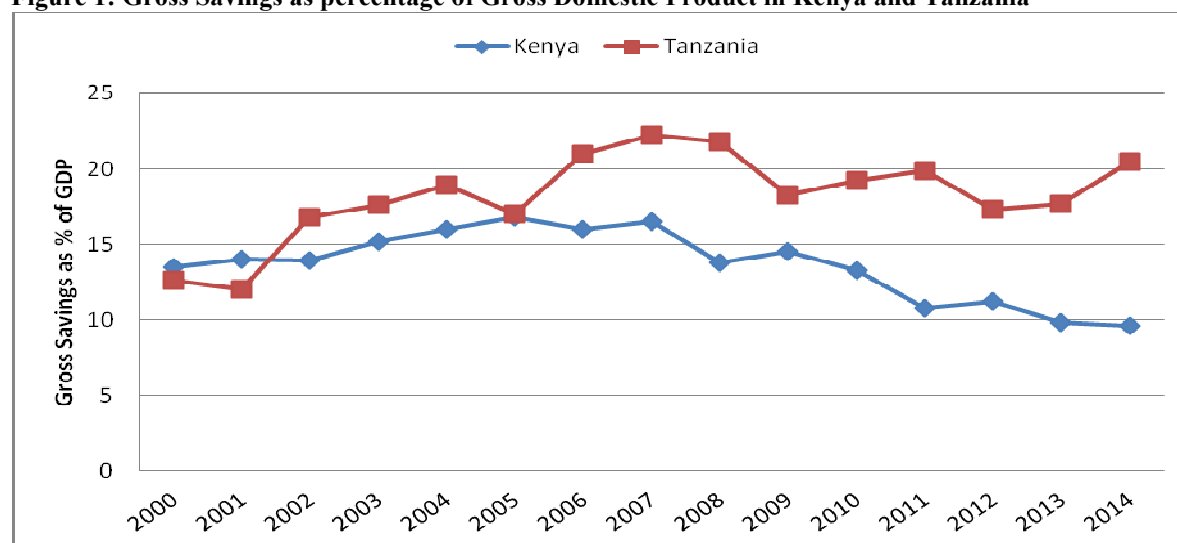**Keywords:** Access to credit, Savings mobilization, Seemingly unrelated regression

1. Introduction

Access to and use of quality financial services by both households and firms is of increasing concern to policy makers across Africa. Although most African countries have undergone extensive financial reforms in the last two decades, their financial sectors remain under-developed relative to the standards of industrial economies or even other developing countries (Alter and Yontcheva, 2015). A recent global database shows that financial exclusion is more pronounced in Sub-Saharan Africa where less than one in five households has access to formal financial services (Demirguc-Kunt, et al., 2015). This paper investigates access to credit and savings mobilization in Kenya and Tanzania. Significant improvements have been made in Kenya and Tanzania where FinAccess data 2016 and FinScope data 2013 shows that access to formal financial system stands at 75 percent and 57 percent respectively. Despite the significant increase in access to financial services, access to credit and savings mobilization remain low. A vast majority of small scale savers continue to be deprived of affordable and secure credit in a stable financial system. In addition, selective credit policies prevailing in most developing countries have not only hindered savings mobilization from domestic sources but also increased inefficient allocation of scarce capital (Donkor and Duah 2013).

The level of domestic savings has remained low despite concerted efforts aimed at addressing this situation. Figure 1 shows the trend in gross savings as a percentage of GDP between 2000 and 2014. Tanzania's savings strategy has yielded better results than Kenya. On the other hand, access to credit derived from adults with credit from formal institutions is at 7 percent for Tanzania and 10 percent for Kenya. These low levels of credit are not desirable if meaningful growth targets envisaged in the Vision 2030 for Kenya and Vision 2025 for Tanzania are to be achieved

Figure 1: Gross Savings as percentage of Gross Domestic Product in Kenya and Tanzania

Source: World Bank Statistics, various years

It is therefore imperative to examine how access to credit and savings mobilization between Kenya and Tanzania could be harnessed in order to create a stable environment where the two economies can be bolstered. Kenya and Tanzania form natural partners in regional economic co-operation and therefore assessing their areas of strength would help promote development agenda in a more consistent manner. There is scant empirical literature that exists comparing the levels of financial inclusion in the two countries. This paper makes use of the demand side data comparing access to credit and savings mobilization in Kenya and Tanzania in more detail. These facts raise the following questions: What factors explain access to and use of credit and savings mobilization in Kenya and Tanzania; what are the marginal effects of socioeconomic and demographic factors on access to savings and credit mobilization among households in Kenya and Tanzania? This paper makes several contributions to literature and policy. First, it compares and contrasts socioeconomic and demographic characteristics of access to savings and credit in a two country context. The findings add to the growing work in this area (Ngendakuriyo 2014; Ellis et al., 2010). Additionally, the paper demonstrates how two separate datasets could be enjoined to derive consistent indicators of financial inclusion. Most of the studies in this area have succeeded in linking financial sector measured using macro-level variables to growth (Calderon and Liu 2003). Others including (Honohan 2005) have sought to establish the relationship between financial sector and welfare improvement. Comparative studies on access to financial services have failed to show why different countries adopt different strategies despite the fact that their economies have more or less similar socioeconomic characteristics. In addition, rigorous analysis is often impeded by the lack of appropriate data that is amenable to cross country comparisons; the data compilations used in this paper offer a unique opportunity to explore financial inclusion from a multifaceted standpoint. Despite similarities existing between the two countries, interventional strategies to address the problem of access to credit and savings mobilization are dissimilar. This paper therefore makes unique contribution by showing the optimal relativity of access to credit and savings mobilization required to improve household welfare.

2. Previous evidence

Factors influencing access to credit have been compared using two rounds of survey at two different points in Kenya. Using age, gender, household size, education, marital status, distance and income, Mwangi and Sichei (2012) provide evidence in support of the quadratic relationship between age and access to credit. Their results showed that access to credit increased among middle aged individuals but began to decline as individuals approached retirement age. This study however, did not make use of other variables considered critical such as social capital. However, the age-access nexus has been authenticated by Johnson and Morduch (2007), Le Blanc (2014), Bhuiya et al., (2001) and Diagne (1999). In Le Blanc (2014), age is found to limit access to credit while in Ngendakuriyo (2014), an expanding age raises the likelihood of holding savings product. Bovenberg and Evans (1990) identify aging population as lowering the likelihood of saving because such population is in its second period whereas Foley and Pyle (2005) found the young and elderly population to have a higher likelihood to save than the middle aged population. Foley and Pyle (2005) used panel data collected over 5 rounds starting from 1995 to 2001. They examined household savings rate in Russia during the transition period. The transitioning period provided a limit to the applicability of the results and therefore deviates fundamentally from the situation in normal period.

In a related study, Mwalughali (2013) used institutional data to assess the impact of membership on household income in Malawi. The key per capita variables considered included land per capita, income per capita and credit per capita. The findings showed that age of the household head, sex, and distance from the location of the institution were key determinants of household savings. However, this study did not apply the standard sampling approaches since it used the institution as a case study. The findings are consistent with Akudugu (2013) who used the Global Findex dataset of 2011 to assess the determinants of financial inclusion in Western Africa. Akudugu (2013) applied the logit model and found out that only two in five adults were included in the formal financial services in Ghana. Age of household head, financial literacy, wealth class, lack of documentation, distance to the nearest financial service provider, lack of trust in financial institutions, poverty of money and social networks were key determinants of financial inclusion in Ghana. The study assumed non-hierarchical modelling unlike Pailwar et al., (2010) who use the multilevel model to assess the impact of membership of financial institutions on rural savings. Pailwar found out that such membership explained a large proportion of the variation in rural household saving.

The role of gender in access to credit among urban slum residents in the Philippines was investigated by Malapit (2012) using the survey data between 2002 and 2006. The study revealed that women were likely to face credit constraints than men. The study focused on wealth and non-formal lenders who relied on the reputation and history of borrowers to screen potential borrowers. They concluded that women targeted credit interventions in urban poor settlements was necessary. The major weakness of the study was in the scope of coverage which constrained its applicability to a wide range of settings. This study however is corroborated by Mwangi and Sichei (2012) who found that men had a higher likelihood of accessing loans from banks and

SACCOs, whereas women had a higher likelihood of accessing loans or credit from the microfinance institutions and local shops. Credit constraints are likely to be higher in women because of discrimination tendencies by potential lenders. Additionally, women are involved in social and economic roles such as homemaking, which limit their ability to establish adequate lender networks from whom they can obtain credit.

Using a Tobit model to analyze major determinants of household savings, Mirach and Hailu (2014) found out that the key determinants of household savings included age, sex, marital status and income. In this study women were more likely to save than men. This is inconsistent with the previous results where men had a higher likelihood to save than women. Women and men were found to have different propensities to save because of the differences in their perception of risks and interest rates, as well as, other gender related factors that influence savings behaviour. In this regard, women were more likely to save than men because of their conservative behaviour in investment decisions. They prefer to hold their assets in fixed rather than liquid assets (Mirach and Hailu 2014).

Mwangi and Shem (2012) concluded that effective marketing strategies are required to enhance financial inclusion in terms of access to savings accounts and credit facilities. Marketing creates awareness on the benefits and availability of various savings and credit products, thereby facilitating inclusion. This argument is anchored on the fact that access to credit and savings products was influenced by several socio-economic factors that if exploited through appropriate marketing strategies could positively affect the decision to adopt savings and credit services. The socio-economic factors considered include age, level of education, ease of reaching a savings facility, availability of M-Pesa services, wealth, and group affiliation. Ageing increased access to savings and credit services in formal financial markets, but reduced access in the informal markets. Large households were found to have high dependency ratios, which negatively affected access to credit and savings.

Family size and composition have been found to produce uncertain impacts on access to savings and credit. Families with large size and/or many children are less likely to save (Orbeta 2006; Loayza and Shankar 2000) consequently constraining access to credit. This behaviour is partly due to strong intergenerational links existing in most developing countries (Gersovitz 1988) which lessen the need to save. Mwangi and Sichei (2012) found that an increase in household size enhanced access to credit from a buyer of households' harvest, but reduced access in the formal financial system. This is attributed to adequate labour to produce surplus agricultural products which could be used to access credit services.

Income facilitates access to credit and savings services, especially in developing countries where financial inclusion is still low. Individuals with reliable sources of income are likely to have at least one savings account to accumulate capital since they are likely to have surplus disposable income (Fernando 2007). In addition, they can use their source of income as collateral to access credit from formal financial institutions. Indeed Ike and Umuedafe (2013) in their study of determinants of savings in Nigeria found that the volume of savings among rural farmers was determined by the amount of income obtained from farming and non-farming activities. Thus, low productivity and limited access to credit were the main factors that constrained accumulation of savings among farmers.

According to Mwangi and Shem (2012) wealth was used as proxy for ownership of assets such as cattle and mobile phones is a key determinant of access since the wealth can be turned into cash and deposited in bank accounts. Having a mobile phone, on the other hand, is important because it facilitates the use of M-Pesa, which provides savings, credit, and money transfer services. Ngendakuriyo (2014) showed that wealthier households and individuals with high levels of education had a high probability of saving in banks, SACCOs, and microfinance institutions than in informal institutions and secret places.

Gitaharie et al., (2014) found that the probability of a household to access credit for businesses from banks, non-bank, and individuals was influenced by income-related factors such as employment status and poverty level. Banking public education programs also improved access by creating awareness on the available and benefits of financial services in the country. Ownership of assets such as a house, computer, and a phone also influenced access to credit. This suggests that wealth positively affects access to credit services since it can be used as collateral in the formal and informal sources of credit. However, this is inconsistent with Malapit (2012) who found that lenders in the informal sector depended more on the borrowers' creditworthiness rather than wealth to evaluate loan applications.

Mwalughali (2013) showed that land per capita had a positive effect on access to credit. This means that having adequate collateral is a key determinant of access to credit. This is based on the fact that financial institutions prefer to provide secured loans to avoid default risks, especially among poor customers with no steady sources of income. A key challenge in providing credit based on collateral is that poor households, especially those who reside in rural areas may not have access to collateral. As a result, they will remain locked out of the formal financial system.

Individuals often consider the costs and the benefits associated with various credit and savings products before making a decision to be included or not. High costs are expected to reduce access, whereas

benefits are expected to improve access. Ngendakuriyo (2014) analysis of the determinants of household savings mobilization in East Africa Community (EAC), established that transaction costs and deposit interest income influenced individuals' decisions to save in financial institutions and informal mechanisms such as secret places. Additionally, larger households were more likely to save in informal institutions and secret places due to the convenience of accessing the funds, low costs and lack of adequate funds to maintain regular savings accounts in banks.

Mirach and Hailu (2014) showed that household's propensity to save is determined by income, inflation rate, and the interest paid on bank savings accounts. Inflation discourages savings by eroding the value of money or income over time. Additionally, low interest rates on deposits can discourage the uptake of savings products, especially during high inflation because savers will not be able to get value for their money. This suggests that efforts geared towards improving the uptake of savings products should also address barriers such as inflation, which make such products unattractive to the target population.

Empirical evidence shows that the higher the interest rate the higher is the likelihood that households will have access to informal financial services (Kochar 1997; Mwangi and Ouma 2012). In the same vein social capital measured by group membership is positively related to use of formal financial services. Vaessen (2001) evaluated access to credit by the families and demonstrated that the moneylender and the household attributes were essentials impacting access to financial services.

Mbuthia (2011) found that resource constrain was the main barrier to accessing a bank account. This study supports the argument that access to regular income promotes uptake of savings and credit products. Perception of the interest rate paid on deposits and the availability of formal financial institutions were also significant determinants of savings. High deposit interest rates promote mobilization of savings since it rewards savers for their efforts to save for the future.

A properly functioning credit market has to be established to facilitate access to credit products. This means that the market should be large enough to avoid credit rationing, which often leads to high interest rates and exclusion of the most vulnerable households and enterprises. According to Atieno (2001), small enterprises in rural parts of Kenya did not have access to credit due to rationing. In the informal financial sector, credit rationing was attributed to financial resource constraints among lenders. By contrast, rationing in the formal sector was attributed to lending terms and conditions which acted as barriers to credit access. Apart from rationing, access to credit was limited by lack of information concerning the available credit facilities and the cost of accessing them. This finding is consistent with Mbuthia (2011) who found that access to credit increased with increase in availability of information concerning available credit products. Atieno (2001) also found out that lack of the required security had a negative effect on access to credit. This supports Mwalughali (2013) who found that availability of collateral in terms of land increased access to credit.

Location is another factor considered in literature although diverse measurement approaches have been applied. The findings of how location impacts savings and access to credit are mixed. While some studies show that location is a significant determinant of access to savings and credit (Kraay 2000, World Bank 1993), others fail to attach this importance to location in the urban neighborhoods (Kulikov et al., 2007). World Bank (1993) pointed out that savings and credit schemes with a wide network of branches lower the transaction costs for micro-savers and offers appropriate and affordable credit facilities because of the location of the financial institution. This is consistent with Akudugu (2013) who found out that distance had a negative effect due to the high cost of accessing services in the absence of financial institutions within a 5-kilometre radius. Mwangi and Ouma (2012) also found that distance had a negative effect on access to credit. This further underscores the need to improve availability of financial institutions to enhance access to credit and other services.

According to King (2012), distance and time to the nearest banking infrastructure such as bank branch or agents are significant barriers to financial inclusion in Kenya. Despite the significant expansion of bank branch network, the negative effect of distance and time to banking infrastructure remains a challenge. This suggests that a large number of Kenyans are still not able to access savings and credit products. However, mobile banking and other digital financial platforms have increased access to credit and savings services by eliminating the costs associated with distance and time to the nearest banking institution (King 2012).

Focusing on the Kenyan economy, Mbuthia (2011) found out that a household's decision to save in a formal, informal, or semi-formal institution is mainly informed by among other factors the information they have about existing financial institutions, level of household income, and credit availability in financial institutions. Savings are likely to increase if the target population has adequate information concerning the financial health of the formal financial institution through which they intend to save. Information improves the trust and confidence of potential savers. As a result, individuals will tend to save in institutions that are associated with minimal risks to avoid losing their money.

According to Johnson and Zarazua (2009), financial perception has a significant effect on the decision to adopt and use savings account and other bank services. Specifically, the perception that an individual can survive without a bank account leads to a decline in the likelihood of accessing a general account. The decision

to invest and access a savings account was affected more by financial behaviour than financial perception (Johnson and Zarazua, 2009). However, financial behaviour did not have any effect on access to and use of insurance products.

According to Mwangi and Ouma (2012), households are more likely to borrow from the informal sector than the formal banking sector due to their perception of the interest rates charged in the two sectors. Borrowers perceived interest rates in the formal banking system to be very high. Thus, they avoided borrowing from banks and SACCOs. This calls for strategies that improve access to information concerning the interest rates charged by various financial institutions to eliminate perceptions that hinder access to formal financial services.

The business model adopted by financial institutions can significantly influence access to savings account and credit facilities (Allen et al., 2012). An appropriate business model must allow the financial institution to reach the unbanked segments of the population with relevant products to satisfy existing financial needs, while maintaining acceptable levels of profits. In a study of access to banking services in Kenya, Allen et al., (2012) found that Equity Bank had adopted a business model that focused on serving the populations that had been locked out by the traditional banking system. This included individuals with low income, low levels of education, without permanent houses, and without salaried jobs. As a result, the bank contributed to significant increase in access to savings accounts and credit among households. The increase was attributed to the massive branch network expansion program that the bank implemented to reach households in rural and remote locations. The resulting reduction in distance to the nearest financial institution promoted uptake of savings account and credit products.

Recently, microfinance institutions have included in their business models financial education program to enhance uptake of credit and savings products. Participation in savings and credit institutions' education programs is expected to provide the knowledge and experience that individuals require to make the decision to be included in formal financial system. Mwalughali (2013) supported this argument in his study which found out that participation in community savings and investments programs in Malawi had a positive effect on access to credit and household income. The study employed a probit model whose results showed that the decision to participate in community savings and investments programs was determined by sex of the household head, land per capita, distance to the nearest program's office and credit per capita.

In their study of mobile phone financial services as a business model for delivering savings and credit products, Mbiti and Weill (2011) concluded that M-Pesa significantly increased access to financial services in Kenya by increasing competition, which in turn reduced transaction fees among competitors. They found that frequent users of M-Pesa services were urban residents, highly educated, banked, and affluent. The use of M-Pesa was associated with a decrease in the use of informal savings mechanisms. Additionally, it increased the probability of being banked. This implies that M-Pesa complements bank services by increasing demand for financial services. Although mobile money account provided opportunities for saving, it was mostly used to transfer funds between individuals rather than to savings account (Mbiti and Weill 2011). This situation is attributable to the higher opportunity cost of holding funds in mobile money savings account. The implication is that M-Pesa is not likely to promote significant positive savings behaviour even if it paid interest rates on deposits that are as high as those provided by commercial banks.

Access to credit can positively change saving behaviour among individuals and micro-enterprises. Financial institutions prefer to lend to customers who already hold a savings account since they are likely to have a better understanding of such customers' financial needs and ability to repay loans. Rogg (2000) found that increased access to credit motivated borrowers to shift their savings from less liquid assets such as livestock and jewellery whose returns are often low or negative into deposit accounts in banks that guarantee positive returns. One of the factors that promoted the shift in savings behaviour was increased availability of information and improved confidence in existing financial institutions. The positive returns from bank deposits attracted savings from the public, thereby increasing overall access to savings services (Rogg 2000). The increase in access to savings accounts had welfare effects, which included increased income and access to credit facilities. In addition, it promoted the development of the financial market by improving the depth and liquidity, which in turn improved access to various financial services.

The empirical literature has shown that the main drivers of access to credit and savings mobilization are age of the household head, gender, education, marital status, social capital, income, family size, location, land per capital among others. However, the principal datasets used in this paper do not have variables such as land per capita, family size among other variables. The paper therefore focuses on the variables available in the two datasets namely the FinAccess and the FinScope surveys. In addition, the paper adopts the seemingly unrelated regression equation model to jointly determine the drivers of access to and use of savings mobilization in Kenya and Tanzania.

3. Methodology

3.1 Theoretical Framework

The random utility theory is a characteristic theory of choice which has received proportionate support in literature (Luce 1959, Marschak 1960, McFadden 1974). This study reviews the random utility model in the context of households' preference for financial services. It assumes that a variety of financial services are available for consumers and therefore the choice alternative depends purely on the amount of utility derived from their choice. The utility theory best represents the problem of the consumer as being to maximize utility given the budget constraints. This trademark hypothesis of purchaser decision expects that people select the choices that maximize their own utility. The econometric methods of random utility models are based on the reviewed work of McFadden (1974). Subsequently probabilistic models have been derived from decisions arising from alternatives available for each given scenario. Following the random utility model and assuming rationality in decision making by economic agents, we assume that an individual i is a utility maximiser subject to budget constraint. The utility associated with selecting an option j among the different choice options (access to credit and/or access to savings) can be specified as follows:

$$\bigcup_{ij}(X_{ij};Z_{ij}) = V_j(X_{ij};\beta) + \varepsilon_j, i = 1,2,.....,N; j = 1,2,......M \tag{1}$$

Where,

$U_{ij}(X_{ij};Z_{ij})_j$ represents the utility enjoyed by individual i, from accessing saving or credit product of alternative j.

X_{ij} represents the observed characteristics of individual i and choice alternative j.

Z_{ij} represents the unobserved characteristics of individual i and choice alternative j.

$V_j(X_{ij};\beta)$ represents the utility deterministic component.

ε_j is the utility random component

3.2 Empirical Model

The basic model assumes that utility is derived from accessing savings and/or credit products subject to several factors. Among the factors that affect access to savings mobilization and credit include age, income, education, marital status, social capital, location and gender. If we let U_{ij} be individual i's utility of alternative j, then j takes either 0 or 1. Subsequently, we assume that

$$U_{ij} = v(X_{ij}, \beta) + \varepsilon_{ij} \tag{2}$$

The terms are as described in equation 1. Assuming a utility maximization framework and linearity in parameters of the cumulative density function, equation 2 can be expressed as a probit model as shown in equation 3;

$$y_i = \beta x_i + \varepsilon_i \tag{3}$$

y_i is the likelihood that financial mode i (where i is each of the result variable) will be selected. The compressed form of the replica to be approximated thus takes the form:

$$y_i = y_i(x_i, \varepsilon_i) \tag{4}$$

Where, y_i is the relevant dummy variable signifying access strands: formal, formal other, informal, and excluded. xi represents independent household attributes in the FinScope and FinAccess datasets. ε_i is the error term. In the empirical model in equation 5, non-income factors mainly socioeconomic and demographic have been included.

$$FAccount = \beta_0 + \beta_1 Age + \beta_2 LogAgeSqrt + \beta_3 Gender + \beta_4 Location + \beta_5 MaritalStatus$$
$$+ \beta_6 Education + \beta_7 SocialCapital + \beta_8 Income + \upsilon_s \tag{5}$$

$FAccount$ is a binary measure of access to savings and credit account.

3.3 Seemingly Unrelated Regression Equations (SURE) Models

Equation 5 describes the behaviour of account ownership that facilitates access to savings and credit in response to a set of explanatory variables. This is a comparative study of Kenya and Tanzania which involves multiple equations with standardized variables. In each country, at least four equations involving four dependent variables have been estimated. However, one approach to deal with multiple equations that explain different economic phenomena may be to jointly estimate them. This is because such equations may have correlated error terms as expected. When these conditions are met, the resultant equation takes the form of a seemingly unrelated regression equations (SURE) model where separate linear equations are related. The system of equations generated individually are assumed to be related and therefore the appropriate method was to estimate them jointly. The paper considered the model comprising of four equations of the form:

$$y_{ti} = \sum x_{tij}\beta_{ij} + \varepsilon_{ti}, t = 1,2.....,T; i = 1,2,......M; j = 1,2,....k_i \tag{6}$$

where y_{ti} is the tth observation on the ith response variable which is to be explained by the ith regression

equation, x_{tij} is the tth observation on j^{th} predictor variable appearing in the ith equation, β_{ij} is the coefficient associated with x_{tij} at each observation and $\acute{\varepsilon}_{ti}$ is the tth value of the random error component associated with i^{th} equation.

3.4 Definition and measurement of variables
3.4.1 Dependent Variable
The response variable is defined by the four access strands namely: Formal, formal other, informal and excluded. These strands encompass the access to credit and savings mobilization i.e. formal credit/savings, formal other (credit/savings), informal (credit/savings) and excluded (credit/savings). Individuals choose savings and credit products independently from the options given according to their maximization objectives.

3.4.2 Independent Variables
The independent variables considered in this paper have also been used in previous studies (Mirach and Hailu 2014; Malapit 2012; Johnson and Morduch 2007). However, the permutation of these variables is exclusively defined in this paper. The variables under investigation include: age, income, education, gender, marital status, location and social capital.

3.5 Sources of Data and Sample
The paper utilized the Financial Access (FinAccess) and FinScope survey datasets for 2013 for Tanzania and Kenya. The Kenya sample clusters were selected to guarantee representation at all levels. At individual level, the determination of the sample was done using KISH technique that randomly selected adult individuals. An aggregate of 6,449 interviews were recorded. In Tanzania, an aggregate of 800 specification ranges were secured both on the territory and Zanzibar Island. The aggregate meetings directed were 8,000 producing an aggregate sample of 7,987 interviews.

4. Empirical results and discussions
4.1 Descriptive Statistics
Table 1 presents the summary statistics obtained from the cross-sectional data for Kenya and Tanzania. The means and the standard deviations are shown. The difference in means was not large enough depicting similarity in data.

Table 1: Summary Statistics for the single equation model

Variable	Obs	Median	Mean	Std. Dev.	Min	Max
Formal Savings	14436	0.00	0.096	0.295	0	1
Formal Other Savings	14436	0.00	0.076	0.264	0	1
Informal Savings	14436	0.00	0.212	0.409	0	1
Excluded Savings	14436	1.00	0.549	0.498	0	1
Formal Credit	14436	0.00	0.021	0.143	0	1
Formal Other Credit	14436	0.00	0.084	0.277	0	1
Informal Credit	14436	0.00	0.079	0.270	0	1
Excluded Credit	14436	0.00	0.217	0.412	0	1
Log Age squared	7127	7.37	7.393	0.779	6	9
Education	3860	2.00	1.926	1.299	0	6
Marital Status	7127	3.00	2.204	1.108	0	3
Social Capital	3639	0.00	0.135	0.458	0	3
Income	5395	1.00	1.253	1.292	0	6
Location	7127	0.00	0.450	0.498	0	1
Gender	7127	0.00	0.466	0.499	0	1

4.2 Determinants of savings mobilization
The seemingly unrelated regression equation (SURE) model was used preferably because it offered the best fit for the available data. In this paper, a joint estimation of the models for Kenya and Tanzania was preferred largely because of the similarities in the design of the data and the key drivers of access to savings mobilization in the two countries. The two datasets used in this paper had different assumptions underlying data collection methods but with many similarities that warranted a joint estimation. This was further made easy through standardization of variables across datasets.

The findings are presented in Table 2. The log age squared is significant across all access strands except formal savings strand. However, it is observed to be positive for *formal other strand* while negative for informal access strand and excluded strands. Therefore, as individuals grow old, they are more likely to use *formal other access strand* than formal access strand. This is seen in the relatively large coefficient for *formal other* strand compared to other access strands. On the other hand, age appeared to reduce the use of informal

access strands for savings and excluded strands. This indicates that older individuals would not find it prudent to use more risky avenues to access savings. This view is consistent with the precautionary principle which states that older individuals tend to consume what they saved over the years. However, Efobi et al., (2014), using the Global Findex data set observed that age had a negative bivariate inclination to use of banking services. Camara et al., (2014) investigated barriers to financial inclusion in Peru and found out that age appeared to be a significant factor albeit with little importance. They further noted that the turning point existed at age 53 when the relevance of age is suppressed. The findings further show that the risk involved in informal strand is unwarranted for older members of the society and especially those living on pension and old age security resources. In both countries age is strongly associated with access to savings mobilization from formal other strand. However, age is not found to be significantly associated with formal access to savings.

Education appears to be a significant factor. Our findings show that education is positively associated with formal savings access strand. More educated individuals will positively influence adoption of formal access to savings. This is depicted by the large coefficients ascending from the lower levels of education to university degree. Individuals with university education are shown to be more likely than those without education to access formal channel of saving. Similarly, education was also found to positively influence formal other strand of savings access. The coefficients increase in size as the level of education increases indicating that higher levels of education has greater influence on use of formal other access strand of saving. Although education was found to be associated with exclusion, the magnitude of influence diminishes as you move from lower levels of education to higher levels. It should however be noted that university degree was not found to be significant with exclusion. This implies that as individuals acquire more education, they are more likely to use formal savings access strand than they would be excluded. The findings in this study however deviate from the findings in Kulikov et al., (2007) that indicate that higher levels of education were more likely to lead to lower savings because higher education reflects higher expectations in terms of income and less uncertainty in future incomes. Kibet et al., (2009) corroborate the findings in this paper by demonstrating that the education level of the household head positively affects the savings behaviour.

This paper also investigated the effect of marital status on access to savings. Marital status was found to be positively associated with the formal other strand of savings access but negatively associated with exclusion. The results further showed that marital status was not found to be significantly associated with formal savings strand. Individuals with divorced status were 7 percent more likely to use formal other strand of access to savings than those in single marital status. On the other hand the married individuals were found to be more likely to access savings from the formal other strand than the single status individuals. According to Sinha (2014), divorced women were more likely to obtain support of the children from the responsible man yet develops her own mechanisms of fending for herself. This behaviour exposes her to a variety of financial services including savings access that would offer collateral for the future. The paper shows that widows were more likely to access informal savings by 6 percent. Singles or married individuals were less likely to be excluded from accessing savings by a factor of 0.0662.

This paper also investigated social capital which has been defined as group membership. However, the groups under investigation may not necessarily assume a formal organization. Observation on group membership depict a positive association with access to savings at all levels except exclusion strand. Individuals with membership in more than one group are more likely to have access to savings than those with no membership. The findings concur with literature from both developing and developed countries. The strength of the group coefficient is influenced by the amount of assets the group owns. The greater the coefficient and positive it is, the more the social capital influences savings mobilization (Kulikov et al., 2007; Camara, et al., 2014). However, social capital was found to be insignificant in relation to savings access exclusion.

Income in general was found to increase access to savings across all strands except the exclusion strand. However, we observe that with increased income earnings, the coefficients for income tend to reduce in the exclusion model indicating that increased income has a tendency to discourage financial exclusion. The paper also examined the effect of location on access to savings. Location defined as rural or urban was found to be significant for formal other and informal strands as well as exclusion strands. We observe that being urban compared to rural increases access to savings from formal other and informal channels by a factor 0.035 and 0.0528 respectively but reduces exclusion by a factor 0.0409. This indicates that more urban dwellers are likely to access savings than rural dwellers. This has led attributed to skewed distribution of financial services across the country in favour of urban areas (Llanto 2015). According to Llanto (2015), many financial services favour urban areas due to easier penetration arising from the high level of concentration.

The distribution of financial services almost always affects gender. In most developing countries rural dwellers constitute the majority with less resource endowments (Addae-Korankye 2014). The analysis shows that men are less likely to access informal savings compared to women. Similarly, the men have less likelihood of being excluded from accessing savings compared to women. The findings are consistent with several other studies which view women as greatly disadvantaged (Demirguc-Kunt 2013; Aterido et al., 2011, Asiedu et al.,

2013).

Table 2: Results for the Seemingly Unrelated Regression Model for Savings mobilization

Variables	Formal Savings	Formal Other Savings	Informal Savings	Excluded Savings
Log Age squared	0.00836	0.0380***	-0.0198**	-0.0207**
	(0.00656)	(0.00731)	(0.00825)	(0.00981)
Some primary	0.0180	0.0554***	0.104***	0.111***
	(0.0170)	(0.0190)	(0.0214)	(0.0255)
Primary completed	0.0291*	0.0768***	0.0884***	0.114***
	(0.0173)	(0.0193)	(0.0218)	(0.0259)
Some secondary	0.0932***	0.109***	0.157***	0.118***
	(0.0232)	(0.0258)	(0.0291)	(0.0346)
Secondary completed	0.152***	0.171***	0.168***	0.0901***
	(0.0202)	(0.0224)	(0.0254)	(0.0301)
Technical after Secondary	0.244***	0.190***	0.111***	0.0526
	(0.0271)	(0.0302)	(0.0341)	(0.0406)
University degree	0.296***	0.332***	0.0129	-0.0131
	(0.0386)	(0.0430)	(0.0486)	(0.0578)
Divorced	0.0133	0.0726**	0.0458	0.0447
	(0.0254)	(0.0283)	(0.0319)	(0.0380)
Widowed	-0.00435	0.0344	0.0617**	-0.0438
	(0.0193)	(0.0215)	(0.0242)	(0.0288)
Married/living together	0.0114	0.0487***	0.0272	-0.0662***
	(0.0149)	(0.0165)	(0.0187)	(0.0222)
Belongs to one group	0.0423**	0.0129	0.392***	0.135***
	(0.0210)	(0.0234)	(0.0264)	(0.0314)
Belongs to two groups	-0.0277	0.110**	0.479***	0.211***
	(0.0397)	(0.0442)	(0.0499)	(0.0594)
Belongs to three or more groups	0.0362	0.197***	0.505***	0.271***
	(0.0523)	(0.0582)	(0.0658)	(0.0782)
USD 1-15	0.0131	0.00377	0.0157	0.143
	(0.0135)	(0.0150)	(0.0169)	(0.0201)
USD 16-30	0.0887***	0.0660***	0.0505**	0.163
	(0.0171)	(0.0190)	(0.0215)	(0.0256)
USD 31-75	0.129***	0.137***	0.0724***	0.156
	(0.0199)	(0.0222)	(0.0251)	(0.0298)
USD 76-150	0.115***	0.220***	0.120***	0.180
	(0.0299)	(0.0332)	(0.0376)	(0.0446)
USD 151-300	0.174***	0.259***	0.173***	0.105
	(0.0352)	(0.0393)	(0.0443)	(0.0527)
USD 301-1000	0.355	0.336	0.568**	-0.411
	(0.217)	(0.242)	(0.273)	(0.325)
USD 1001-2000	-0.0558	-0.0718	0.799**	0.686
	(0.306)	(0.341)	(0.385)	(0.458)
USD greater than 2000	0.849***	0.780**	-0.223	0.801
	(0.307)	(0.342)	(0.386)	(0.459)
Urban	-0.0124	0.0350***	0.0528***	-0.0409**
	(0.0116)	(0.0130)	(0.0146)	(0.0174)
Male	-0.00940	-0.0115	-0.122***	-0.0485***
	(0.0118)	(0.0131)	(0.0148)	(0.0176)
Constant	-0.0421	-0.314***	0.221***	0.408***
	(0.0516)	(0.0575)	(0.0650)	(0.0772)
Observation	3,468	3,468	3,468	3,468
R-squared	0.126	0.110	0.158	0.077

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

4.3 Determinants of Access to Credit

Table 3 shows that log age squared is significant for formal other access strand and exclusion strand. An increase

in age marginally increases the likelihood of access to formal other strand of credit. The results further show that individuals with advanced age are less likely to obtain credit although exclusion diminishes.

Education is found to be positively associated with access to formal credit. Specifically, having secondary education compared to having no education was found to increase access to formal credit by a factor 0.0678. Similarly, having technical training after secondary and university degree were more likely to increase access to formal credit by a factor of 0.0752 and 0.183 respectively. The coefficients of education increase from the lower level to the highest level. These findings are corroborated by a survey on access to Credit by Smallholder Farmers in Kenya in which Kiplimo et al., (2015) established that the marginal effects of education showed significant and positive effects on access to credit. The findings have also been supported by the findings in Johnson and Morduch (2007) who concluded that at higher levels of education individuals are able to engage more in activities that generate higher incomes and therefore their ability to access credit is improved.

Married individuals or those living with their partner were shown to have a higher likelihood of accessing formal other credit channel than being excluded. Similarly, divorce status increase the probability of accessing informal credit than the other strands of access. However, a sizeable chance exists for divorced individuals to be excluded from accessing credit. The widowed individuals had minimal chance of accessing formal other credit. The findings obtained from this study are corroborated by Ololade et al., (2013) whose findings lay credence to the role of marital status in determining access to credit. The study found out that not being married reduced immensely the likelihood of accessing credit. Social capital was found to be a significant determinant of access to credit. Membership to several groups increased the likelihood of accessing informal credit than those with no group membership by a factor of 0.252. The findings indicate that the type of group could have greater influence on the choices individual's make. Informal groups would increase access to informal financial services. The findings are corroborated by Heikkilä et al., (2016) who investigated the role of social capital in promoting financial access in Uganda. The study established that individual's social capital is significantly associated with access to credit from formal financial institutions.

Income is one of the most important factors influencing access to credit in Kenya and Tanzania. Across all credit access strands, the results showed that increased income would have a higher probability of accessing formal credit. However, the size of the coefficients of income on informal and excluded access strands are declining as income increases. This shows that increased income is more likely to reduce access to credit from informal strand. Similarly, more income has been shown to reduce the level of exclusion from credit access. Zins et al., (2016) established that increased income was associated with higher levels of financial inclusion. Similarly, our results are corroborated by Allen et al., (2012) and Fungacova and Weill (2014) who used the worldwide data and established that wealthy individuals were more likely to be financially included than the poor. In addition, the findings in this paper are consistent with (Al-Hussainy et al., 2008; Johnston and Morduch 2007) which attach greater importance to income as a determinant of access to credit.

Although location measured as urban and rural was not significant for both formal access channels (Formal and formal other credit), it was found to be significant in relation to informal and excluded channels. Being urban relative to rural, an individual was less likely to access informal credit. This could be attributed to the widespread mainstream financial services in the urban than in the rural areas (Mlachila et al., 2013; Doan et al., 2010). Similarly, being urban was less likely to exclude individuals from accessing credit. Similar findings were reported in Mlachila et al., (2013) showing the importance of variety in promoting financial inclusion.

The results further shows lesser likelihood of men to access informal credit compared to women and the coefficients taper towards formal credit access. This shows that women are more constrained to access credit across different strands than men. According to Mayada (1994), women are considered more constrained in the formal financial markets which limits their capacity to access credit. In another study, Navajas and Tejerina (2006) showed that the main challenge for women to access credit was the cost associated with it.

4.4 Marginal Effects on Savings Mobilization

Marginal effects of the variables on savings mobilization are showed in Table 4. The marginal effects of income and education on formal savings are more pronounced. For instance, a one unit increase in education level increases the likelihood of accessing formal savings by 4.6 percent compared to income which is likely to increase access to formal savings by 4 percent. Age, marital status and social capital increase access to formal savings marginally. However, location and gender have the effect of reducing access to formal savings. Tesfamariam (2012) carried out a study to investigate the determinants of savings mobilization among rural co-operators in Tigrai region in Ethiopia. The empirical results showed that education was statistically significant but negatively influencing savings. Results from Abdelkhalek et al., (2010) however showed that education determines formal savings mobilization more than income. These findings corroborate the results in the current study which show that education determines access to formal savings more than income.

Table 3: Results for the Seemingly Unrelated Regression for Credit access

VARIABLES	Formal Credit	Formal Other Credit	Informal Credit	Excluded Credit
Log Age squared	0.00245	0.00861*	-0.00968	-0.0145**
	(0.00393)	(0.00521)	(0.00683)	(0.00571)
Some primary	-0.00432	0.00681	0.0343*	0.0371**
	(0.0102)	(0.0135)	(0.0177)	(0.0148)
Primary completed	0.0107	0.0452***	0.0617***	0.0471
	(0.0104)	(0.0137)	(0.0180)	(0.0151)
Some secondary	0.0145	0.0775***	0.0317	0.0308
	(0.0139)	(0.0184)	(0.0241)	(0.0202)
Secondary completed	0.0678***	0.107***	0.0615***	0.0193
	(0.0121)	(0.0160)	(0.0210)	(0.0175)
Technical after Secondary	0.0752***	0.102***	0.0703**	0.0630
	(0.0162)	(0.0215)	(0.0282)	(0.0236)
University degree	0.183***	0.243***	0.0200	0.0412
	(0.0231)	(0.0307)	(0.0402)	(0.0336)
Divorced	0.00520	0.0827***	0.135***	0.127***
	(0.0152)	(0.0201)	(0.0264)	(0.0221)
Widowed	0.00199	0.0470***	0.0151	0.0702***
	(0.0115)	(0.0153)	(0.0201)	(0.0168)
Married/living together	0.0157*	0.0581***	0.0212	0.0540***
	(0.00890)	(0.0118)	(0.0155)	(0.0129)
Belongs to one group	0.0297**	0.0311*	0.183***	0.0370**
	(0.0126)	(0.0166)	(0.0218)	(0.0183)
Belongs to two groups	-0.00144	0.0502	0.0971**	0.0282
	(0.0238)	(0.0315)	(0.0413)	(0.0345)
Belongs to three or more groups	0.00939	0.0317	0.252***	0.0540
	(0.0313)	(0.0415)	(0.0544)	(0.0455)
USD 1-15	-0.000574	0.00162	0.0473***	0.0470***
	(0.00807)	(0.0107)	(0.0140)	(0.0117)
USD 16-30	0.00347	0.0276**	0.0318*	0.0354**
	(0.0102)	(0.0136)	(0.0178)	(0.0149)
USD 31-75	0.0580***	0.0580***	0.0301	0.00134
	(0.0119)	(0.0158)	(0.0207)	(0.0173)
USD 76-150	0.133***	0.120***	-0.00341	-0.0194
	(0.0179)	(0.0237)	(0.0311)	(0.0260)
USD 151-300	0.175***	0.108***	0.0130	-0.0343
	(0.0211)	(0.0280)	(0.0367)	(0.0307)
USD 301-1000	-0.0583	0.373**	0.201	0.350*
	(0.130)	(0.172)	(0.226)	(0.189)
USD 1001-2000	-0.0184	-0.0626	-0.157	-0.119
	(0.184)	(0.243)	(0.319)	(0.267)
USD greater than 2000	-0.0562	0.898***	-0.0596	-0.0353
	(0.184)	(0.243)	(0.319)	(0.267)
Urban	0.00713	0.00537	-0.0336***	-0.0465***
	(0.00697)	(0.00924)	(0.0121)	(0.0101)
Male	-0.0156**	-0.0270***	-0.0462***	-0.00843
	(0.00705)	(0.00934)	(0.0122)	(0.0102)
Constant	-0.0249	-0.0998**	0.141***	0.117***
	(0.0309)	(0.0410)	(0.0537)	(0.0449)
Observation	3,468	3,468	3,468	3,468
R-squared	0.115	0.085	0.063	0.038

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Men and women have been shown to have varying propensities to access savings mobilization with men carrying the highest probability. However, Bajtelsmit and Bernasek (1996) find that women had a higher

propensity to access savings mobilization than men. They showed more women with higher proportions of fixed assets than men. Even more recent studies have also not established conclusive findings on the sign of the coefficient of gender on savings mobilization (Anang et al., 2015, Mirach et al., 2014). The fundamental reason cited in these studies is the low tolerance to risk for women negatively affects them in the short run rather than in the long run. Similarly, differences exist between savings behaviour of rural and urban dwellers. A change from urban to rural areas decreases the probability of accessing savings by 0.011. The rural-urban differences have been investigated and varied conclusions reached. For instance, rural dwellers are more likely to engage in informal savings as well as saving in secret places. This is mainly driven by both the supply side constraints as well as the individual level factors.

Table 4: Marginal effects on savings mobilization

Variable	dy/dx	Std. Err.	Z	P>z	[95%	C.I.]	X
Log Age squared	0.012	0.006	1.850	0.065	-0.001	0.024	7.402
Education	0.046	0.004	12.060	0.000	0.039	0.054	2.093
Marital Status	0.002	0.005	0.510	0.611	-0.007	0.012	2.134
Social Capital	0.008	0.012	0.660	0.508	-0.015	0.030	0.134
Income	0.040	0.005	8.660	0.000	0.031	0.049	1.205
Location	-0.011	0.012	-0.940	0.349	-0.034	0.012	0.612
Gender	-0.009	0.011	-0.780	0.435	-0.031	0.013	0.595

4.5 Marginal Effects on Credit Access

Similar to access to savings mobilization, education and income influence access to credit in significant ways. Table 5 shows that an increase in education by one level has the potential of increasing access to credit by a factor of 0.021 while increasing income by one unit would increase access to credit by a factor of 0.027. Although gender appears to decrease access to credit, being female would cause a decline in the probability of accessing credit than being male. Table 5 shows the marginal effects on access to credit.

Table 5: Marginal Effects on Credit Access

Variable	dy/dx	Std. Err.	z	P>z	[95%	C.I.]	X
Log Age squared	0.006	0.004	1.520	0.129	-0.002	0.013	7.402
Education	0.021	0.002	8.990	0.000	0.016	0.025	2.093
Marital Status	0.006	0.003	2.050	0.040	0.000	0.012	2.134
Social Capital	0.004	0.007	0.590	0.553	-0.010	0.018	0.134
Income	0.027	0.003	9.720	0.000	0.022	0.033	1.205
Location	0.011	0.007	1.620	0.104	-0.002	0.025	0.612
Gender	-0.017	0.007	-2.540	0.011	-0.031	-0.004	0.595

5. Conclusion and Policy Implications

The paper aimed at examining the socioeconomic and demographic characteristics of access to and use of credit and savings mobilization in Kenya and Tanzania. Both socioeconomic and demographic factors are key determinants of access to savings and credit in Kenya and Tanzania. The findings have important policy implications as follows; when more people are financially included, the risks associated with informal and/or exclusion are avoided. In addition, promotion of education and employment policies may provide the much needed impetus to increasing access to financial services. Access to credit ensures that households are not deprived of income to smoothen their consumption. Majority of the people in Kenya and Tanzania are relatively poor and therefore require stable source of income for their livelihoods. It is in this regard that access to credit and savings becomes a critical factor to improving the livelihoods. Education plays the most critical role in ensuring that choices preferred by individuals are not only rational but also beneficial. More education has been shown to lead to better earnings; enabled people to live in urban areas and facilitated creation of networks to fulfill their desires.

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