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Determinants of Informal Finance Use in Kenya

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Abstract
Financial services sector play a pivotal role in Kenya's development by providing better intermediation between savings and investments and mobilization of capital required to implement Vision 2030 projects. However, Kenya's financial system is dualistic in nature with a dominant informal finance over formal finance. Informal finance entails financial activities that occur outside the immediate control of government agencies. This paper examined the role played by an individual's attitude towards formal finance and internal business regulation while controlling individual socio-economic characteristics in determining use of informal finance using data from FinAccess 2009 national survey. To examine the hypothesized factors, the study used Maximum Likelihood technique to estimate a logit model. The study revealed that negative attitude towards formal finance and internal business regulations play a key role in promoting informal finance use. Policy recommendations arising from the study are that formal institutions in conjunction with CBK should address negative attitude by adopting effective regulatory framework, policies and reforms leading to effective transformation of informal to formal finance. These regulations should filter favorably into informal systems allowing transformation of informal into formal institutions. In addition, formal institutions should address customer needs on a case by case basis rather than having standardized contracts that may not suit all individuals hence enhance their flexibility. They should also rein on the escalating fees and other transactions costs that enhance a negative attitude. Similarly, the CBK in conjunction with KBA and banking institutions should re-evaluate KYC requirements with a view to weeding out excessive internal regulations that drive away individuals into using informal finance without compromising on due diligence. Future studies should focus on linkages between formal and informal finance to determine whether they are complementary or substitutes. Further, data collection should be enhanced in order to support evidence-based policy formulation.

INTRODUCTION

A well functioning financial services sector play a pivotal role in Kenya's development by providing better intermediation between savings and investments and mobilization of capital required to implement Vision 2030 projects. However, Kenya's financial system is dichotomized into formal and informal finance. "Informal finance" refers to financial transactions that take place beyond the functional scope of country's banking and other financial sector regulations (Burkett, 1998; Aryeetey, 2003; Yaldiz et. al, 2006). These include (1) savings mobilization units that do little or no lending; (2) lending units that seldom engage in savings mobilization; and (3) units that combine deposit mobilization with some amount of lending. Informal financial systems take various forms but prominent ones include Savings and Credit Cooperatives (SCC); Savings and Credit Associations (SCA); Rotating Savings and Credit Associations (ROSCAs). Others are moneylenders, traders, grain millers, employers, relatives and friends. For purposes of this study, informal finance use refers to uptake of credit financial services from and saving in informal financial systems.

Informal finance is not only a Kenyan phenomenon but is a common feature in developing countries where inefficient regulations and high costs of finance coexist with structural problems in financial markets stocking a negative attitude towards formal finance. This implies that informality is partly the result of inefficient public policies and the failure of public institutions to protect and promote an efficient and equitable market economy. Africa has a rich history of informal financial arrangements emerging from the African socio-economic fabric. Studies in China, Nigeria, Ghana, Malawi and Tanzania reveal adequately that there has been substantial growth in the activities of the informal financial sector since reforms began in many countries, (Aryeetey, 1998; Ayyagari Demirgüç-Kunt & Maksimovic March 2007).

In West African countries such as Ghana, Cote d'Ivoire and Togomobile bankers generally known as susu or esusu collectors with similar characteristics to ROSCAs and ASCAs are common. In addition, informal finance arrangements known as Tontines are widespread in Senegal. Iddir and Iqqub informal financial groups operate in Ethiopia while Uchamaa in Tanzania has facilitated growth of various types informal finance groups. Just like other African countries, Kenya's financial sector is dichotomized into formal and informal. Informal financial arrangements in the country include ROSCAs, moneylenders, ASCAs, merry-go-rounds and more recently chamas. Generally, all these arrangements exist to mobilize savings and/or channel funds to investible areas of the economy thus making access to finance less difficult.

The operations of informal finance are such that any number of people may agree to contribute an agreed sum of money regularly into a pool, which is then given to each member as a lump sum in turn. Users of informal finance are expected to keep their membership by continuously saving or repay loans by continuing to make their regular contributions. Some of the common features of these groups are that they heavily rely on social networks, charge varying interest rates different from formal interest rates, offer small and short-term loans, demand small or no collateral, and are not regulated by government agencies. With the SACCO Societies Regulatory Authority in place, some of these groups ultimately form Savings and Credit Co-operatives, (SACCOs).

In the last decade, the impetus of financial reforms in Kenya has been growing with emphasis on deepening access to formal finance. This registered some success in formal finance albeit with persistence of informal finance over the same period. Informal groups are embracing emerging technologies such as M-Pesa to augment their traditional channels of intermediation to provide better financial services to its users hence sustaining high usage. Other efforts by the government such as establishment of SACCO Regulatory Authority, (SASRA), and formalization of microfinance institutions through establishment of Microfinance Act, 2006 to transform informal finance it remains dominant over formal finance. On the one hand, this may suggest that these measures are inappropriate or regulations put in place are repressive therefore enhancing use of informal finance. On the other hand, this may imply that there are certain factors that drive people to use informal finance that could not be addressed by financial and regulatory reforms aimed at enhancing use of formal finance.

The degree of utilization of credit from both formal and informal finance in Kenya is shown in Table 1. 1.70% of Kenyans use credit from informal finance compared to 29% from formal financial systems. Family and friends forms the most important source of funds for individuals with 51% of the individuals relying on it. This perhaps is because of its convenience and low or at times zero interest charges as compared to other financing arrangements. 11% of the respondents indicated that they borrowed from banks while 6% borrow from micro-finance institutions. Only 8% of the respondents use ASCAs to access loans.

Table 1: Loans from Formal and Informal Finance

Type of Financing		**Percentage of individuals using it to loan funds**
Formal	Bank	11
	MFI	6
Semi-formal	SACCO	12
Informal	ASCA	8
	Shylock	3
	Family & Friends	51
	Buyer of produce	4
	Employer	4
Other	Government	1

Source: Compiled from FinAccess, 2009 national survey

Similarly, results in Table 2 show that 74% of Kenyans reported that they used informal finance to save. Formal finance compares poorly to informal finance arrangements at 36%. 35% reported to keep their money in a secret place indicating that formal financial institutions have not succeeded in mobilizing most of the funds held by individuals. In addition 24% reported to use ROSCAs for saving purposes. Family and friends was reported to be used by 9% of the respondents while 6% reported to have used ASCAs for saving. As shown in Table 2 16% of individuals reported to have used banks with only 2% using microfinance institutions, (MFIs), for saving. Only 8% of individuals reported to have used semi-formal arrangements such as SACCOs.

Table 2: Savings in Formal and Informal Finance

Type of Financing		**Percentage of individuals using it for saving**
Formal	Bank	16
	MFI	2
Semi-formal	SACCO	8
Informal	ASCA	6
	ROSCA	24
	Family & Friends	9
	Secret Place	35

Source: Compiled from FinAccess, 2009 national survey

It is evident that informal finance plays a bigger role in credit and savings mobilization, than formal finance in Kenya. Given the low penetration of formal financial services, these institutions have enormous potential to mobilise additional savings and to provide credit, especially to sections of the population that do not use banking services and the low-income groups, (Sessional paper No 10 of 2012).Johnson, (2008) established that approximately Kshs1.2bn is mobilized by informal groups monthly translating to over 14.4 billion annually.

Over half of these funds, (Kshs 690 million), were mobilized through ROSCAs. It is against this backdrop that this study seeks to establish the determinants of informal finance use in Kenya.

Research Problem

The goal of broadening use of formal finance is anchored on Kenya's Vision 2030 which envisages the country as a leading financial centre in Eastern and Southern Africa with its financial institutions mobilizing savings to 30% of GDP. Vision 2030 acknowledges that the major constraint to the growth of this sub-sector is the lack of an effective regulatory framework, giving rise to low public confidence in formal institutions. Despite the government's concerted efforts to enhance formal finance use in pursuance of this goal, the 2009 FinAccess national survey revealed that majority of adult population in Kenya use informal finance. In spite of financial liberalization, privatization, legal & regulatory reforms, informal finance use has remained persistently high albeit with the attendant risks of lack of accountability, legal enforcement and impeding smooth transmission of monetary policy.

Further, despite informal finance use being vibrant and robust, the attention of policy makers and researchers has primarily been focused on formal finance. Consequently, informal finance has not been featured prominently in research and policy circles. It is not clear what factors determine an individual's choice of either formal or informal finance. Against this backdrop, the study seeks to establish the factors that drive informal finance use in Kenya that must be addressed by policy in order to reduce informality, boost investment and growth by improving the viability and use of formal finance. The key policy question arising from this study is what determines the choice of a mode of finance in Kenya.

Justification of the Study

Informal finance use has predominantly remained high in Kenya. This therefore warrants mainstreaming of informal finance in research and policy making. The study therefore hopes to bring into focus the need for the Central Bank of Kenya, (CBK), and other regulatory agencies in particular and the government in general to adopt an effective regulatory framework, policies and reforms leading to effective transformation of informal to formal finance in order to enhance formal finance use. Informality has been found to be negatively correlated with economic growth. It would therefore be imperative to establish the drivers of informal finance in order to address them hence limit the negative effects of informal finance use in the country. Further, the costs of informality appear even larger considering that it hinders the effectiveness of the country's monetary policy. It is hoped that this will enhance formal finance use therefore enhancing the role of financial services in economic development; regional competitiveness of the country's financial system and achievement of Kenya's Vision 2030.

Organization of the Paper

The rest of the paper is organized as follows. Section two reviews both the theoretical and empirical literature. Section three contains methodology of the study which includes the conceptual framework, the empirical model, and data sources. The section also contains the working hypotheses to be tested. Section four focuses on the results of the study whereas section five contains conclusion and recommendations of the study.

LITERATURE REVIEW

Theoretical Literature

Financial intermediation plays an important role in economic development through effective mobilization of savings and allocation of funds to the real sector (McKinnon 1973; Shaw 1973; Aryeetey, 1990, Burkett, 1988). Achievement of this objective relies on a well developed financial system. Development of the financial system involves increase in the scale, scope, complexity and efficiency of institutions and markets through which funds are transferred from savers to investors, (Burkett, 1988). However, Kenya's financial system is dichotomized with both formal and informal financial systems. The existence of the two financial systems in a particular country has been explained by three schools of thought. These are the McKinnon-Shaw (neoclassical school), the structuralist school and the imperfect information school.

The underlying argument of McKinnon (1973) and Shaw (1973) is that financial repression occasioned by government interference in financial markets was responsible for the underdeveloped nature of the financial system. This, they argue lead to less than optimal contribution to economic growth by the financial system. Their argument was later reinforced by Galbis, (1976), Kapur (1976), Matheison (1980), Fry (1988) and Fry (1999) who posit that economic growth can be enhanced by eliminating government interference in the workings of the financial market. It is this interference that lead to emergence of parallel markets as economic agents sought to evade government controls and regulations, (Jones, *et. al,* 1991). It is the proponents of this school of thought that championed the liberalization of the financial system.

Departing from the McKinnon-Shaw school of thought the structuralists (Taylor, 1979; Buffie, 1984;

Kohsaka 1984; van Wijnbergen 1983; Aryeetey *et. al*, 1990; Burkett 1988) observe that structural weaknesses in the workings of financial markets are responsible for the dichotomous nature of financial systems in developing countries. They market failure in the credit market create gaps in the formal financial system prompting individuals to switch between alternatives hence the existence of informal credit markets alongside formal credit institutions. In searching for alternatives to formal sector finance, some attention is increasingly being paid to informal and semi-formal finance (including micro-finance) for meeting demand for credit, (Aryeetey, 1998). The proponents of this school of thought opine that informal finance plays an important role in developing countries as a result of structural weaknesses in formal finance.

Proponents of the imperfect information school of thought explain that imperfect information and costly contract enforcement result in market failures and hence fragmented credit market. Stiglitz and Weiss (1981), Hoff and Stiglitz (1990), Bell (1990) and Basely (1994) observe that market failures undermine the working of financial markets. This, they argue, lead to moral hazard and adverse selection. In the same vein, Burkett, (1998) opine that the relatively cheap production functions and knowledge of local information on the credit worthiness of borrowers utilized by informal financial institutions allow them to compete with formal financial institutions thus help to enforce decreased spreads between deposit and loan interest rates at formal financial institutions.

Empirical Literature

Burkett, (1988) acknowledges that one of the reasons for widespread existence of informal finance is their accessibility, especially for non-wealthy saver/borrowers rationed out of the services of formal financial institutions. This is either due to constraints in formal finance or the inability of formal finance to satisfy excess demand for formal financial services.

Empirical studies, (Azam *et al.* 2001; Turvey and Kong 2010; Yaldiz *et al.,* 2011; Johnson & Nino-Zarazua 2011), establish that trust is a significant determinant of individual choice to use informal finance. In their study, Johnson & Nino-Zarazua, (2008), find that further analysis should carried out to investigate the effect of attitude to formal finance on informal finance. In a survey conducted by Ipsos, (2012) they find that individual's attitude toward regulation in emerging markets regulation is often perceived as sufficient if not excessive and support for regulation is intimately related to distrust of banks. Their survey reveals that consumer attitudes towards the regulation of financial services companies are intimately related to their level of trust, or distrust, in them. As demonstrated by social networks in informal finance, trust in the financial industry is a function of familiarity unless familiarity derives from negative associations. This implies that there is an inverse relationship between consumer's trust in formal financial institutions and their support for regulations.

The nexus of the analysis by McKinnon (1973) and Shaw (1973) is that economic growth may be impeded if financial intermediation is repressed by government regulations. For instance, repression of interest rates dampens the mobilization of savings. Concern with the microeconomic effects of financial regulations has supported the view that informal finance is in part a response by economic agents to certain regulatory constraints and inefficiencies which result from these controls, (Burkett, 1988). Therefore informal finance use may help policymakers identify inefficient regulations which can be removed to enhance formal finance use.

The seminal work of McKinnon (1973) and Shaw (1973) triggered a concern with transaction costs in the provision of credit and savings services at the microeconomic, (individual/household) level, (Burkett, 1988). Transaction costs are costs incurred by intermediaries, savers and borrowers in formal financial institutions. According to Thillairajah, (1994) these include administration costs, time spent in information gathering, formalizing collateral arrangements, the opportunity cost of time of travel and waiting time to deposit savings, document processing, approvals, disbursements, costs are incurred related to the withdrawal of funds, inconvenient banking hours, bureaucratic procedures often adopted by formal institutions and collections. He further observes that for the financial intermediary itself there are generally money costs involved in deposit mobilization, maintaining branches, operating mobile units, to facilitate the mobilization and withdrawal of savings, customer account administration, control procedures, and so on. Due to transaction costs, including information costs, informal finance is likely to have a comparative advantage over formal financial institutions in savings and credit transactions even after removal of inefficient controls, (Burkett, 1988). As compared to formal finance, the unique delivery mechanisms of informal finance enable them to lower their transaction costs, offer services conveniently with a high level of flexibility and trust. This offers them a competitive advantage over formal finance thus increasing its usage.

Widespread operations of informal groups in many developing countries arise to evade controls, regulations and repression of interest rate controls, (Burkett, 1988; Aryeetey, 2003). Johnson, (2004) find that being young educated and male raised the likelihood of borrowing from friends and relatives. Being young, educated and running small businesses meant that they needed funds, but had no collateral since they were too young to have inherited land hence difficult to access formal finance. However, Oladeji and Ogunrinola, (2001) find that as age increased, more of earned income would go into informal savings. Similarly, FSD, (2009) finds

that individuals with more education and men are more likely to use formal financial services, while women are more likely to use informal services.

Past studies, (Oladeji and Ogunrinola, 2001; Atieno 2001; Johnson & Nino-Zarazua, 2008), find that income is a very important influence on which financial services are used and overall inclusion. They opine that as income increases the tendency is for the fraction of income saved informally to decline and given that average propensity to consume declines or remains the same, this development implies an increased average propensity to save in the formal financial sector. Mwangi, & Sichei, (2011) establish that s increase in age; education and income tend to enhance access to formal credit but the probability of access drops as one draws close to retirement age. The study finds out that information costs impede access to finance. This suggests that the unmet demand arising from this scenario is likely to be met through informal groups.

Regulations play a pivotal role in the financial system as it influences among other factors, costs, taxes, competition, access to formal finance, market discipline and the overall efficiency of the system. Empirical studies, (Steel *et al.* 1997; Tsai, 2004; Yaldis *et al.,* 2011; Batini *et al.,* 2010), show that, despite financial liberalization efforts and regulations, informal finance use still constitute a large proportion of financing to poor households and SMEs. Although financial and regulatory reforms triggered significant investment in formal finance the focus of researchers, (Levine, 1997; Beck *et. al,* 2000), has been on the effect of formal finance on economic development with little regard on informal finance effectively, leaving out informal financial use both by reform and policy. Similarly, Allen, Qian, and Zhang (2011) find that Chinese individuals relied mostly on informal finance given structural weaknesses in its financial system.

To test the hypothesis about the role of gender in informal finance use, a dummy variable is employed. Male equals to one, if the respondent is male, zero otherwise. Empirical studies show that financial markets are segmented by gender and that women participate in informal finance, especially in savings part of the market more than men (Johnson 2004; Tsai, 2004; Yaldiz *et al.,* 2011; Johnson & Nino-Zarazua 2011; Fapohunda, 2012). This finding has been attributed to lower education making it difficult to understand formal finance contracts and low income levels of women (Baydas et al., 1995; Johnson 2004; Yaldiz *et al.,* 2011).

There are negative impacts associated with informal finance. Perhaps, this may explain the concerted efforts to diminish informal finance. Honohan P., (2004) argue that in poor countries, much of the problem of predatory lending is likely to be found more in an underground or informal economy than in any areas within the scope of formal financial sector policy.

Education has been established to influence socio-economic affairs of the society. Demirgüç-Kunt, *et al.,* (2008); Financial Sector Deepening, Kenya (2009); Johnson, Nino-Zarazua, (2008); Mwangi, & Sichei, (2011) find a positive association between education level and use of formal finance. Their findings suggest that more educated do not use informal finance and instead use formal finance. However, on the contrary to the notion that the informal segments usually attract poorly educated persons who cannot easily find places in the modem economy, they appear to attract fairly literate and educated persons. Many educated people working in various institutions form groups where they pool funds either for investment or further lending to members at less stringent terms than formal institutions.

Pagura M., & Kirsten M., (2006) assessing formal-informal financial linkages in developing countries establish that linkage arrangements between formal and less formal financial institutions expanded financial outreach into rural areas. The coexistence of both formal and informal finance indicates that there is a clear demand for financial services across the population, though semi-formal and informal financial services and mechanisms are used more commonly than formal financial services (Ellis *et al.,* 2010; Gin´e, 2010)

Overview of Literature

Empirical studies on informal finance, (Baydas et al., 1995, Yaldiz *et al.,* 2011, Mwangi, & Sichei, 2011), concentrated mainly on in informal credit and ignoring the role of savings in informal financial systems. This study departs by looking and the entire spectrum of financial intermediation in informal finance. In addition, past studies, (Jonson, 2004; World Bank 2004; Johnson & Nino-Zarazua, 2008; Mwangi & Sichei, 2011) have predominantly focused on the level of income, age, awareness, education, product design and gender. This study departs from these studies by introducing new variables. In particular the study seeks to establish the effect of attitude towards formal finance, internal business regulations and transaction costs, on informal finance use. In their study, Johnson & Nino-Zarazua, (2011) recommend that further research needs to be carried out to investigate the effect of attitude towards formal finance on informal finance use in Kenya. In addition the study seeks to establish whether a thriving informal finance leads to a thriving formal finance.

This study is anchored on both the MacKinnon-Shaw and information schools of thought. These theories fit the study well as they link regulatory and cost constraints in formal finance to the use of informal finance. While past studies, (Beck, Demirguc-Kunt and Levine, 2004; Honohan, 2004, Demirguc-Kunt and Maksimovic, 1998; Rajan and Zingales, 1998; Beck, Levine and Loayza, 2000 and Levine, 2005) focused on the importance of access to formal access, empirical evidence linking attitude towards formal finance to informal

finance use is limited if any in Kenya and hence little guidance for policies. Previous studies, (Mwangi & Sichei, 2011; Atieno, 2001; Yaldiz *et al.,* 2011)) also predominantly focused on credit with little or no attention on informal savings. It is therefore imperative to consider the implications of informal finance on policy in order to improve the viability of formal financing methodologies hence enhance formal finance use. This study potentially contributes to the scanty literature on the use of informal finance in Kenya.

METHODOLOGY

Conceptual Framework

To explain why some individuals choose to use informal finance while others use formal finance assuming these are the only two alternatives we use a binary choice model. Assuming that an individual seeks to maximize the benefit derived from each financing alternative, his choice will be informed by the value he attaches to each alternative. It follows that there is an expected value attached to using a certain mode of finance (formal/informal). This value can be expressed as a sum of the probability of enjoying the benefits derived from informal finance use. According to McFadden's random utility model (RUM), this scenario can be expressed in form of a utility function. Mwangi, & Sichei, (2011) argue that an individual is faced with a choice of various modes of finance whose utility can be expressed as;

$$U_{ij}(X_{ij};Z_{ij}) = V_j(X_{ij};\beta) + \varepsilon_j \text{.........................} 1$$

$i = 1,2,......., N$ and $j = 1,2$. There are two alternative j; formal and informal finance.

Where;

$U_{ij}(X_{ij};Z_{ij})$ Represents the utility derived by individual *i,* from choosing financing alternative *j*

X_{ij} Represents the observed characteristics of individual *i* given alternative *j* chosen

Z_{ij} Represents the unobserved characteristics of individual *i* given alternative *j* chosen

$V_j(X_{ij};\beta)$ Denotes the deterministic component of the utility

ε_j Represents the random component of the utility

Model Specification

Given that an individual faces a binary choice between using informal finance and formal finance, his choice can be represented by an indicator variable, y, so that;

$$y = \begin{cases} 1 & \text{individual uses informal finance} \\ 0 & \text{otherwise} \end{cases}$$

Since the individual is rational, he chooses the alternative that maximizes his utility. Following (Johnson & Nino-Zarazua, 2008; Green and Hensher, 2009, Mwangi, & Sichei, 2011; Griffiths *et. al,* 2011), and as the dependent variable is dichotomous, conventional regression methods are inappropriate. Even the linear probability model is heteroskedastic and may predict probability values beyond the (0, 1) range. Therefore, the study used the Maximum Likelihood technique to estimate a logistic regression model. To obtain the logistic model from the logistic function,

Logistic function: $$f(Y) = \frac{1}{1+e^{-Y}} \text{...} 2$$

Let *y* represent the right hand side of a linear model, (Kleinbaum and Klein, 2010), so that;

$y = \alpha + \beta_i X_i + \ldots + \beta_k X_k$ 3

Substituting for *y* in the logistic function, we have:

$$f(Y) = \frac{1}{1+e^{-Y}} = \frac{1}{1+e^{-(\alpha + \Sigma\beta_i X_i)}} \text{.......... ....} 4$$

For the independent (predictor) variables X_i, and for dependent variable =1 representing informal finance use, the probability of informal finance use *f*(y) is;

$$\Pr(Y = 1|X) = [1 + e^{-(\beta_i x_i + \varepsilon_i)}] \text{......... ....} 5$$

$$P_i = \frac{1}{1 + e^{-(\beta_i x_i + \varepsilon_i)}} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 6$$

Therefore use of informal finance, (that is the probability that y=1), can be expressed as;

$$\log it(P_i) = \ln(\frac{P_i}{1-P_i}) = \beta_i x_i + \varepsilon_i$$

$$= \alpha + \beta_1 Atfml + \beta_2 Dist + \beta_3 Age + \beta_4 Edn + \beta_5 Inc + \beta_6 IBR + \beta_7 Gndr + \beta_8 \text{Re} + \varepsilon \ldots\ldots\ldots 7$$

This can be linearized by presenting the log odds form as;

Where;

$Atfml$ = Attitude towards formal institutions

$Dist$ = Distance to formal financial institution

Age = Age of an individual

Edn = Individual's education level

Inc = individual's income

IBR = Internal business regulations in formal institutions

$Gndr$ = Individual's gender

Re = Region

ε = error term

Data and Data Sources

The study utilizes data from FinAccess national survey undertaken by Financial Sector Deepening (FSD) Kenya, in collaboration with the Central Bank of Kenya and the Kenya National Bureau of Statistics (KNBS) in 2009 in Kenya. The survey picked a nationally representative sample of 6,598 in 2009 with 78.7% of the respondents coming from a rural setting and 21.3% from an urban setting. The survey questionnaire sought data on a myriad of issues including household characteristics, age, and gender; formal, semi-formal and informal financial services.

The advantage of this data set is that it provides a large and representative sample covering all regions of the entire nation. In addition, respondents were drawn from both rural and urban settings hence captured the varied characteristics of individuals across the divide. The limitation of this data set is that it was collected with the purpose of evaluating the level of financial access in Kenya. For this reason the data may not have captured the use of informal finance in Kenya. This may be reflected by the proxies used for instance the main economic activity that earns income instead of income. In addition, in some cases an index had to be computed to measure certain variables.

Measurement of Variables.

The use of financing mechanism, formal or informal, is represented as a dummy variable coded either 1 (if the individual uses informal finance) or 0 (otherwise). As the dependent variable is dichotomous, conventional regression methods are inappropriate as linear probability model is heteroskedastic and may predict probability values beyond the (0, 1) range, thus the choice of logistic regression model to estimate the model. Data to measure informal finance use is taken from FinAccess survey questionnaire. If the answer is "yes", it is coded 1 and 0 otherwise. However, there were challenges in estimation and measurement particularly considering that there are individuals who used both formal and informal finance. This was occasioned by the fact that the survey was conducted for a different purpose other than informal finance use. Table 3 presents the predictor variables, (attitude to formal finance and internal business regulations controlling for region, level of education, income, gender and age), and the hypothesized signs of their parameters.

Table 3: Variable Measurement

Variable	Definition	Source	Description	Expected sign
Informal finance use	Dummy = 1 if individual has used informal groups for credit or savings, zero otherwise	FinAccess	Common among poor, uneducated, rural,women Johnson & Nino-Zarazua, (2008), Mwangi & Sichei (2011); Atieno (2001)	
Attitude towards formal finance	Index of questions D8(1) and G22(20)	FinAccess	Negative attitude to formal drive individuals to informal finance use Azam *et al.* (2001); Turvey and Kong (2010); Yaldiz *et al., (*2011); Johnson & Nino-Zarazua (2011)	+
Region	rural =1; urban = 2	FinAccess	High usage of informal finance in rural areas Johnson & Nino-Zarazua, (2008), Mwangi & Sichei (2011); FSD, (2009)	
Internal regulation	Mainly KYC requirements drawn from section G of the questionnaire. An index of G22(14); G22(15)	FinAccess	Restrictive requirements to use formal finance increases informal finance use Steel *et al.* (1997); Tsai, (2004); Yaldis *et al.,* (2011); Batini *et al.,* (2010)	
Education	Individual's level of education measured categorically, with 0 = no education; 1 = primary; 3 = secondary and 4 = tertiary	FinAccess	Educated individuals are more likely to use formal finance Johnson & Nino-Zarazua, (2008); Mwangi & Sichei (2011) Aryeetey, (2003); Oladeji and Ogunrinola, (2001)	-
Gender	Dummy = 1 if male, 2 otherwise, (section A of the questionnaire)	FinAccess	Women participate in informal finance more than men Johnson (2004); Tsai, (2004); Yaldiz *et al.,* (2011); Johnson & Nino-Zarazua (2011); Fapohunda, (2012); Baydas et al., (1995); Johnson (2004); Yaldiz *et al.,* (2011); FSD, (2009)	
Age	Number of years of an individual measured categorically with 1 = youthful; 2 = mature and 3 = elderly. 16-34 years = youth; 35-64 years = mature and 65+years = elderly	FinAccess	Formal finance use higher at intermediate age Oladeji and Ogunrinola, (2001); Mwangi & Sichei (2011)	-
Income	Individual's income (section Q of the questionnaire)	FinAccess	Used mainly by low income earners Atieno (2001); Johnson & Nino-Zarazua, (2008); Mwangi, & Sichei, (2011)	-
Distance	Distance to a formal institution. 1 = less than 5 kilometers; 0 = more than 5 kilometers	FinAccess	It is expected that as distance to a formal institution increases, informal finance use increases. Johnson (2004); Aryeetey (2003), (2011); FSD, (2009); Johnson & Nino-Zarazua, (2008); Mwangi, & Sichei, (2011)	+

Source: Own compilation, 2013

RESULTS AND DISCUSSIONS

Summary Statistics

Summary statistics in Table 5.1 reveal that on 73.5 percent of the respondents use informal institutions to save. The average income of the respondents is shillings 14, 250. In addition, most of the respondents were youthful, average age of 1.3, and most had attended at least primary education, as shown by a mean of 1.3.

Table 4: Summary Statistics informal Savings use

Variable	Obs	Mean	Std. Dev.	Min	Max
Informal savings use	6598	.7352228	.4412479	0	1
Region	6598	1.286754	.4522797	1	2
Gender	3385	1.814771	.3885406	1	2
Income	6590	14249.54	30669.02	20	812500
Education	3385	1.317873	.7813519	0	3
Attitude	4991	.1226207	.3280342	0	1
Internal regulations	5485	.0100273	.0996424	0	1
Distance	6349	.2231848	.416414	0	1
Age	3385	1.351551	.5224438	1	3

Similarly, as shown in Table 3 over 70 percent of the respondents use informal systems to access credit facilities. In addition, most of the respondents were drawn from rural settings as indicated by a mean of 1.2.

Table 5: Summary Statistics Informal Credit Use

Variable	Obs	Mean	Std. Dev.	Min	Max
Informal Credit use	6598	.70495	.4720087	0	1
Region	6598	1.286754	.4522797	1	2
Gender	3385	1.814771	.3885406	1	2
Income	6590	14249.54	30669.02	20	812500
Education	3385	1.317873	.7813519	0	3
Attitude	4991	.1226207	.3280342	0	1
Internal regulation	5485	.0100273	.0996424	0	1
Distance	6349	.2231848	.416414	0	1
Age	3385	1.351551	.5224438	1	3

Marginal Effects after Logistic Regression

The likelihood ratio chi-square test of the logistic regression on informal savings use, 87.03 with a p value of 0.0000 implies that the model as a whole fits significantly with the hypothesized factors as joint predictors of informal savings use. Similarly, the likelihood ratio chi-square test of the logistic regression on informal credit use, is 75.09 with a p-value 0.0000 indicating that the hypothesized factors fit significantly and the hypothesized factors jointly predict informal credit use. See Appendix I and II respectively. Results in Table 5 and Table 6 show the marginal effects after logistic regression results of the socio-economic factors that influence informal savings and credit use respectively.

Table 6 Marginal Effects after Logistic Regression on Informal Savings Use

y = Pr(informal savings use) (predict)

= .75545357

Variable	dy/dx	Std. Err.	z	P>|z|	[	95% C.I.	]	X
Region	-.0655246	.02123	-3.09	0.002*	-.107137	-.023912		1.24562
Gender	.0809268	.02096	3.86	0.000*	.039845	.122009		1.80579
Income	1.05e-06	.00000	1.35	0.178	-4.8e-07	2.6e-06		9050.72
Primary Education*	.0994516	.02559	3.89	0.000*	.0493	.149603		.549124
Secondary Education*	.0718786	.02594	2.77	0.006*	.021044	.122713		.27837
Tertiary Education*	.0314075	.04908	0.64	0.522	-.064796	.127611		.029703
Attitude*	.1214932	.02396	5.07	0.000*	.074523	.168464		.096344
Distance*	-.0572832	.02223	-2.58	0.010*	-.100849	-.013718		.249048
Mature*	.0471877	.01987	2.38	0.018*	.008248	.086128		.285986
Elderly*	-.0150188	.05757	-0.26	0.794	-.127845	.097807		.023229
Internal Regulation*	-.0343765	.02656	-1.29	0.196	-.086433	.01768		.123001

* Significant at 5% confidence level

Table 7: Marginal Effects after Logistic Regression on Informal Credit Use

```
      y  = Pr(informal credit use) (predict)
         =   .3138597
------------------------------------------------------------------------------
             variable |      dy/dx    Std. Err.      z    P>|z|  [    95% C.I.   ]       X
----------------------+-------------------------------------------------------------------
               Region|  -.0272501      .02337   -1.17   0.244   -.07305  .018549   1.24562
               Gender|   .0471328      .02513    1.88   0.061**  -.002125   .09639   1.80579
               Income|   1.09e-06      .00000    1.44   0.149  -3.9e-07  2.6e-06   9050.72
 Primary Education*|   .0850297      .02902    2.93   0.003*   .028157  .141902   .549124
Secondary Education*|   .0382322       .0346    1.10   0.269  -.029588  .106052    .27837
 Tertiary Education*|   .0443858      .06582    0.67   0.500  -.084624  .173395   .029703
            Attitude*|   .0008279      .03093    0.03   0.079  -.059794   .06145   .096344
            Distance*|  -.0920579      .02123   -4.34   0.000*  -.133673 -.050443   .249048
              Mature*|   .0746611      .02228    3.35   0.001*   .030984  .118338   .285986
             Elderly*|  -.0067088      .06391   -0.10   0.916  -.131977   .11856   .023229
Internal Regulation*|   .1160307      .02502    4.64   0.000*  -.165063  .066998   .123001
------------------------------------------------------------------------------
```

* Significant at 5% confidence level ** Significant at 10% confidence level.

Attitude to Formal Finance

As hypothesized, a negative attitude towards formal financial institutions positively influences informal finance use. Table 5 shows that a negative attitude significantly influences use of informal savings systems by individuals at 5% confidence level, p-value=0.000. However, negative attitude to formal institutions influences informal credit use at 10% significance level, p-value=0.079. This may be attributed to the feeling that banks is a preserve of the rich and therefore do not offer products or services that are affordable by the poor majority. Consequently, individuals turn to informal finance to satisfy their unmet demand for financial services.

It should be noted that informal finance thrives due to strong bonds and close relationship amongst its users which in turn boost confidence in informal finance. Consequently, this enhances individual's confidence in these institutions compared to formal institutions. In addition negative attitude arise out of high transaction costs in formal institutions which may not have been disclosed at the time of establishing a savings or loan contract. This compounds with high interest charges hence making informal systems more appealing to individuals than formal institutions. These fees make use of formal finance prohibitively expensive for the low income earners. This is especially true considering that informal finance systems rarely charge a service fee. Negative attitude may also be attributable to low familiarity with formal financial services resulting from high levels of exclusion from formal finance.

Internal Regulations

Internal business regulations and other requirements to open and operate a bank account are a hindrance to formal credit use. These requirements have the effect of locking out those who do not meet these requirements. As shown in Table 6 internal regulations in formal institutions positively and significantly influences informal finance use, p-value=0.000. Rigid and cumbersome know your customer, (KYC), requirements such as too much documentation, inflexibility, collateral requirements, requirement of guarantors, negatively impact individual borrowing from formal institutions. Consequently, many individuals may be locked out as they do not meet the set qualifications.

However, internal regulations negatively influence informal savings use. This may be due to the fact that individuals find their savings being more secure in formal institutions than in informal institutions. However, this result is not statistically significant at either 5% or 10% significance level.

Gender

As shown in Table 5 and Table 6, gender is a significant factor in determining use of informal finance. Gender is particularly significant at 5% significance level, p-value=0.00 in informal savings whereas informal credit is significant at 10% significance level, p-value=0.061. This may be attributed to the popularity of merry go rounds or ROSCAs among women who pool resources for onward lending to members. In other instances they give each member a lump sum in turn. This finding is not surprising given that women comprised 80 percent of the

respondents.

Women in rural areas rely on informal finance mainly because they do not have tangible collaterals to finance domestic expenditure due to cultural restrictions on property ownership. This is mainly met by informal lenders against firm produce, local traders, money lenders, or even against their savings in informal systems. Women are also known to be good in group dynamics in Kenya than men. The growth and development of informal groups such as ASCAs (Chamas), and ROSCAs is a result of such strong bonds among women. This indicates that women are continuing to play a leading role in Kenya's financial intermediation and economic development.

Income

Income is an important determinant of an individual's use of informal finance use. Results in Table 5 and Table 6, p-values=0.000, show that income significantly influences an individual's choice of informal finance. However, this finding is not in line with the hypothesis made that as an individual's income increases they tend to use more of formal finance. This result contradicts the notion that informal finance is a preserve of the low income individuals. This result is inconsistent with the finding of previous studies (FSD 2009; Aryeetey, 2003; Johnson & Nino-Zarazua, 2008), indicating that the low income individuals locked out of formal finance turn to other alternatives such as informal finance.

Level of Education

An individual's level of education significantly influences their choice of informal finance. Even though it was hypothesized that as an individual's level education increases, they tend to embrace formal finance, findings in Table 5 and Table 6 indicate a positive relationship. Individuals with primary education or no education at all use informal systems both for saving, (p-value=0.000), and credit purposes, (p-value=0.003). This explains why informal finance thrives more in the rural areas particularly where majority of the people are least educated. However, only individuals with up to secondary education find informal savings appealing, p-value=0.006, whereas those above secondary level do not use informal loans.

Age

Results show that an individual's age significantly influences their choice of informal finance. Given that majority of the respondents were below the age of 35 years, it implies that majority of informal finance users are youthful. This finding could be attributed to the fact that most youth do not have security required by formal financial institutions for purposes of credit services. Consequently they turn to informal finance to meet their financial needs as they do not require security. The high level of unemployment particularly in the rural areas and property ownership for collateral purposes may also explain this scenario where there is a positive relationship between informal finance use among the youth whereas this relationship is negative among the elders.

Distance to formal financial institution

As hypothesized, as distance to formal financial institution increases individuals are more likely to use informal finance. This is attributable to the costs associated to travelling and the time taken to access formal institutions. Results in Table 5 and Table 6 show that distance is statistically significant in influencing both informal savings and credit use.

Region

It was expected that informal finance use is high in rural areas compared to urban areas. Results in Table 5 show that use of informal saving systems is significant, p-value=0.002, in rural areas. This may be attributable to the few formal institutions in rural areas, low awareness and incomes in rural areas. However, informal credit was not statistically significant at either 5% or 10% level.

CONCLUSION AND POLICY RECOMMENDATIONS

Conclusion

Kenya's financial system continues to play a pivotal role in the country's economic growth through its intermediary roles. The system is dichotomized into formal and informal with the later dominating the former in usage by individuals. The study explains the socio-economic factors that determine informal finance use in Kenya. The analysis was anchored on both the MacKinnon-Shaw, 1973 and information schools of thought.

Evidence from the study reveals that informal finance is the predominant source of financing and the most used for saving by individuals. It mobilizes funds in excess of 14.5 billion annually as savings which are later channeled to formal financial systems underscoring its in savings mobilization. This seems to suggest that both formal and informal systems may be complimentary rather than substitutes and their co-existence may have

positive effects. Findings indicate that factors that have played a key role in promoting the use of informal finance include attitude to formal finance, income, internal business regulations, age, distance to formal institutions and individual's level of education.

Policy Recommendations

Formal institutions should address negative attitude that drive individuals into using informal finance with the attendant negative effects of informality such as poor transmission of the country's monetary policy. It is therefore incumbent upon formal institutions and other regulatory agencies such as the CBK to adopt an effective regulatory framework, policies and reforms leading to effective transformation of informal to formal finance. Formal institutions in particular should enhance relationships with their customers to build strong bonds such as those of informal systems. In addition, formal institutions can enhance their flexibility by addressing customer needs on a case by case basis rather than having standardized contracts that may not suit all individuals. CBK should issue guidelines to rein on the escalating fees and other costs that enhance a negative attitude that formal institutions are a preserve of the rich.

Even though due diligence requirements are critical in banking it is necessary for the CBK in conjunction with KBA and banking institutions to re-evaluate KYC requirements with a view to weeding out excessive internal regulations that drive away individuals into using informal finance as they seek to circumvent or avoid such constraints. Such interventions will enhance efficiency of formal financial systems, efficient allocation of funds and mobbing up funds from informal system to formal system.

Generally, it would be important for reforms in formal financial institutions to integrate informal finance rather than seeking to eliminate them. Therefore, regulations should be structured in such a manner that they favorably filter into informal systems thus paving way for appropriate linkages and integration of the two systems. This will have the effect of not only enhancing formal finance use but also the smooth and gradual movement from informal to formal finance.

Future studies should also try to establish the linkages between formal and informal finance in Kenya. This will be important in determining empirically whether they are complementary or they are substitutes and hence enhance policy formulation.

Lastly, future surveys should seek to improve data collection in the two financing systems so as to support evidence-based policy formulation.

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APPENDICES

Appendix I: Logistic Regression of Informal Savings Use

```
Logistic regression                                     Number of obs   =       2626
                                                        LR chi2(11)     =      87.03
                                                        Prob > chi2     =     0.0000
Log likelihood = -1442.4409                             Pseudo R2       =     0.0293
------------------------------------------------------------------------------
Informal savings use |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
---------------------+--------------------------------------------------------
              Region| -.3546787   .1151882    -3.08   0.002    -.5804434   -.1289141
              Gender|   .4380497   .1136814     3.85   0.000     .2152383   .6608612
              Income|   5.70e-06   4.24e-06     1.35   0.178    -2.60e-06    .000014
   Primary Education|   .5320318   .1359265     3.91   0.000     .2656208    .7984429
 Secondary Education|   .4082522   .1551615     2.63   0.009     .1041412    .7123632
  Tertiary Education|   .1776604   .2908337     0.61   0.541    -.3923633     .747684
           Attitude|   .7856306   .1928622     4.07   0.000     .4076276    1.163634
           Distance| -.2988932    .112252    -2.66   0.008    -.5189032   -.0788833
             Mature|   .2630877   .1144403     2.30   0.022     .0387889    .4873865
             Elderly| -.0797556   .3000513    -0.27   0.790    -.6678453    .5083341
 Internal Regulation| -.1799289   .1346918    -1.34   0.182    -.4439201    .0840622
           Constant|   .2634711    .284799     0.93   0.355    -.2947248     .821667
------------------------------------------------------------------------------
```

Appendix II: Logistic Regression of Informal Credit Use

```
Logistic regression                                     Number of obs   =       2626
                                                        LR chi2(11)     =      75.09
                                                        Prob > chi2     =     0.0000
Log likelihood = -1607.6196                             Pseudo R2       =     0.0228
------------------------------------------------------------------------------
Informal Credit Use|      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------------+----------------------------------------------------------
            Region|  -.1265378   .1085192    -1.17   0.244    -.3392316     .086156
            Gender|   .2188643   .1167771     1.87   0.061    -.0100147    .4477432
            Income|   5.05e-06   3.49e-06     1.44   0.149    -1.80e-06    .0000119
  Primary Education|   .3985066   .1376884     2.89   0.004     .1286423    .6683709
Secondary Education|   .1751136   .1564927     1.12   0.263    -.1316065    .4818336
Tertiary Education|   .1995256   .2873223     0.69   0.487    -.3636157     .762667
           Attitude|   .0038422   .1434611     0.03   0.979    -.2773364    .2850208
           Distance|  -.4478207   .1090627    -4.11   0.000    -.6615798   -.2340617
            Mature|   .3383821   .0989778     3.42   0.001     .1443892     .532375
            Elderly|  -.0313284   .3001651    -0.10   0.917    -.6196412    .5569844
Internal Regulation|  -.5932857   .1438424    -4.12   0.000    -.8752116   -.3113598
           Constant|   1.250832   .2878663     4.35   0.000     -1.81504    .6866247
------------------------------------------------------------------------------
-
```