Challenges in Banking the Rural Poor: Evidence from Kenya's Western Province*

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Abstract

Most people in rural Africa do not have bank accounts. In this paper, we combine experimental and survey evidence from Western Kenya to document some of the supply and demand factors behind such low levels of financial inclusion. Our experiment had two parts. In the first part, we waived the fixed cost of opening a basic savings account at a local bank for a random subset of individuals who were initially unbanked. While 63% of people opened an account, only 18% actively used it. Survey evidence suggests that the main reasons people did not begin saving in their bank accounts are that: (1) they do not trust the bank, (2) service is unreliable, and (3) withdrawal fees are prohibitively expensive. In the second part of the experiment, we provided information on local credit options and lowered the eligibility requirements for an initial small loan. Within the following 6 months, only 3% of people initiated the loan application process. Survey evidence suggests that people do not borrow because they do not want to risk losing their collateral. These results suggest that, while simply expanding access to banking services (for instance by lowering account opening fees) will benefit a minority, broader success may be unobtainable unless the quality of services is simultaneously improved. There are also challenges on the demand side, however. More work needs to be done to understand what savings and credit products are best suited for the majority of rural households.

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1 Introduction

Access to basic banking services in Sub-Saharan Africa remains limited, and lags far behind even other parts of the developing world. Chaia et al. (2009) combine a number of data sources to estimate that only about 20% of households in Sub-Saharan Africa were banked in the early 2000s.[1] While there has been some progress in recent years, Kendall et al. (2010) obtain similar results using more recent data. While developing countries have only 28% as many bank accounts per adult as do developed countries, the figure in Sub-Saharan Africa is far lower (only 16%). Lack of access is particularly acute in rural areas: representative household survey data we collected between 2009 and 2011 suggest that only between 15 and 21 percent of households are banked in rural areas of Kenya, Malawi, and Uganda, respectively.[2]

Such limited access could potentially have important repercussions on people's lives. If lacking a formal bank account makes it more difficult for people to save, they will be unlikely to have enough saved up to cope with unexpected emergencies such as household illness. When such shocks occur, rather than withdraw money or take a loan from the bank, people might have to take much costlier actions.[3] Lack of banking access might also make it difficult for people to save up large sums or obtain credit for lumpy purchases such as start-up costs for a business, agricultural inputs, or even preventative health products like anti-malarial bednets.

Given this, expanding access to even very basic savings and credit services could have large effects. The existing evidence on this issue is somewhat mixed, however. Recent studies suggest that expanding access to microloans *alone* has only modest effects on most outcomes (i.e. Banerjee et al 2010; Crépon et al 2011; Karlan and Zinman 2010). In contrast, studies of programs that increased access to both credit and savings services have found important welfare impacts (see Burgess and Pande, 2005 in India; and three studies in Mexico by Aportela, 1999, Bruhn and Love, 2009, and Ruiz, 2010). Expansion of saving services alone also appears to have the potential to be beneficial. In an earlier experimental study in Kenya, Dupas and Robinson (2009) provided small-scale entrepreneurs access to accounts in a local Village Bank, and found large effects on business investment and income among a subsample of the study population (market vendors, who are mostly female). In a similar experiment in Nepal, Prina (2011) also finds large impacts of expanding access to savings accounts for women.

From a policy standpoint, in addition to understanding the impact of financial inclusion, a critical question is *how* to achieve it. This is an area that has seen a lot of innovation in the last five years. These recent innovations ultimately amount to either reducing barriers to access to existing financial institutions (e.g., reducing fees); or bringing banking options geographically closer to people.[4] For example, a number of countries have adopted "correspondent" or "agent" banking in

[1] Much of their financial access data is from Honohan (2008).

[2] At the country level, Chaia et al. (2009) find a weak relationship between urbanization and financial access.

[3] Examples of such costly actions include taking children out of school to work on the farm (see Ferreira and Schady 2009 for a recent review article), selling off assets such as business inventory (Dupas and Robinson 2009) or productive animals (Rosenzweig and Wolpin 1993), or engaging in income-generating activities which entail health risk (Robinson and Yeh 2011).

[4] Examples of the former type of innovations include the 2006 call made by the Reserve Bank of India to all

which people can deposit into and withdraw money from their bank account using a non-bank agent (for example, a retail store).[5] A closely related option which has received a substantial amount of recent attention is "mobile money," in which people can transfer, deposit, and withdraw money using their cell phone (Jack and Suri, 2009). A third approach is a "bank on wheels" in which a vehicle visits a town at a regular interval for people to make transactions.[6] A less glamorous approach would be to simply build more ATMs or bank branches (as Equity Bank has done in Kenya with great success – see Allen et al. 2011).

While much attention has recently been paid to these various strategies to expand access, comparatively little attention has been paid to the *quality* of financial services in very rural areas. If people are not banked because they do not trust banks or banking agents, because they find services to be unreliable, or because account maintenance or withdrawal fees are prohibitive, then expanding such flawed services is unlikely to be appealing. On the demand side, little attention has been paid to understanding reasons other than access for why people may choose to stay out of the formal banking system. This paper combines survey and experimental evidence from Western Kenya to show that addressing these supply and demand factors is crucial if financial services are to be expanded usefully to unbanked populations.

Our study takes place in an area spanning multiple villages surrounding three rural market centers in Western Kenya, and in which banking options remain very limited. In this part of Kenya, large bank branches are located only in major towns, and the villages in our study are far enough away from a town that the cost of traveling there for banking is prohibitive. Locally, there are only two options: a "Village Bank", owned by share-holding villagers and affiliated with a microfinance organization, and a partial-service branch (essentially a sales and information office with an ATM) for a major Commercial Bank. Both banks have substantial minimum balance requirements and withdrawal fees. The Village Bank also has an account opening fee. The Village Bank does not pay interest on deposits; effectively, neither does the Commercial Bank, at least for the poor (interest is only paid if the account balance exceeds 20,000 Ksh, or about $210).

To examine financial access among this population, we conducted a census of 1,898 households in the study area between September and December 2009. Account ownership was quite low: only 20% of households had at least one member with a bank account. Knowledge of banking options was also limited, as only 60% of adults knew of the bank branches in the study area. Almost no one knew the fee schedule for account opening or maintenance. The 1,565 unbanked individuals formed the final experimental study sample.

To test whether opening costs (information acquisition, account opening fees, and administrative requirements) explained the low rates of account ownership, we randomly selected 55% of the 1,565

Commercial Banks to introduce free "no-frills" accounts (Thyagarajan and Venkatesan, 2008); or the 2010 pledge by the Bill and Melinda Gates foundation to contribute of $500 million over 5 years towards increasing access to savings accounts in poor countries (Bill and Melinda Gates Foundation, 2010).

[5]See Kumar et al. (2006) for evidence on agent banking in Brazil. McKinsey and Company (2010) provide some background on correspondent banking in several other Latin American countries.

[6]Though such banking products exist in many countries, there are few academic studies of their impact. See Stuart et al. (2011) for evidence from Malawi and Nguyen Tien Hung (2004) for evidence from Vietnam.

unbanked individuals to receive a free account at either of the two local banks. We paid the account opening fees and provided the minimum balance, and arranged for the banks to simplify the account opening procedure for our study participants. We did not waive withdrawal fees. The majority of people opened accounts when offered this opportunity: take-up was over 60%. But actual account usage was much lower. Only 28% of those who opened an account (18% of those randomly selected for a free account) made at least two deposits on their account in the 12 months after account opening. Many did not use the account at all.

Why didn't the other 80% of those selected to receive a free account actively use it? To shed light on this question, we administered qualitative surveys in which respondents could discuss their concerns with the various savings mechanisms available to them. A significant proportion listed risk of embezzlement, unreliable services, and transaction fees as concerns with formal banking. Many of these concerns are valid: the fees are indeed quite high in both the Village and Commercial Bank, and the services in one branch of the Village Bank were relatively poor during this time period. Furthermore, another branch of the Village Bank had a recent banking scandal in which withdrawals were frozen for some account holders for a long period. Not surprisingly, we find that trust concerns are more pronounced for the village with the branch with the recent scandal, and reliability concerns are worse for those near the branch with poor service. Interestingly, these concerns were reinforced by exposure to the bank: those who did use their account were more concerned with both the risk of fraud and the lack of reliability than those who did not use the account.

We use a similar combination of survey and experimental evidence to examine the demand for formal loans. The banks offer a variety of loans which range in interest between 1.25 and 1.5% per month (16%-19.5% APR), well below that of many microfinance banks in other parts of the world,[7] and well below recent estimated returns to capital, including estimates from previous work in this part of Kenya.[8] Yet, very few people take out loans. Of those in our experimental sample, only 6% had ever applied for a formal loan at baseline. As with savings options, knowledge of loan options appears extremely limited – very few people know what the conditions are for loans with either bank. Further, when asked, very few people reported wanting loans for agricultural inputs such as fertilizer, despite the high estimated returns to usage in Kenya (Suri 2011; Duflo et al., 2011).

To better understand why people do not take up loans, we conducted a randomized credit intervention with two components: (1) an information intervention in which we told people about the requirements and procedures to apply for a loan; and (2) an intervention in which we gave people a voucher which lowered the eligibility requirements necessary to begin taking out loans with the Village Bank. Though the vast majority of people took the vouchers when offered them, and 40% redeemed them, only 3% of our experimental sample had even started the process of applying for a loan at the time of writing (6 months after the credit information and voucher interventions).

[7] Kneiding and Rosenberg (2008) report a worldwide average APR of 35 percent. The average in Kenya is over 50 percent per year. See Armendáriz and Morduch (2007), Morduch (1999) and Demirguc-Kunt et al. (2009) for more background.

[8] See, for example, de Mel et al. (2008), Fafchamps et al. (2011), McKenzie and Woodruff (2008). For Western Kenya, see Kremer et al. (2011) and Dupas and Robinson (2009).

Evidence from qualitative surveys on barriers to borrowing suggests that the fear of losing one's collateral if one cannot repay the loan is the primary deterrent. These results are in line with numerous recent studies in microfinance which show limited demand for microcredit at market rates (i.e. Johnston and Morduch 2008, Banerjee et al 2010, Crépon et al. 2011). They are also roughly consistent with a recent informational experiment in Sri Lanka which found that only 10% of entrepreneurs who were given information about credit options took out loans (de Mel, McKenzie and Woodruff, 2009).

Overall, our data reveal a number of challenges with the current supply of financial services. Simply expanding those existing services is not likely to massively increase formal banking use among the majority of the poor unless quality can be ensured, fees can be made affordable, and trust issues are addressed. Our results also suggest that marketing could be improved – a large percentage of people lack even basic information about banking options.

Note that while our results are based on two particular banks in one part of Kenya, and concern "classical" banking services rather than agent- or mobile phone-based banking, the general take-away is that service quality, fees, and trust are important and often overlooked factors. Even M-Pesa, Safaricom's mobile money network in Kenya and arguably the most developed mobile money product in the world, is ultimately similar in structure to the banks we study here – people must still make deposits and withdrawals in person, in cash, and the fees are substantial. Moreover, M-Pesa, as it is currently constituted, cannot function well as a bank. To guarantee solvency, Safaricom requires agents to pay in advance for any mobile money they purchase. Safaricom then holds this money in bank accounts with several large commercial banks, and gives all interest to charity (Jack and Suri 2011). Clearly, M-Pesa cannot lower fees unless it can invest its deposits for profit – which, in turn, will likely require some form of regulation (for instance, deposit insurance) if people are to trust money with it.[9] On top of this, banks would lobby vociferously to prevent a new entrant into the banking sector – see Mas and Radcliffe (2010) for evidence on this in regards to M-Pesa in Kenya. Given this, it seems that the most likely future for mobile banking is as a platform through which people can transfer money into an account in a formal bank.[10] Thus, the issues we raise here remain quite pertinent to mobile banking as well.

Our finding that a non-negligible proportion of people distrust banks generally is somewhat surprising, since the banking sector in Kenya has been relatively stable for some time: while Kenya has had a number of banking scandals, many of these were in the 1980s and 1990s (Central Bank of Kenya, 2009), and many involved non-bank financial institutions such as Savings and Credit Cooperations (SACCOs). However, even though the number of bank scandals have been limited in recent years, it is likely that other non-bank related financial scandals have made people wary, especially of the Village Bank for which deposits are not insured by the central government. For

[9] Of course, some countries may not require even banks to have deposit insurance, which will create a host of other problems. See Demirgüç-Kunt et al. (2005) which shows that deposit insurance in Africa lags behind other regions.

[10] Safaricom has recently entered into a partnership with a bank to link the M-Pesa account to a formal bank account through the M-Kesho service (Opiyo 2010). Since then, other banks are developing similar services allowing customers to manage their accounts using MPesa.

example, Kenya has had a number of very high-profile pyramid schemes in which an estimated 148,000 people had invested over $90 million (Ministry of Co-operative Development and Marketing, 2009). Both Kenya and neighboring Tanzania have also had high-level scandals which ultimately forced their respective Central Bank Governors to step down. Such scandals might quite naturally cause general mistrust of financial institutions. Our results indicate that, once established, such mistrust sticks for a very long time, and limits the extent to which people seek out information about available financial services, even decades later. This suggests that any effort to expand financial access, if it is to successfully achieve financial inclusion, needs to include an important communication component in order to bring awareness of the various options available as well as the regulation around them (especially deposit insurance).

2 Background Information on Rural Banking

2.1 Financial Institutions in our Study Area

Our data comes from farming villages located near three market centers in Western Province, Kenya. For confidentiality purposes we call these three market centers A, B and C. Two separate financial institutions operate in this area, a Village Bank and a Commercial Bank.

The Village Bank is a community-owned and operated entity that receives support from a local microfinance institution (MFI). Deposits in the bank are not insured by the Central Bank (though the bank does purchase a limited amount of private insurance), and the Village Bank is classified as a Non-Bank Financial Institution. The Village Bank has three branches in our study area. The main branch is located in market A and opened in 2000. There is a smaller branch in market B which opened in 2008, and a part-time branch in market C which opened in September 2009. Branch C only handles account opening, loan applications and deposits (withdrawals can be made at either of the other two branches, each a bit over 11km away). The branches in markets A and B are open Monday through Friday from 8:30 AM to 4 PM, and on Saturdays from 8 AM to 1 PM. The branch in market C is only open Monday, Wednesday and Friday from 9 AM to 4 PM.

The second local financial institution, the Commercial Bank, is a small branch of a large corporate bank. The branch has an ATM through which people can make deposits and withdrawals at any time and a small staff which assists with these transactions (as well as with account opening and loan applications) during normal business hours (Monday through Friday from 8:30 AM to 4 PM and Saturday from 8 AM to 12 PM). The main, full-service branch, where tellers process loan applications and handle transactions, is located in a town about 30km away. Deposits in the Commercial Bank are insured.

2.1.1 Savings Products

The Village Bank offers just one type of savings account, which does not pay interest. At the time this project started, opening an account at the Village Bank cost 300 Kenyan shillings (Ksh). All accounts must also hold a 100 Ksh minimum balance making the total account opening fee 400 Ksh,

or about $4.25 US at the current exchange rate. Deposits are free and there are no monthly fees, but there is a fee to make withdrawals.[11] No ATM services are available, so savings are illiquid beyond the opening hours mentioned above.

The basic savings account at the Commercial Bank has no account opening fee but a 200 Ksh ($2.10 US) minimum balance requirement.[12] The account comes with a free ATM card. The bank charges 30 Ksh ($0.32) for withdrawals of any size from the ATM, and 100 Ksh ($1.05 US) for withdrawals of any size made with at an urban branch. The account pays no interest unless the customer maintains a balance of 20,000 Ksh ($210 US) for at least a 3-month period, in which case interest is paid.[13]

A final way that people in the study area can potentially save is through mobile money, as there are a number of mobile money agents in the area. Mobile money is much more commonly used for transfers than for savings, however, for several reasons. First and most obviously, people need to have access to a cell phone (and only 47% of households in our census have a phone). Second, it is not always possible to withdraw money immediately. On the main mobile money network (M-Pesa), the currency of mobile money is "e-float." The agent holds a balance of e-float on his own cell phone and must decide how much cash to hold to pay out withdrawals. If the agent has a large number of withdrawals on a given day, he may lack the liquidity to cover them all. On the other hand, if there are many deposits, the agent may have no e-float left to sell to allow deposits. These sorts of problems are cited as a drawback by many respondents in our sample. In addition, M-Pesa markets itself as a money transfer, rather than savings, product. Finally, withdrawal fees are substantial (though this is true of both of the banks in our study as well).[14]

2.1.2 Credit Products

While both the Village Bank and the Commercial Bank offer credit products, the terms for borrowing vary quite a bit across the two institutions. The Village Bank, like many MFIs, requires the formation of a group of at least 5 people who approve the purpose and amount of each other's loans, and who serve as mutual guarantors. To take out a loan, borrowers must purchase a share (valued at 300 Ksh each, or $3.20 US) in the bank. Borrowers are then eligible to borrow up to four times the value of shares owned. In addition, the bank requires borrowers to attend several training sessions on loan management.

The Village Bank offers several different types of loans, most at interest rates between 1.25 and 1.5 percent per month (16-19.5% APR). Loans are to be used for business purchases, with the exception of a loan for emergencies which features a higher interest rate (2.25% per month).The Commercial Bank grants microloans for existing businesses to individuals who have had an account at the Commercial Bank or with another Commercial Bank for at least 3 months. Prospective

[11] The withdrawal fee is 10Ksh ($0.10) to withdraw amounts under 1,000Ksh ($10.50), 20Ksh ($0.21) to withdraw amounts between 1,000 and 4,999Ksh ($53), and 100Ksh ($1.05) for amounts of 5,000Ksh or higher.

[12] The Commercial Bank also offers a youth savings account with a smaller minimum balance requirement.

[13] The interest rate is variable, ranging from 2-4% within the study period.

[14] See Jack and Suri (2011) and Mbiti and Weil (2011) for more detail on these issues.

borrowers must also be visited by a loan officer to assess the state of the business. Loans must be repaid within 6 months, with an interest a rate of 1.5% per month. Two guarantors and full collateral are required for each loan[15]

2.2 History of Financial Scandals

One of the key results of this study is that the level of interest and trust in financial institutions is quite low among rural households. This finding is not particularly surprising when it applies to non-regulated financial institutions, such as the Village Bank that operates in our study area, or Savings and Credit Cooperatives (SACCOs), which have somewhat charged history of financial scandals, up to the present day. In fact, the Village Bank in our study area suffered a financial scandal at its main branch (in market A) shortly after we started working in the area. The branch manager was fired for embezzlement, resulting in a months-long liquidity crisis during which existing customers were barred from withdrawing funds over $10.50 a day per customer. During the crisis, the satellite branch in market C was temporarily closed. Though nobody has officially lost deposits, liquidity remains a problem to this day.

What is more surprising is that trust in fully regulated financial institutions also appears relatively low, despite the fact that Kenya has had relatively few scandals specific to the regulated banking sector in recent years. Why have rural populations not embraced banks that offer insured deposits? One hypothesis is that they do not make a clear distinction between regulated and unregulated institutions, and their somewhat well-founded mistrust of Village Banks and SACCOs expands to the banking sector more generally. Another hypothesis is that they remember the various banking crises that Kenya had in previous decades, particularly from 1983 until the late 1990s. These crises were dramatic and hugely costly. For instance, 11 banks were put under liquidation in 1993 alone (Central Bank of Kenya, 2009). Outright fraud during crises between 1993 and 1995 was estimated to cost 3.8% of GDP (Economist Intelligence Unit, 1995), and affected 30% of total bank financial assets (Daumont et al. 2004). While many of these crises occurred a number of years ago, it's likely that memory of them continues to have some effect on perceptions.

Another reason that people might be wary is that Kenya has had a number of pyramid schemes and other scams, including a number in recent years. The problem was so severe that the Government put together a Task Force on Pyramid Schemes in 2009. The final report of that Task Force reported that over 148,000 people had invested over $90 million in various pyramid schemes. The largest of these (DECI) had over 93,000 investors alone (Ministry of Co-Operative Development and Marketing, 2009). Other scandals have involved corruption at very high levels. In the early 1990s, a number of government officials, including the Governor of the Central Bank, were implicated in the notorious "Goldenberg" scandal, which led to a minimum of $600 million in fraud (Warutere 2005).

Note that these issues are not specific to Kenya. A number of other African countries had major

[15] Besides these two banks, credit is available from a third institution which until recently did not take deposits. However, that organization lends only to women with licensed businesses.

banking scandals during the 1980s and 1990s (Caprio and Klingebiel, 1997; Brownbridge, 1998), several of which cost over 10% of GDP (Daumont et al., 2004). Within East Africa, Uganda had a banking crisis in which four commercial banks, holding over 12% of the nation's deposits, collapsed over just 13 months in 1998 and 1999 (Habyarimana, 2005; Brownbridge 2002). Tanzania had a major banking crisis in the late 1980s in which government-owned banks (accounting for 95% of total bank assets) became insolvent. Total estimated losses from this crisis were equivalent to about 10% of GDP (Daumont et al. 2004). Also in Tanzania, a $120 million banking scandal in 2005 led to the firing of the Governor of the Central Bank (BBC, 2008).

3 Study Sample, Design and Data

3.1 Sample

We first conducted a census of all households living within a 4 kilometer radius of the three market centers in our study area. The census survey collected information on demographic characteristics of the household, sources of income, as well as access to financial services, knowledge and perceptions of available financial services, and saving practices more generally.

A total of 1,898 households were surveyed during the census exercise. Table 1 presents some summary statistics on those households. Panel A presents demographic information. The average household had just below 6 members. Only a few households (11%) did not have a female head living in the homestead, but around 31% of households did not have a male head living in the homestead.[16] Polygamy is still somewhat prevalent – 8% of households are polygamous. The average household in the study area owned just under two acres of land, and had just above 4,000 Ksh ($42) in animal assets. Almost half (47%) of households owned a cell phone.

Panel B of Table 1 presents statistics on access to banking services. Only 20% of households had a member with a bank account, despite the fact that the average distance to the closest deposit-taking financial institution is only 1.6 kilometers, suggesting that physical access is unlikely to be the barrier.

Table 2 presents statistics at the individual level, separately for women (Panel A) and men (Panel B). Average educational attainment is relatively low, with just about 6 years of education for women and 8 years for men. Sixty-five percent of women and 90% of men were literate. Almost three-quarters of women reported farming as their primary activity, while only a little over a third of men did. Own enterprise was the primary occupation of 19% of women and 36% of men. The remainder worked in physical day labor (mostly associated with agriculture), worked for a wage, or had no job. Table 2 also includes individual-level statistics on access to banking. While 21% of men had a bank account, only 10% of women did.

To construct a sample, the primary eligibility criterion was that nobody in the household had a bank account. However, we also decided to exclude all polygamous households and all households

[16] This is the result of two main factors: (1) it is much less common for a widow to remarry than it is for a widower; and (2) some men leave their family behind to work in urban areas.

with no female head. The rationale for doing this is that those two categories of households are likely very different from others, yet they are too few of them to do subgroup analysis. In the case of polygamous households, another reason is that measuring expenditures and savings in such households is difficult and time-intensive.

Given this eligibility criteria, 989 of the 1,898 households in the census were selected to participate in the randomized experiment, comprising 1,565 individuals. As is to be expected, households in the experimental sample are poorer, less educated, and more likely to be farmers than other households (see Column 2 in Tables 1 and 2).

3.2 Experimental Design

3.2.1 Savings Experiment

After constructing the sample, we randomly selected individuals for the savings intervention. Randomization was done at the individual (rather than household) level, stratified by household composition (single female-headed or dual-headed), primary occupation, and market center.

The savings intervention was rolled out between May and June 2011. Those individuals who were selected for this intervention received a nominal, non-transferable voucher for a free savings account. For those living within 4 kilometers of Market A (where the Commercial Bank has an ATM), the voucher was redeemable at either the Village Bank or the Commercial Bank. For everybody else, the voucher was for the Village Bank only. The experiment made it financially costless to open an account: the vouchers covered all account-opening fees (where applicable), including the minimum balance requirement.

The vouchers were delivered to people in their homes. During that visit, individuals received information on how the bank and the account work, and when and how to redeem the voucher.[17]

Among households with no male head, 50% were randomly selected to receive an account voucher, which was given to the female head. Among households with both a female and a male head, 20% received no voucher, 30% received two vouchers (one for each head), and 50% received one voucher (in 25% of households, the male received the voucher; in the other 25%, only the female received the voucher). In total, 55% of the sample was selected to receive vouchers.

3.2.2 Credit Experiment

In February 2011, a second randomization was conducted to lower informational and financial barriers to credit. The intervention differed slightly according to whether individuals had received the savings intervention 9 months earlier.

Among those who had not received the savings intervention, half were randomly selected to receive information about local credit opportunities. Trained staff visited those individuals at their

[17] The vouchers expired after 2 weeks. In practice, most of those who redeemed did so immediately. Commercial Bank customers had to visit the branch twice, once to redeem the voucher and again two weeks later in order to pick up their ATM cards and receive training in their use.

home and delivered a detailed script explaining the rules and procedures for obtaining a loan from either of the two local institutions. No financial assistance was given, however.

Among those who had received the savings intervention, half were selected to receive the same financial information script as above. However, they were also given a voucher redeemable for one free share at the Village Bank (valued at 300 Ksh, or $3.20). As discussed in Section 2.1.2, one of the requirements for getting a loan from the Village Bank is that an individual must purchase a share (in addition to having a bank account). In particular, the maximum amount that anyone can borrow is four times the amount of share capital they own. While the share is not the only requirement to get a loan (in particular, people must form a group with four other bank clients who approve their loan and act as guarantors), getting a free share does lower the barrier to getting a loan.

3.3 Data

We use three main sources of data in this project. First, we have background information (described above) from the census. Second, we have administrative data on deposits, withdrawals and loan applications from the bank. All study participants that opened an account agreed to sign a waiver allowing their bank to release their bank statements to the research team. We use these bank statements to monitor the saving activity as well as the credit history of our restricted experimental sample. Third, a semi-structured survey was administered to a randomly selected half of the restricted experimental sample after 9 months. The survey asked respondents open-ended questions about their current savings practices, perceived barriers to saving, and perceptions of the various saving mechanisms available to them. For those who had received an account voucher but had not redeemed it, the survey also asked why they had not opened an account. The survey also included a number of questions about familiarity with and interest in local credit options.

4 Rural Households and their Money: A Snapshot

In Tables 3 and 4 we present information from the census to show how rural households in the study area save. Table 3 presents means at the household level, separately by household type. Table 4 present means at the individual level, separately by gender.

The first striking observation in Table 3 is the fact that access to formal saving services is very limited. Among the 20% of households which have at least one family member with a savings account, only about 12% have accounts in a commercial bank (this includes all commercial banks in Kenya, not just the bank which participated in the experiment), 8% in the Village Bank that participated in the experiment, and 3% in the post office savings bank. Nobody saves in a microfinance institution. Note that some households have multiple accounts, so these categories are not exclusive.

Interestingly, 25% of households have a mobile money account. However, most Kenyan households do not currently save in such accounts and instead use them only for transfers (Mbiti and

Weil, 2011).[18] Nevertheless, the relatively high penetration of such accounts in even very rural areas is potentially very promising.

In contrast to the low rates of participation in formal savings, savings through informal mechanisms is quite important– 56% of households have at least one member who participates in a ROSCA.[19] A ROSCA (Rotating Savings and Credit Association) is a savings group (composed of 10 to 20 members, typically) that meets on a regular basis; at each meeting, group members make a fixed, mandatory contribution which goes into a "pot" that is then assigned to one of the members. Each member gets the pot in turn. A ROSCA cycle thus requires as many meetings as there are members. Once a cycle is complete, a new cycle can start. Though the structure of ROSCAs varies from place to place, most ROSCAs in this part of Kenya use a predetermined order to allocate the savings pot. Many households (52% of the population) also save in animals, which can be used both as a form of savings and as productive assets.

The amounts saved in ROSCAs and animals are not trivial– the average household reports saving over 7,200 Ksh in ROSCAs ($76 US) over the past year and owning about 4,300 Ksh ($45 US) worth of animals. These two forms of informal savings are relatively illiquid, however. Selling animals quickly in response to negative income shocks is not easy, especially if the shock is an aggregate shock at the community level (since the market may be flooded with people selling animals at that time). In the case of ROSCAs, since they typically have a predetermined order, it is impossible to access the money immediately if an emergency comes up. Thus, a more liquid savings option (such as a bank account) could still be useful to people.

The breakdown by household type in Panels B and C of Table 3 shows that female-headed households are much less likely to be banked than dual-headed households (9% vs. 25%). They are also less likely to use informal saving mechanisms, suggesting that their overall saving rate is lower. The individual-level means presented in Table 4 suggest that this gap between household types is essentially driven by a gender divide: only 10% of women have banking accounts, compared to 21% of men. Similarly, only 12% of women have mobile money accounts, compared to 28% of men.

There are also major differences between those who are primarily farmers and those who are not. We present the statistics disaggregated by gender and farming status in Appendix Table A1. Only 8% of farmers have savings accounts, compared to 23% of non-farmers. Most striking is that only 6% of female farmers have accounts. Farmers are also much less likely to participate in a ROSCA or have a mobile money account.

Given the low rate of banking, and the fact that the most common informal saving alternatives are relatively illiquid, a key question is how people deal with emergencies that require immediate liquidity. To shed some light on this issue, our census survey asked people "If you absolutely needed 1,000 Ksh ($10.5 US) right now, where would you get the money?" We allowed people to list as

[18] As discussed in the introduction, formal banks in Kenya have lobbied against the entry of M-Pesa. In part to avoid this controversy, M-Pesa markets itself as a service for transferring money and not for saving. This (along with the withdrawal fees) is likely a big reason that people do not much use M-Pesa as a savings vehicle.

[19] Besley, Coate and Loury (1993), Anderson and Baland (2002) and Gugerty (2007) discuss various reasons why so many people in developing countries participate in ROSCAs.

many sources as they wanted (so that the categories are not exclusive). The results are presented in Table 5. We find that only 13% of people would be able to get even part of the money from savings. Most people would ask others for help, while others would have to sell a household asset or work more. Although it's conceivable that people could fully make up for a 1,000 Ksh shortfall by relying on others, nearly every study of inter-household risk coping suggests that this is unlikely. Thus, it seems likely that increasing savings would better allow people to cope with shocks.

5 Understanding Low Levels of Formal Banking

This section discusses factors which partially explain the low observed rate of formal banking. We start by describing our baseline survey evidence. We find that at the time our study began people knew very little about local financial institutions, suggesting that earlier marketing activities by these financial institutions, if any, had been mostly unsuccessful. We then present evidence from the randomized savings experiment. Overall, while we find that reducing the account opening fees and minimizing the hassle of opening an account did induce a minority to start saving in the bank, we find that most people did not use their accounts. Survey evidence suggests that the major reasons people did not use the bank is that they were concerned about high withdrawal fees and poor service, and that they did not trust their money with the bank. Note that given our experimental design, it is not surprising that distance to a local banking option does not appear as a major factor, as the sample was drawn from villages within walking distance of the bank.

5.1 Survey Evidence: Baseline Interviews

Table 6 presents data from the census on knowledge of and trust in the Village Bank, separately by branch. At the time of the census, the Village Bank had been established in market center A for nearly 10 years, in market center B for about 18 months, and in market center C for 10 months. Despite this, only 64% of household heads in markets A and B, and 51% in market C, had ever heard of the Village Bank. Even those who had heard of the bank did not know enough about it to have an opinion about it. Thus, when those who had at least heard of the Village Bank were asked if they would trust the bank with their money, 43% said they didn't know enough about the bank to know. Around 49% said they would trust the bank, while the remaining 8% said they would not. The main reasons for not trusting the bank were lack of familiarity and being worried about embezzlement of funds.

Table 7 addresses those in the experimental sample, who were all unbanked at the time of the census, and to whom a slightly more detailed survey was administered. In this sample, we asked about knowledge of both the Village Bank and the Commercial Bank. Unsurprisingly, familiarity with local financial institutions is lower among these unbanked individuals than in the full census sample. Only about half of household heads had heard of the Village Bank across the three market centers, though awareness was slightly higher in Market A (where the Village Bank had been established for longer), and lower in Market C (where the Village Bank had only recently started

a deposit-only branch). Very few individuals knew the details of the services offered by the Village Bank, however – only 8% of those who had heard of the bank knew the cost of opening an account.

Despite the fact that the Commercial Bank, located in market A, had only opened in late 2008 (8 years after the Village Bank), by 2009 it had the same level of name recognition as the Village Bank. Just as with the Village Bank, however, people knew very little about the products offered at the Commercial Bank: none of the respondents knew that accounts were free (with only a minimum balance requirement).

Though people do not know much about either bank, most people tend to prefer the Commercial Bank (likely because it is a large, well-established bank with a national presence). When asked which institution they would prefer to have an account in, close to two-thirds of respondents said they would choose the Commercial Bank over the Village Bank.

5.2 Experimental Evidence

The randomized savings experiment allows us to test the extent to which eliminating opening fees, facilitating account opening, and providing information can increase access to formal banking. Table 8 presents figures on take-up of the experimental offer of a free bank account. A relatively large fraction of individuals elected to open an account: overall take-up was 62%. In market A, where both banks are available, the Commercial Bank was the favorite choice: 43% of people opened an account at the Commercial Bank, compared to only 17% at the Village Bank. Across the branches, take-up was lowest in market C, where the Village Bank only offers partial service.

However, many of those who opened accounts did not actively use them. In Table 8, we define an account as "active" if the respondent made at least two deposits in the year following the account opening date. We find that only 28% of opened accounts were active. Since only 62% of people even opened accounts, this means that the overall usage rate was only 0.28 x 0.62 = 18%. In Table 9, we show the results separately for men and women (pooling all the market centers together). While women were slightly less likely to open accounts than men, they were 10 percentage points more likely to actively use the account if they opened one. Overall, the active take-up rate was thus higher among women than men (19.7% versus 14.0%), but still relatively modest among both groups. Overall, these results suggest that entry costs – be it the cost of acquiring information, the opening fees (including minimum balance requirement) or the administrative hassle of opening an account – explain only about 1/5th of the low banking rates observed in our study area.

5.3 More Survey Evidence: Debriefing Interviews

To understand what other supply factors explain the relatively low demand for formal banking we observe once the entry costs were experimentally removed, we asked respondents, in an open-ended way, what their concerns were with the various saving mechanisms available to them. We asked these questions to a random subset of our restricted experimental sample. The results are presented in Table 10. We present the results separately for those in the control group (who did not receive information and assistance with account opening), those in the treatment group who did not

actively use the account (whom we call non-compliers), and those in the treatment group who did use the accounts (whom we call compliers). We present results for the three formal and quasi-formal banking options available: the Commercial Bank, the Village Bank, and Mobile Money.

The main concerns raised with formal banks are transaction fees, unreliability, and risk of embezzlement. The relative importance of these concerns varies substantially between the two financial institutions in our study area. Transaction fees are the primary concern with the Commercial Bank, which charges a flat fixed fee of 30 Ksh per withdrawal at the ATM, making it very costly to make small withdrawals. While these withdrawal fees could act as a commitment device to not withdraw money until a relatively large lump sum has been saved, they can also deter people from saving in the account if they anticipate needing small sums to deal with emergencies as they arise. This is in line with a related study we conducted in this part of Kenya, in which we find that the cost of limiting liquidity exceeds its benefit for many people (Dupas and Robinson, 2011).

For the Village Bank, while fees remain a major concern, substantial fractions of people also report unreliability and risk of embezzlement as problems. Among the non-compliers, 37% cite unreliability and 24% cite risk of embezzlement, suggesting that many of those who did not actively take-up Village Banking thought service quality was poor or lacked trust in the institution.

In regards to mobile banking, the most common concerns are that it requires owning a cell phone and that there are network or liquidity issues (i.e. the agent runs out of "e-float", to pay out withdrawals). Fees are less of a concern for mobile money banking than for formal banks, even though in practice the fees associated with mobile money fall somewhere in between the fees charged at the Village Bank and those charged at the Commercial Bank. Notably, trust in mobile banking is extremely high (another promising sign if mobile money is eventually to be mobilized for savings as well as transfers).

Table 11 provides further qualitative evidence on these issues by disaggregating results by market center. Recall that there was a withdrawal freeze in the wake of an embezzlement scandal in Market A and that the service in Market C is spotty, so we might expect people to trust the Village Bank least in Market A and find it most unreliable in Market C. Interestingly, Table 11 shows that this is true only of people who actively used the accounts. Though the sample of people who use their account is obviously selected, one interpretation of these findings is that people's experience with the Village Bank reinforced the mistrust in the institution.

Table 11 also reports responses to a question in which we asked people for their preferred savings options. All in all, when asked what their preferred savings mechanism would be if they could choose, over 40% of respondents answered "a commercial bank." A sizeable fraction also reported the Village Bank. As expected, this share is higher in the control and compliers groups than in the non-compliers group. Somewhat surprisingly, mobile money banking was the least favorite mechanism, behind grain storage and ROSCA participation. In fact, almost 40% of the control group reported informal options (animals, ROSCAs, or saving in grain) as their preferred saving tool. Given the risks associated with these informal saving mechanisms, the fact that they remain preferred is suggestive that the formal products being offered are insufficient for many people. This

is consistent with the finding that close to a quarter of respondents said they had been discouraged to open a bank account by a friend.

5.4 Open questions

The evidence presented thus far has focused on supply issues. These issues only partially explain the low formal savings rates we observe in our experiment, however. Many of those in the treatment group who do not list trust, fees, or reliability as concerns still do not use the accounts. When asked directly what keeps them from saving, many of them say that their expenses are too high or that their income is simply too low for them to save at all. However, it is hard to know how to interpret these responses. Existing evidence strongly suggests that even extremely poor people can save. For instance, research in the Gambia (Shipton, 1990) and Bangladesh, India, and South Africa (Collins et al., 2009) demonstrates that poor households do find ways to save, albeit often through informal mechanisms. Moreover, Banerjee and Duflo (2007) find that even among the poorest households – those living at or under $1 per person per day – the majority don't exhaust all their income on basic necessities.

Ultimately, the low take-up rate in this study begs the question: is a savings account in a bank relatively far from home well-tailored for people who can only save in very small increments? Providing a more convenient place to save, or stronger incentives to make deposits, may be more effective. For example, in previous work, we find that people save quite readily if provided with a lock box and key which they can keep at home (Dupas and Robinson, 2011). Furthermore, providing people with a credit incentive to make deposits, and social pressure to continue making them, was extremely effective in mobilizing savings. Similarly, Duflo et al. (2011) find that providing people with small incentives to set aside money for fertilizer when people have money (after harvest) increases fertilizer investment. Other recent papers have shown how prompting people to save (Atkinson et al., 2010) or providing people with reminders to save can also be quite effective (Kast et al 2010; Karlan et al. 2011).

Indeed, in countries like the US, where many transactions are conducted electronically, it is has been well documented that savings can be most effectively mobilized when they are "unseen," for example when wage increases are automatically put into a savings account (Thaler and Benartzi, 2004) or when people are automatically opt in to a certain 401(k) savings level (Carroll et al., 2009). Designing such products in a much more cash-based economy may be difficult, but is worth exploring. In fact, the value of mobile money (such as M-Pesa in Kenya) may be largely in making savings more electronic; it might be less costly, both in terms of transportation and time, to transfer an electronic balance to a linked savings account than to physically take cash to the bank during operating hours. It may also be less painful psychologically to devote electronic money to savings rather than to physically put cash into a savings account.

6 Understanding Low Borrowing Rates

While much of our focus has been on savings, the flipside of savings is credit. Returns to capital have been estimated to be quite high in the study area (as discussed in footnote 12), higher than the APR on loans offered by the two financial institutions (which vary from 16-19.5 percent APR). What keeps people from taking out such loans and reaping high returns?

We examine this issue in Tables 12-14. To start, Table 12 describes familiarity with local credit options among our restricted experimental sample of unbanked households. As with savings, people have very limited information about credit options. Only 64% think there is a local credit option and only 38% (41%) correctly identified the Village Bank (Commercial Bank), respectively, as a credit option. Only 15% said that they knew the procedure to get a loan; interestingly, only 7% could correctly describe the procedure when asked.[20]

To gauge potential interest in loans, we asked people if they were interested in a loan at 1.5% monthly interest, with or without collateral requirements. While 74% said that they were interested if no collateral was required, this dropped to only 32% with collateral. We also asked people if they thought that they could qualify for a loan, and 37% said yes. Yet only 6% had ever applied for loan.

Given this low level of information, we implemented an intervention to improve information and access to credit (the details are presented in Section 3.2.2). We present two sets of results of this intervention. First, in Table 13, we report the answers to questions we asked participants immediately after they received detailed information about local credit opportunities. While a majority of people were interested in a loan at the Village Bank, far fewer were interested at the Commercial Bank. This is likely primarily due to the fact that the Commercial Bank only lends to people with an existing business, and as shown in Table 2, only 15% of women and 36% of men in our restricted experimental sample had a business at baseline (farming is not considered a business by the bank). What's more, most of those have a very small market vending business with very low levels of working capital, and they would most likely not quality for a loan from the Commercial Bank in any case. It is also likely that people perceive it as more difficult to qualify for a loan from the Commercial Bank even aside from the business requirement.

Among those interested in borrowing, we asked what they would want to borrow for. Few people were interested in loans for small investments like agricultural inputs. People were much more likely to report wanting to start a business or adding to business inventory with a loan. Whether these types of goals are feasible for such borrowers is an open question.

The second set of results from the experimental credit intervention is presented in Table 14, and concerns the take-up of the "share capital" voucher we gave to a random subset of those who had already been offered an account voucher. By redeeming this voucher, people would be credited with one Village Bank share (valued at 300 Ksh) and thus be eligible to borrow up to four times the value of the share (1,200 Ksh). Note, however, that this is much smaller than the median desired loan size listed in Table 13, which was 10,000 Ksh. Table 14 shows that, while 87% accepted the

[20] As shown in Appendix Table A2, these levels are even lower among farmers.

voucher when it was given to them, only 40% redeemed it, and as of the time of writing (6 months after vouchers had been distributed), only 3% of individuals had started the process of applying for a loan by making an inquiry, and only 1 person (out of 358) had applied and been granted a loan.

While we have not yet followed up with these individuals directly to ask why they did not end up applying for a loan, we did ask people about concerns about taking out loans at the time the vouchers (and information) were given out. These results are reported in Table 15. Overwhelmingly, people report that they are afraid of losing collateral or that taking out a loan is risky. Thus, even at relatively low interest rates, the fear of losing assets overwhelmed loan demand in our study area. Clearly, this creates a serious problem in generating a market for credit, since the interest rate would have to be much higher if loans were not collateralized.

7 Conclusion

Without a safe place to save up money, it may be very difficult for people to take advantage of high-return investments of many types. Likewise, without a safe place to keep an emergency cash buffer, vulnerability to shocks might be very high. Recognizing this, policymakers and international aid organizations have begun to devote attention to expanding access to financial services in developing countries, especially in rural areas where access continues to be extremely limited. This paper shows that unless serious attention is paid to the reliability and quality of financial services offered, simply expanding access by reducing monetary or time costs will fail to effectively achieve financial inclusion.

Our analysis generates several important prescriptions for effectively expanding financial services to the poor. First, trust is an important reason that people do not use current banking services. Providing stronger consumer protection through tighter regulation and deposit insurance could be very important. Second, many people are uninformed about banking options (in part because they have little or no experience with them). Better marketing from the banks themselves might be warranted. Finally, more attention should be paid to the types of products that banks provide. While basic savings accounts do appear to be useful to a minority, more sophisticated products might be necessary for others (just as they are for many people in developed countries). For example, many people in Kenya save to deal with health emergencies, which are very common. For them, putting money into a bank that does not offer withdrawal services at night or on weekends and that has big withdrawal fees might not be very attractive. Similarly, people whose income is seasonal (such as farmers, who make up the great majority of the rural poor in Sub-Saharan Africa) might benefit from products that provide stronger incentives to save as soon as they have money.

In this sense, it is good news that as many as 18% of people in our poor, rural sample took up and actively used basic savings accounts when they could access them for free. However, the evidence we presented suggests that this is a lower bound on potential demand for formal saving products. Serious attention should be paid to improving the delivery of financial services – doing so could improve the lives of millions of people.

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Table 1. Baseline household characteristics

	(1) Full Sample	(2) Restricted Experimental Sample
Panel A. Demographic Information		
Total Household size	5.83	5.67
	(3.05)	(2.95)
No Male Head	0.31	0.38
No Female Head	0.11	0.03
Polygamous household	0.08	0.00
Number of children	3.38	3.34
	(2.34)	(2.28)
Household health expenditures last month (in Ksh)	683	508
	(3058)	(1502)
Household treats drinking water with chlorine	0.43	0.39
Iron roof at home	0.48	0.45
Cement floor at home	0.17	0.13
HH has cell phone	0.47	0.40
Value of physical assets (in Ksh)	10482	9073
	(9852)	(8448)
Value of animals (in Ksh)	4142	4277
	(9278)	(9424)
Land holdings (acres)	1.90	1.74
	(2.86)	(1.90)
Panel B. Access to Banking		
At least one member of household has a bank account	0.20	0.00
Distance to closest deposit-taking branch (in km)	1.60	1.60
	(0.74)	(0.71)
Distance to closest branch offering withdrawals (in km)	2.78	3.01
	(2.32)	(2.45)
Panel C. Eligibility for Experimental Treatments		
Eligible for randomized saving and credit experiments	0.52	1.00
Number of Households	1898	989

Standard deviations in parentheses. The exchange rate at the time of the study was around 80Ksh to US$1 on average.

Table 2. Baseline Individual characteristics

	(1) Full Sample	(2) Restricted Experimental Sample
Panel A. Women		
Age	39.27	40.39
	(15.98)	(17.02)
Years of education	6.09	5.34
	(3.88)	(3.65)
Can write in Swahili[1]	0.65	0.58
Primary Occupation:		
Farming	0.72	0.78
Own enterprise	0.19	0.15
Physical labor	0.02	0.02
Employee	0.03	0.00
None	0.05	0.05
Has bank account	0.10	0.00
Included in Experimental Sample	0.56	1.00
Number of Women	1686	949
Panel B. Men		
Age	41.73	40.02
	(15.28)	(15.33)
Years of education	8.10	7.35
	(3.58)	(3.25)
Can write in Swahili	0.90	0.90
Primary Occupation:		
Farming	0.38	0.43
Own enterprise	0.36	0.36
Physical labor	0.10	0.11
Employee	0.10	0.05
None	0.06	0.04
Has bank account	0.21	0.02
Included in Experimental Sample	0.47	1.00
Number of Men	1299	606

Standard deviations in parentheses.

[1] *We use writing in Swahili as a proxy for literacy because we have fewer observations with data on being able to read in Swahili. Results look very similar with alternate definitions, however.*

Table 3. Baseline: How do Households Save?

	All	# obs
Panel A. All Households		
Informal Savings		
Owns Animals	0.50	1806
Value of Animals (for those who own)	4358	1751
	(9469)	
Someone in Household Participates in ROSCA	0.53	2984
ROSCA contributions in past year (if any)	7231	924
	(13121)	
Formal Savings		
Has Account in Formal Deposit-Taking Institution	0.20	1752
Has Account in Commercial Bank	0.12	1752
Has Account in Post Bank	0.03	1752
Has Account in Village Bank	0.08	1752
Has Account with MFI	0.00	1752
Has Account Elsewhere	0.03	1752
Has Mobile Money Account	0.25	1752
Panel B. Married Households		
Informal Savings		
Owns Animals	0.52	1195
Value of Animals (for those who own)	4762	1153
	(9944)	
Someone in Household Participates in ROSCA	0.56	2388
ROSCA contributions in past year (if any)	8361	675
	(14812)	
Formal Savings		
Has Account in Formal Deposit-Taking Institution	0.25	1169
Has Account in Commercial Bank	0.16	1169
Has Account in Post Bank	0.03	1169
Has Account in Village Bank	0.09	1169
Has Account with MFI	0.00	1169
Has Account Elsewhere	0.04	1169
Has Mobile Money Account	0.32	1169
Panel C. Single Headed Female Households		
Informal Savings		
Owns Animals	0.47	501
Value of Animals (for those who own)	3637	489
	(8286)	
Someone in Household Participates in ROSCA	0.40	492
ROSCA contributions in past year (if any)	4118	208
	(5471)	
Formal Savings		
Has Account in Formal Deposit-Taking Institution	0.09	478
Has Account in Commercial Bank	0.04	478
Has Account in Post Bank	0.01	478
Has Account in Village Bank	0.05	478
Has Account with MFI	0.00	478
Has Account Elsewhere	0.01	478
Has Mobile Money Account	0.09	478

Data: Full census sample, baseline survey. Standard deviations in parentheses. Monetary values in Kenyan shillings (Ksh). Exchange rate was roughly 80 Ksh to $1 US during the sample period.

Table 4. Baseline: How do Individuals Save?

	All	# obs
Panel A. All		
Participates in ROSCA	0.41	2605
If yes: Number of ROSCAs	1.50	1079
	(0.80)	
If yes: ROSCA contributions in past year (in Ksh)	6130	1090
	(10443)	
Has Account in Formal Deposit-Taking Institution	0.15	2869
Has Account in Commercial Bank	0.08	2869
Has Account in Post Bank	0.02	2869
Has Account in Village Bank	0.05	2869
Has Account with MFI	0.00	2869
Has Account Elsewhere	0.02	2869
Has Mobile Money Account	0.19	2869
Panel B. Women		
Participates in ROSCA	0.45	1608
If yes: Number of ROSCAs	1.54	725
	(0.82)	
If yes: ROSCA contributions in past year (in Ksh)	5316	723
	(8272)	
Has Account in Formal Deposit-Taking Institution	0.10	1640
Has Account in Commercial Bank	0.04	1640
Has Account in Post Bank	0.01	1640
Has Account in Village Bank	0.05	1640
Has Account with MFI	0.00	1640
Has Account Elsewhere	0.01	1640
Has Mobile Money Account	0.12	1640
Panel C. Men		
Participates in ROSCA	0.36	997
If yes: Number of ROSCAs	1.42	354
	(0.74)	
If yes: ROSCA contributions in past year (in Ksh)	7733	367
	(13625)	
Has Account in Formal Deposit-Taking Institution	0.21	1229
Has Account in Commercial Bank	0.14	1229
Has Account in Post Bank	0.02	1229
Has Account in Village Bank	0.06	1229
Has Account with MFI	0.00	1229
Has Account Elsewhere	0.03	1229
Has Mobile Money Account	0.28	1229

Data: Full census sample, baseline survey. Standard deviations in parentheses. Exchange rate was roughly 80 Ksh to $1 US during the sample period.

Table 5. If you absolutely needed 1,000 Ksh, where would you get the money?

	All	# obs
Panel A. All		
Would use savings	0.13	1984
Would work more	0.14	1984
Spouse would work more	0.07	1984
Would borrow from friend/relative/neighbor	0.43	1984
Would get donations from friend/relative/neighbor	0.13	1984
Would get a loan from ROSCA	0.06	1984
Would sell household asset / animal / land	0.13	1984
Would sell business asset	0.01	1984
Would sell agricultural product	0.14	1984
Other	0.08	1984
Panel B. Women		
Would use savings	0.08	1221
Would work more	0.12	1221
Spouse would work more	0.09	1221
Would borrow from friend/relative/neighbor	0.45	1221
Would get donations from friend/relative/neighbor	0.16	1221
Would get a loan from ROSCA	0.06	1221
Would sell household asset / animal / land	0.12	1221
Would sell business asset	0.01	1221
Would sell agricultural product	0.15	1221
Other	0.08	1221
Panel C. Men		
Would use savings	0.20	763
Would work more	0.16	763
Spouse would work more	0.04	763
Would borrow from friend/relative/neighbor	0.38	763
Would get donations from friend/relative/neighbor	0.08	763
Would get a loan from ROSCA	0.05	763
Would sell household asset / animal / land	0.14	763
Would sell business asset	0.01	763
Would sell agricultural product	0.13	763
Other	0.09	763

Data: Full census sample, baseline survey. Respondents could give more than one answer to the question (i.e. categories are not mutually exclusive).

Table 6. Baseline Perception of Village Bank

	All	Market A	Market B	Market C	# obs
Panel A. All					
Have you heard of the Village Bank?	0.60	0.64	0.64	0.51	2018
Do you trust the Village Bank?					
Don't know	0.43	0.41	0.44	0.46	1191
Yes	0.49	0.52	0.48	0.46	1191
No	0.08	0.08	0.08	0.09	1191
Of those who don't trust the Village Bank, why?					
Worried that the Village Bank will take my money	0.23	0.10	0.49	0.17	111
Don't know the Village Bank / unfamiliar with banking	0.43	0.64	0.23	0.29	111
Fees are high	0.10	0.08	0.11	0.13	111
No interest	0.04	0.02	0.06	0.04	111
Bank is unreliable	0.08	0.04	0.03	0.25	111
Other	0.12	0.14	0.09	0.13	111
Panel B. Women					
Have you heard of the Village Bank?	0.55	0.61	0.57	0.43	1492
Do you trust the Village Bank?					
Don't know	0.44	0.41	0.46	0.49	803
Yes	0.49	0.53	0.46	0.44	803
No	0.07	0.07	0.08	0.07	803
Of those who don't trust the Village Bank, why?					
Worried that the Village Bank will take my money	0.25	0.11	0.56	0.25	67
Don't know the Village Bank / unfamiliar with banking	0.46	0.57	0.28	0.42	67
Fees are high	0.09	0.08	0.11	0.08	67
No interest	0.02	0.03	0.00	0.00	67
Bank is unreliable	0.05	0.03	0.00	0.17	67
Other	0.13	0.19	0.06	0.08	67
Panel C. Men					
Have you heard of the Village Bank?	0.75	0.78	0.81	0.68	526
Do you trust the Village Bank?					
Don't know	0.41	0.40	0.41	0.41	388
Yes	0.49	0.50	0.50	0.48	388
No	0.10	0.10	0.09	0.11	388
Of those who don't trust the Village Bank, why?					
Worried that the Village Bank will take my money	0.21	0.07	0.41	0.08	44
Don't know the Village Bank / unfamiliar with banking	0.39	0.80	0.18	0.17	44
Fees are high	0.11	0.07	0.12	0.17	44
No interest	0.07	0.00	0.12	0.08	44
Bank is unreliable	0.14	0.07	0.06	0.33	44
Other	0.09	0.00	0.12	0.17	44

Notes: Data is from the full census sample. The Village Bank in Market A had a freeze on withdrawals a few months prior to the survey. The bank in Market C does not allow withdrawals and is often closed during business hours.

Table 7. Baseline Familiarity with Local Financial Institutions among the Unbanked

	All	Market A	Market B	Market C	# obs
Panel A. All					
Distance to closest deposit-taking branch (in km)	1.63	1.87	1.40	1.49	1260
	(0.71)	*(0.69)*	*(0.77)*	*(0.52)*	
Distance to closest branch offering withdrawals (in km)	3.04	1.87	1.40	7.00	1260
	(2.44)	*(0.69)*	*(0.77)*	*(0.73)*	
Has heard of the local Village Bank	0.52	0.54	0.57	0.45	1122
If yes: Knows account opening fee at local Village Bank	0.08	0.11	0.07	0.00	389
Has heard of local Commercial Bank[1]		0.59			125
If yes: Knows Comm. Bank accounts are free to open		0.00			71
Would use bank account if had one	0.85	0.85	0.87	0.83	1468
Would choose Village Bank over Commercial bank if had choice	0.38	0.31	0.47	0.41	1320
Panel B. Women					
Distance to closest deposit-taking branch (in km)	1.60	1.85	1.37	1.46	828
	(0.71)	*(0.69)*	*(0.77)*	*(0.53)*	
Distance to closest branch offering withdrawals (in km)	3.01	1.85	1.37	7.01	828
	(2.45)	*(0.69)*	*(0.77)*	*(0.73)*	
Has heard of the local Village Bank	0.47	0.52	0.49	0.37	914
If yes: Knows account opening fee at local Village Bank	0.05	0.09	0.03	0.00	247
Has heard of local Commercial Bank		0.54			71
If yes: Knows Comm. Bank accounts are free to open		0.00			37
Would use bank account if had one	0.81	0.82	0.82	0.79	958
Would choose Village Bank over Commercial bank if had choice	0.39	0.31	0.48	0.45	858
Panel C. Men					
Distance to closest deposit-taking branch (in km)	1.67	1.92	1.45	1.54	432
	(0.72)	*(0.70)*	*(0.79)*	*(0.50)*	
Distance to closest branch offering withdrawals (in km)	3.08	1.92	1.45	6.99	432
	(2.44)	*(0.70)*	*(0.79)*	*(0.73)*	
Has heard of the local Village Bank	0.73	0.71	0.80	0.67	208
If yes: Knows account opening fee at local Village Bank	0.14	0.14	0.15	0.00	142
Has heard of local Commercial Bank		0.67			54
If yes: Knows Comm. Bank accounts are free to open		0.00			34
Would use bank account if had one	0.92	0.91	0.98	0.91	510
Would choose Village Bank over Commercial bank if had choice	0.36	0.31	0.45	0.34	462

Notes: Data consists of restricted experimental sample. Standard deviations in parentheses.

[1] *This question only asked in Market A (where the Commercial Bank has a branch).*

Table 8. Experimental Results: Take-up and Usage of Free Accounts among those Initially Unbanked

	All	Market A	Market B	Market C	# obs
Opened an account	0.625	0.613	0.753	0.530	840
Opened account at Village Bank	0.427	0.175	0.744	0.526	840
Opened account at Commercial Bank	0.198	0.438	0.009	0.004	840
If opened an account:					
"Active" (= at least 2 deposits)	0.28	0.36	0.27	0.17	525
If Village Bank account: "Active"	0.23	0.22	0.28	0.17	359
If Commercial Bank account: "Active"[1]		0.39			166
If "Active": Average number of deposits	4.58	4.57	4.71	4.36	147
	(3.48)	*(3.46)*	*(3.44)*	*(3.79)*	
Total deposited on account (Ksh)	4,314	6,477	2,221	730	147
	(10,231)	*(13,174)*	*(3,836)*	*(1,818)*	
Average deposit size (Ksh)	862	1,288	460	132	147
	(2,223)	*(2,901)*	*(713)*	*(228)*	
Average number of withdrawals	1.68	2.27	1.42	0	148
	(3.71)	*(4.49)*	*(2.67)*		
Average withdrawal size (Ksh)	1,455	1,760	845	0	66
	(1990)	*(2269)*	*(1063)*		
Account joint with spouse (if married)	0.058	0.060	0.039	0.078	397
Overall: Active Take-Up of Free Account	0.176	0.218	0.206	0.089	

Data: Subset of individuals sampled for free account (among restricted experimental sample). Accounts were opened in May-July 2010 and follow-up data is from May 2011 (approximately 10-12 months after account opening). Standard deviations in parentheses. Monetary values in Kenyan shillings (Ksh). Exchange rate was roughly 80 Ksh to $1 US during sample period.

[1] *Accounts at the Commercial Bank were only offered in Market A (where the Commercial Bank has a branch).*

Table 9. Experimental Results: Take-up and Usage of Free Accounts among those Initially Unbanked (By Gender)

	Women	Men
Opened an account	0.611	0.649
Opened account at Village Bank	0.415	0.448
Opened account at Commercial Bank	0.195	0.201
If opened an account:		
"Active" (= at least 2 deposits)	0.32	0.22
If Village Bank account: "Active"	0.27	0.16
If Commercial Bank account: "Active"[1]	0.41	0.34
If "Active": Average number of deposits	4.29	5.27
	(3.26)	(3.91)
Total deposited on account (Ksh)	1,966	9,637
	(3955)	(16421)
Average deposit size (Ksh)	480	1,727
	(1144)	(3506)
Average number of withdrawals	0.96	3.31
	(1.56)	(6.03)
Average withdrawal size (Ksh)	1,059	2,148
	(1658)	(2345)
Account joint with spouse (if married)	0.071	0.045
Overall: Active Take-Up of Free Account	0.197	0.140
Observations	532	308

Data: Subset of individuals sampled for free account (among restricted experimental sample). Accounts were opened in May-July 2010 and follow-up data is from May 2011 (approximately 10-12 months after account opening). Standard deviations in parentheses. Monetary values in Kenyan shillings (Ksh). Exchange rate was roughly 80 Ksh to $1 US during sample period.

[1] *Accounts at the Commercial Bank were only offered in Market A (where the Commercial Bank has a branch).*

Table 10. Endline Concerns with Local Financial Institutions among those initially unbanked

	Commercial Bank	*Village Bank*	*Mobile Money*
Panel A. Control Group (No Account Voucher)			
Concerns with Savings Option:			
Fees	0.34	0.15	0.11
Unreliable	0.16	0.32	0.01
Distance	0.11	0.02	0.02
Risk of embezzlement	0.06	0.17	0.00
Agent can't always handle transactions[1]	-	-	0.29
Requires phone	-	-	0.36
Observations	283	294	292
Panel B. Non-Compliers (Offered Account Voucher but did not open account or is not actively using account)			
Concerns with Savings Option:			
Fees	0.39	0.21	0.05
Unreliable	0.15	0.37	0.02
Distance	0.19	0.03	0.02
Risk of embezzlement	0.07	0.24	0.00
Agent can't always handle transactions	-	-	0.33
Requires phone	-	-	0.38
Observations	285	284	284
Panel C. Compliers (Offered Account Voucher, opened account and actively using account)			
Concerns with Savings Option:			
Fees	0.46	0.16	0.09
Unreliable	0.17	0.43	0.01
Distance	0.11	0.02	0.01
Risk of embezzlement	0.06	0.21	0.00
Agent can't always handle transactions	-	-	0.22
Requires phone	-	-	0.35
Observations	79	82	82

Data: Restricted experimental sample.

[1] *If customers make a large number of withdrawals on a given day, the agent may run out of liquidity. If customers make a large number of deposits, he may run out of e-float. See text for more details.*

Table 11. Endline Concerns with Village Bank by Market Center

	All	Market A	Market B	Market C
Panel A. Control Group (No Account Voucher)				
Concerns with Village Bank				
Fees	0.15	0.19	0.07	0.17
Unreliable	0.32	0.33	0.21	0.40
Distance	0.02	0.01	0.03	0.01
Risk of Embezzlement	0.17	0.19	0.14	0.16
Preferred Banking Option				
Commercial Bank	0.43	0.40	0.40	0.49
Village Bank	0.07	0.05	0.10	0.08
Mpesa	0.06	0.08	0.07	0.02
Animals	0.21	0.22	0.25	0.15
ROSCA	0.11	0.11	0.06	0.15
Grain	0.07	0.07	0.10	0.05
Have you ever been discouraged to open an account by a friend or relative?	0.17	0.19	0.16	0.14
Observations	294	138	73	83
Panel B. Non-Compliers (Offered Account Voucher but did not open account or is not actively using acco				
Concerns with Village Bank				
Fees	0.21	0.23	0.27	0.12
Unreliable	0.37	0.34	0.36	0.40
Distance	0.03	0.02	0.03	0.05
Risk of Embezzlement	0.24	0.26	0.21	0.23
Preferred Banking Option				
Commercial Bank	0.36	0.39	0.30	0.35
Village Bank	0.17	0.06	0.30	0.23
Mpesa	0.04	0.05	0.04	0.02
Animals	0.22	0.22	0.19	0.25
ROSCA	0.07	0.10	0.03	0.07
Grain	0.08	0.09	0.08	0.07
Have you ever been discouraged to open an account by a friend or relative?	0.24	0.24	0.27	0.21
Observations	284	125	70	89
Panel C. Compliers (Offered Account Voucher, opened account and actively using account)				
Concerns with Village Bank				
Fees	0.16	0.11	0.32	0.12
Unreliable	0.43	0.41	0.26	0.65
Distance	0.02	0.00	0.11	0.00
Risk of Embezzlement	0.21	0.28	0.11	0.12
Preferred Banking Option				
Commercial Bank	0.49	0.67	0.20	0.35
Village Bank	0.29	0.13	0.55	0.41
Mpesa	0.02	0.02	0.05	0.00
Animals	0.12	0.09	0.10	0.24
ROSCA	0.04	0.02	0.10	0.00
Grain	0.04	0.07	0.00	0.00
Have you ever been discouraged to open an account by a friend or relative?	0.31	0.26	0.40	0.31
Observations	82	46	19	17

Data: Restricted experimental sample. The Village Bank in Market A had a recent freeze on withdrawals. The bank in Market C does not allow withdrawals and was often closed during business hours.

Table 12. Baseline Knowledge of Local Credit Opportunities and Interest in Loans among those Initially Unbanked

	All	# obs
Is there a local institution in which you can get loans?		
Yes	0.64	665
No	0.11	665
Don't know	0.26	665
Correctly identified Village Bank as local credit option	0.38	667
Correctly identified Commercial Bank as local credit option[1]	0.41	311
Says knows procedure for loan	0.15	660
Really knows procedure for loan	0.07	658
Interested in loan at 1.5% monthly interest without collateral	0.74	645
Interested in loan at 1.5% monthly interest with full collateral	0.32	643
Do you think you could qualify for a loan?		
Yes	0.37	664
No	0.22	664
Don't know	0.41	664
Has ever applied for loan	0.06	537
Has ever gotten loan	0.05	536

Data: Random subset of restricted experimental sample.

[1] *This question was only asked in Market A, where the Commercial Bank has a branch.*

Table 13. Interest in Loans among those initially Unbanked, Immediately After Receiving Information on Local Credit Opportunities

	All	# obs
Interested in loan at Village Bank	0.60	645
Interested in loan at Commercial Bank	0.35	644
If interested in a loan: Purpose of Loan[1]		
Farm Inputs	0.11	98
Farm Equipment	0.02	98
Start business	0.77	98
Business inventory	0.19	98
Business equipment	0.09	98
Home construction	0.04	98
Home repair	0.00	98
Furniture	0.01	98
School fees	0.08	98
Health Care	0.00	98
Wedding	0.00	98
Land	0.01	98
Debts	0.00	98
Other	0.11	98
If interested in a loan: Desired Loan Amount (in Ksh)		
Mean	18878	95
Median	10000	95
Standard Deviation	31813	
Months Needed before can make first Repayment	2.15	95
% say would be able to make first payment within 1 month	0.41	95
% say would be able to make first payment within 2 months	0.70	95

Data: Results restricted to those who received the credit intervention.

[1] *Due to problem in the skip code on a version of the survey, this question was only asked for a subset of people who were interested in a loan.*

Table 14. Experimental Results: Impacts of Credit Intervention

	All	# obs
Panel A. Share Voucher + Information Intervention		
All		
Accepted Voucher	0.87	358
Redeemed Voucher	0.40	358
Inquired about loan at Village Bank	0.028	358
Completed loan training at Village Bank	0.011	358
Formed group at Village Bank	0.014	358
Got loan at Village Bank[1]	0.003	358
Women		
Accepted Voucher	0.85	233
Redeemed Voucher	0.37	233
Inquired about loan at Village Bank	0.043	233
Completed loan training at Village Bank	0.017	233
Formed group at Village Bank	0.021	233
Got loan at Village Bank	0.004	233
Men		
Accepted Voucher	0.91	125
Redeemed Voucher	0.46	125
Inquired about loan at Village Bank	0.00	125
Completed loan training at Village Bank	0.000	125
Formed group at Village Bank	0.000	125
Got loan at Village Bank	0.000	125
Panel B. Information Only Intervention		
All		
Inquired about loan at Village Bank	0.00	296
Completed loan training at Village Bank	0.00	296
Formed group at Village Bank	0.00	296
Got loan at Village Bank	0.00	296
Women		
Inquired about loan at Village Bank	0.00	196
Completed loan training at Village Bank	0.00	196
Formed group at Village Bank	0.00	196
Got loan at Village Bank	0.00	196
Men		
Inquired about loan at Village Bank	0.00	100
Completed loan training at Village Bank	0.00	100
Formed group at Village Bank	0.00	100
Got loan at Village Bank	0.00	100

Data: See text for detailed description of interventions. Loan take-up is updated through 31 August 2011. Respondents in Panel A received both a voucher for 1 share at the bank and information on how to apply for a loan. Respondents in Panel B received information only. Information on loan take-up is from the Village Bank only. As of August 31, 2011, no respondents had applied for a loan at the Commercial Bank.

[1] *Exactly one person had qualified for a loan by August 31, 2011.*

Table 15. What factors might prevent you from getting a loan?

	All	# obs
Don't need the money	0.14	179
Afraid bank will seize collateral	0.51	179
Too risky	0.45	179
Don't trust the bank	0.09	179
Don't like the idea of being in debt	0.08	179
Have too much other debt	0.01	179
Too much hassle	0.12	179
I don't have a business which is required for loan	0.27	179
I can't pay immediately	0.18	179
Other	0.38	179

Data: Results restricted to those who received the credit intervention.

Appendix Table A1. Baseline Savings: Farmers vs. Non-Farmers

	All	Female	Male	# obs
Panel A. Farmers				
Informal Savings				
Participates in ROSCA	0.39	0.42	0.32	1576
Number of ROSCAs (for those who participate)	1.43	1.46	1.35	620
	(0.74)	(0.77)	(0.60)	
ROSCA contributions in past year (for those who participate)	4362	4205	4881	643
	(7245)	(6147)	(10051)	
Formal Savings				
Has Account in Formal Deposit-Taking Institution	0.08	0.06	0.15	1657
Has Account in Commercial Bank	0.04	0.02	0.09	1657
Has Account in Post Bank	0.01	0.01	0.02	1657
Has Account in Village Bank	0.04	0.03	0.05	1657
Has Account with MFI	0.00	0.00	0.00	1657
Has Account Elsewhere	0.01	0.01	0.01	1657
Has Mobile Money Account	0.13	0.09	0.24	1657
Panel B. Non-Farmers				
Informal Savings				
Participates in ROSCA	0.45	0.53	0.39	1014
Number of ROSCAs (for those who participate)	1.60	1.72	1.46	455
	(0.87)	(0.89)	(0.82)	
ROSCA contributions in past year (for those who participate)	8731	7797	9704	443
	(13451)	(11302)	(15340)	
Formal Savings				
Has Account in Formal Deposit-Taking Institution	0.23	0.19	0.25	1197
Has Account in Commercial Bank	0.15	0.09	0.18	1197
Has Account in Post Bank	0.02	0.02	0.02	1197
Has Account in Village Bank	0.07	0.10	0.06	1197
Has Account with MFI	0.00	0.00	0.00	1197
Has Account Elsewhere	0.03	0.02	0.04	1197
Has Mobile Money Account	0.26	0.19	0.31	1197

Data: Full census sample.

Appendix Table A2. Baseline Knowledge of Local Credit Opportunities and Interest in Loans among those Initially Unbanked (Farmers vs. Non Farmers)

	All	Female	Male	# obs
Panel A. Farmers				
Is there a local institution in which you can get loans?				
Yes	0.59	0.55	0.73	451
No	0.12	0.13	0.08	451
Don't know	0.29	0.33	0.19	451
Correctly identified Village Bank as local credit option	0.34	0.30	0.47	452
Correctly identified Commercial Bank as local credit option	0.37	0.31	0.55	212
Says knows procedure for loan	0.12	0.11	0.17	446
Really knows procedure for loan	0.05	0.04	0.09	444
Has ever applied for loan	0.05	0.04	0.08	360
Has ever gotten loan	0.04	0.03	0.04	359
Do you think you could qualify for a loan?				
Yes	0.34	0.30	0.46	449
No	0.21	0.24	0.14	449
Don't know	0.45	0.46	0.40	449
Interested in loan at 1.5% monthly interest without collateral	0.74	0.71	0.85	424
Interested in loan at 1.5% monthly interest with full collateral	0.27	0.22	0.47	423
Panel B. Non-Farmers				
Is there a local institution in which you can get loans?				
Yes	0.74	0.62	0.84	196
No	0.09	0.11	0.07	196
Don't know	0.17	0.28	0.09	196
Correctly identified Village Bank as local credit option	0.47	0.34	0.58	197
Correctly identified Commercial Bank as local credit option	0.47	0.38	0.56	95
Says knows procedure for loan	0.19	0.12	0.24	196
Really knows procedure for loan	0.09	0.06	0.11	196
Has ever applied for loan	0.09	0.06	0.11	160
Has ever gotten loan	0.06	0.03	0.08	160
Do you think you could qualify for a loan?				
Yes	0.43	0.30	0.52	197
No	0.24	0.30	0.19	197
Don't know	0.34	0.40	0.29	197
Interested in loan at 1.5% monthly interest without collateral	0.73	0.67	0.77	204
Interested in loan at 1.5% monthly interest with full collateral	0.41	0.29	0.50	203

Data: Random subset of restricted experimental sample.

[1] *This question was only asked in Market A, where the Commercial Bank has a branch.*