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Introducing Mobile Money in Rural Mozambique: Initial Evidence from a Field Experiment[*]

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September 2013

Abstract

The limitations of access to finance in Africa, together with the recent boom in cell phone use in that continent, created high expectations regarding the introduction of mobile money in many African countries. The success story of M-PESA in Kenya raised the bar further. We designed and conducted a field experiment to assess the impact of randomized mobile money dissemination in rural Mozambique. For this purpose we benefit from the fact that mobile money was only recently launched in the country, allowing for the identification of a pure control group. This paper reports on the first results of this ongoing project after the first wave of dissemination efforts in rural locations, which included the recruitment and training of mobile money agents, community meetings and theaters, as well as individual rural campaigning. Administrative and behavioral data both show clear adherence to the services in the treatment group. Financial literacy and trust outcomes are also positively affected by the treatment. We present behavioral evidence that the marginal willingness to remit was increased by the availability of mobile money. Finally, we observe a tendency for mobile money to substitute traditional alternatives for both savings and remittances.

JEL Classifications: O12, O33, G20, R23.
Keywords: Mobile money, remittances, savings, Mozambique.

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1. Introduction

Access to financial services is extremely limited in many parts of the world. In sub-Saharan Africa, less than one in five households have a bank account, meaning deficient access to formal savings. Africans also face substantial costs and risks when sending or receiving remittances: Africa includes the top five most expensive remittance corridors in world.[1] At the same time, the use of cell phones has been dramatically changing the African landscape: the take-up rate increased by 550 percent in the five years up to 2009. African cell phone subscribers are now estimated to have exceeded 500 million, surpassing the number of cell phone subscribers in the US.[2] This extensive spread of cell-phone technology has the potential to be used for many more purposes than simple voice communication and text messaging. One such example is mobile money.

Mobile money was made popular by Safaricom's M-PESA in Kenya, which started in March 2007. By September 2009, US$3.7 billion (close to 10 percent of Kenya's GDP) had been transferred over the system. In April 2011, M-PESA had 14 million subscribers and close to 28 thousand agents.[3] Mobile money typically allows four types of basic transactions: (i) cashing-in at a mobile-money agent (i.e. exchanging physical cash for e-money usable on the cell phone); (ii) transferring e-money to another cell phone number; (iii) paying for products or services at shops taking e-money; (iv) cashing-out (i.e. exchanging e-money for physical money at an agent outlet).

This paper is to the best of our knowledge the first experimental piece of causal evidence on the impact of introducing mobile money technology. But several previous non-experimental studies described the experience of M-PESA in Kenya. Mbiti and Weil (2010) identify increased frequency and overall volume of urban-rural money transfers as the main driving force behind the success of M-PESA. They also emphasize that M-PESA is frequently used as a storage-savings device for safety considerations. Jack and Suri (2011) describe the M-PESA experience in detail and raise a number of interesting potential economic effects and underlying mechanisms of

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[1] The figure on holding a formal bank account comes from a Gallup survey conducted in 18 Sub-Saharan African countries in 2009. The costs of remittances are monitored by the World Bank at remittanceprices.worldbank.org. See the report 'Financing Africa: Through the Crisis and Beyond', 2011, sponsored by the African Development Bank, the World Bank, and Germany's Federal Ministry for Economic Cooperation and Development for additional descriptive data in support of low breadth and high cost of financial services in Africa.

[2] See the report 'Information Economy Report', 2009, by the United Nations Conference on Trade and Development.

[3] Safaricom, 2011.

mobile money. At the household level, these effects may range from impacts on saving and investment, to risk spreading and insurance. Mas and Morawczynski (2009) highlight appropriate liquidity management of rural agents (i.e., their ability to meet customer requests for cash withdrawals), and transparent pricing as crucial attributes of a successful mobile money product.

The project we describe in this paper is an ongoing impact evaluation (randomized control trial) of the introduction of mobile money in rural locations of Mozambique. In this country, mobile money has been launched in 2011 by Mozambican Carteira Móvel and is branded as mKesh. Our project aims to establish the causal effects of mobile money for a rural panel of households. We are particularly interested in adoption of mobile money, effects on savings and remittances as mediators for impact on more fundamental outcomes, such as patterns of consumption and investment.

Our hypothesis is that the introduction of a relatively safe and cheap mobile money technology in rural locations will likely trigger substitution effects both on saving and remittance behavior. This substitution would imply adoption of the new technology instead of the most commonly used traditional technologies, both for saving (mostly keeping cash in cans buried underground) and transferring money (mainly in person or via bus drivers, a channels that was reportedly expensive, risky, and time consuming).

A particular focus of this project (motivated by the M-PESA experience) is the remittance channel: for this reason, in addition to and following mKesh dissemination in rural locations, we will conduct dissemination of mobile money services among urban migrants related to the rural households we interviewed. Our hypothesis is that dissemination of mobile money among these migrants may increase remittances to the corresponding rural experimental locations. This paper reports on outcomes gathered from rural experimental subjects from immediately after to two months after rural dissemination, just before urban migrant dissemination.

Our field experiment reached 102 rural enumeration areas (EAs) in the provinces of Maputo-Province, Gaza, and Inhambane. In half of these locations, a set of mKesh dissemination activities took place. These activities included the recruitment and training of an mKesh agent in each treatment location, a community theatre and a community meeting where mKesh services were explained to the local population, and a set of individual dissemination activities. The individual level activities included registration with mKesh and experimentation of several mKesh

functionalities with trial money provided by the campaign team. 2040 individuals in total were randomly sampled to take part of the study. A random sub-group of the individuals we follow in treatment locations were actually not given the individual treatment, although they had free access to the technology, in order to allow for the measurement of spillover effects.

In this paper, we focus on outcomes related to the adoption of mobile money services (particularly transfers and savings), as well as to information and trust outcomes of the mobile money dissemination intervention that took place in treatment areas. Data on outcomes were gathered from the mobile money operator's administrative records of transactions, from face-to-face individual surveying, and from behavioral measurements after mKesh dissemination. In particular, we examine results on adoption of mKesh using both administrative records and face-to-face behavioral measures based on simple games of the marginal propensity to save and remit – where conventional channels and mobile money were both made available. Information and trust experimental outcomes are based on survey outcomes obtained using techniques to minimize subjective scale bias.

We find promising results on mKesh adoption in the rural treatment locations. According to administrative data from the mobile money operator, 64 percent of the sample of treated individuals conducted at least one transaction using this mobile money service after the dissemination activities (in the period until approximately two months after the end of the fieldwork). In addition, 81 percent of our treated individuals did not want to withdraw the initial cash balance (about 2 USD) they got in their cell phone, despite availability of assistance to make the withdrawal by the mKesh campaign team. These results on adoption and trust in mKesh are consistent with clear improvements in general financial literacy and specific knowledge about mKesh, following its dissemination in treatment areas, and also with an increase in the trust on the local agent and mCel financial services with the intervention.

Finally, we show that the marginal willingness to send remittances gathered from a simple game conducted with all individuals in our study who had migrants in their families increased by 6-7 percent when contrasting treatment and control groups. Marginal willingness to save in an analogous game was not affected. Also in these games, we identify a clear preference for using mKesh for both saving and remitting instead of conventional channels. Overall these results point to the clear potential of mKesh to be adopted in rural locations of Mozambique, to improve

financial literacy, and to increase remittances, as well as to substitute for other means of saving and remitting.

This paper is related to the literatures on savings and remittances, and the use of cell-phone technology in developing countries. Karlan and Murdoch (2010) call for the understanding of the impact that introducing new technology may have on savings, as unintended consequences are possible: liquidity may carry self-control problems (as in Ashraf et al, 2006) and exacerbate social pressure (consistent with Dupas and Robinson, 2012b). Despite these concerns, Dupas and Robinson (2012a, 2012b) show that access to non-interest-bearing bank accounts in rural Kenya significantly increased savings, a finding that highlights the demand for savings products in rural settings.

Existing evidence supports the idea that migrants significantly increase the value of remittances sent when transfer costs are decreased (Aycinena et al., 2012). Ultimately this line of work aims to find changes in development outcomes through an increase in remittances. That is one of the primary objectives of the field experiment we describe here, even though we still cannot establish it with the data available. As made clear in the literature review by Yang (2011), despite several attempts at it, there is still no conclusive experimental evidence that migrant remittances have (or not) productive effects. Yang (2008) was closest by employing exchange rate shocks induced by the 1997 Asian financial crisis: he finds that increased migrant resources produced by exchange rate appreciation are used primarily for investment in origin households, rather than for current consumption. This investment takes the form of educational expenditures and entrepreneurial activities. This is line with other studies focusing on African countries: on the impact of migration on education in Cape Verde (Batista et al, 2012) and on entrepreneurship in Mozambique (Batista et al, 2013).

The current paper also links to the emerging literature on the effects of information and communication technology on various development outcomes. Jensen (2007) looks at the use of cell phones to improve market efficiency in a local fish market in India. Aker (2010) studies the effects of cell phone introduction on grain market outcomes in Niger. Aker et al. (2010) analyze the impact of civic education provided through cell phones on electoral behavior in the 2009 Mozambican elections.

This paper is organized as follows. In Section 2 we provide background for the introduction of mobile money in Mozambique. Section 3 presents the experimental design, including treatment, sampling, measurement, and specifications. Section 4 displays the econometric results: balance tests, adoption outcomes, and impact of mobile money dissemination on information and trust, and savings and remittances, including spillovers. Section 5 provides concluding remarks.

2. Background

In Mozambique there are over six million subscribers of mobile phone services (corresponding to nearly one fourth of the population). Geographical coverage extends to 80 percent of the population.[4] A competitive market composed by state-owned mCel and Vodacom (a subsidiary of the South-African multinational) has been in place since 2003. A third operating license has recently been attributed to Movitel, a consortium majority-owned by Vietnamese Viettel.

Mozambican authorities passed legislation in 2004 that allows mobile operators to partner with financial institutions in order to provide mobile money services.[5] Under this legislation, together with an operating license issued in 2010, mCel established a new company, Carteira Móvel, which started offering mobile money services, branded as mKesh, in January 2011.[6] In an initial effort to recruit mKesh agents, Carteira Móvel recruited 1000 agents in just a few months after September 2011. However, these agents were based mainly in urban locations, particularly in the Maputo city. In this context, Carteira Móvel regarded the launching of this research project as the perfect opportunity to test the impact of mKesh dissemination in rural locations of the country.

Indeed the potential of mobile money in rural Mozambique is enormous. Bank branches simply do not reach beyond province capitals and some (but few) district capitals.[7] Saving methods for the rural population are often limited to hiding money 'under the mattress' (or, more precisely, in cans buried underground), keeping money with local traders or authorities, and participating in

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[4] Computed from data made available by mCel and Vodacom.
[5] The latest version of the Law regulating Credit and Financial Institutions is Law 15/99 from November 1st.
[6] Note, however, that the formal mKesh launch and first advertising campaign of this service on national media was only aired in September 2011.
[7] From the list of bank agencies made available by the Bank of Mozambique in December 2011, for the 18 districts that we cover in our study, only 37 bank agencies are reported to exist in those districts (just over two on average per district, where each district has an average population of 170,000 inhabitants).

ROSCAs.[8] None of these arrangements typically pays interest, and some of them carry considerable risks.

Perhaps even more significantly for the case of money transfers, these transfers typically require: either the rural individual to travel to the urban bank branch to send or receive a bank transfer, or the sender to travel to the location of the recipient of the transfer, or the sending of the money through a bus driver or other person. All these alternatives involve considerable costs, and some of them considerable risks: indeed Mozambique is reported to be in the top four countries in terms of most expensive remittances in Sub-Saharan Africa.[9] Mobile money services as provided through mKesh offer the possibility of saving securely, and transferring money much faster, more securely and at considerably lower costs than the existing alternative channels.

3. Experimental design

3.1. Treatment

The treatment, consisting of the dissemination of the mKesh services in 51 EAs of Maputo-Province, Gaza, and Inhambane, was provided in coordination with Carteira Móvel, the mobile money operator in Mozambique. The treatment activities were divided into three phases: (i) the recruitment and training of mKesh agents, (ii) the holding of a community theater and of a community meeting describing mKesh, and (iii) individual dissemination of mKesh with our panel of survey respondents.

The first phase consisted in the recruitment of one mKesh agent per EA (March-May 2012). These were typically local vendors of groceries who had a cement shop. Three main criteria were sought when proposing local vendors to become mKesh agents: they had to have a large number of clients in their village (having full shelves was taken as an indicator of that condition), they needed a formal license to operate as vendors, and they needed a bank account. Each EA was visited on purpose for the recruitment of the agents. Training of the agents followed in a second visit. At this point in time, the contract signed by Carteira Móvel as well as agent materials were handed out to the agents. The materials included an official poster (to identify the shop as an

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[8] We report for the sample of rural households that we study the following statistics: 63 percent save money at home, 30 percent save money with a local trader, and 21 percent participate in a ROSCA. Only 21 percent report any money saved in a bank account.
[9] See remittanceprices.worldbank.org.

mKesh agent), other mKesh advertising posters, and an agent cell phone to be used exclusively for all mKesh transactions. A briefing describing the remaining dissemination activities was held at this point. This included a description of the community theater and community meeting to be held in the village, and the review of mKesh operations, with an emphasis on self-registrations of clients, deposits, purchases in shop, and withdrawals.

The second phase of the treatment included a community theater and a community meeting. They were typically held one after the other in close proximity to the agent's shop. These events were advertised during our baseline survey with the help of local authorities. The playing of the mKesh jingle from the mKesh shop also helped drawing attention to the events. The script of the community theater (available upon request) was the same for all treatment locations, and included mentions of mKesh safety (based on a PIN number), savings using mKesh, transfers using mKesh, and the self-registration process with mKesh. The context was a village scene, with a household head and his family and neighbors. The community meeting, which had the presence of village authorities, gave a structured overview of the mKesh service, and allowed interaction with the community as questions and answers followed the initial presentation.

The third phase of the dissemination activities was conducted at the individual level for our targeted individuals, i.e., those approached individually by mKesh campaigners. The individual treatment was based on a leaflet distributed to the targeted individuals. This leaflet had a full description of the operations made available by mKesh while providing the cell phone menus to be used for each. The leaflet is displayed in Figure 1.

<Figure 1 near here>

Campaigners described the leaflet and asked targeted individuals whether they wanted to register to the mKesh services. In the affirmative case, they helped targeted individuals following the self-registration menu. This implied writing name/surname and providing the number of an identity card. Then campaigners offered to deposit in the mKesh account of each targeted individual 76 Meticais (around 3 USD). Targeted individuals had to accompany the campaigners to the mKesh shop. The deposit menu was then followed with the mKesh agent for the purpose of depositing the 76 Meticais. After the deposit was made, campaigners helped targeted individuals checking their balance in their mKesh accounts. Subsequently, each targeted individual was asked to buy anything in the agent's shop for the value of 20 Meticais. This transaction was then made in the

presence of the agent, which implied a commission of 1 Metical. Finally, targeted individuals were explained how a transfer could be done to another cell phone and how they could withdraw the remaining 50 Meticais in their account (this operation would imply a 5 Meticais commission, which would make the total 76 Meticais deposited by campaigners in each account). These operations were not conducted at this point. Targeted individuals were also briefed about the pricing structure of the mKesh services (which makes a page in the mKesh leaflet). Please see Figure 1 for all the menus followed by campaigners during the process just described.

The community and theater meetings as well as the individual treatment were conducted in the period June-August 2012.[10]

3.2. Sampling and randomization

Our study concerns 102 EAs in the provinces of Maputo-Province, Gaza, and Inhambane. These EAs were sampled randomly from the 2008 Mozambican census for the referred provinces; note however the exception of Maputo-Province, for which only its northern districts were considered. Two additional criteria had to be observed for an EA to be included in our sampling framework. First, the EA had to be covered by mCel signal – this was first checked by drawing 5-km radii from the geographical coordinates of each mCel antenna, and then by verifying the signal at the actual location of each EA. Second, the district of the EA had to have at least one bank agency. For the purpose of identifying the sampling framework as described, mCel made available the geographical data on its antennae, and the Bank of Mozambique made available the data on the location of all bank agencies in the country.

The individuals that took part in this study were drawn at the household level. We sought household heads while following an n-th house walk departing from the center of the EA along the main directions of walk in the EA. However, additional conditions had to be observed by households to be included in our sample. All sampled households had to have an mCel cell phone number. In addition, but only for half sample, the household head had to have a spouse or son/daughter living in the Maputo city area, i.e., a close migrant in Maputo city. This migrant had to have an mCel cell phone number. 2040 individuals responded the baseline survey, which served the purpose of identifying all experimental subjects before the community-level and

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[10] Visit www.novafrica.org for photos and films that depict some of the activities undertaken at the community and individual level.

individual-level treatment activities. The baseline survey was a fully-fledged household survey that also covered consumption and investment patterns of the corresponding households. We interviewed 20 individuals per EA.

The randomization of mKesh dissemination was performed by forming blocks of two EAs from the set of 102 EAs. The blocks were selected by matching on shortest geographical distance. The 51 treatment EAs were then drawn randomly within each block. See Figure 2 for the location of the 102 EAs in our study, divided between treatment and control. Note that the treatment at the individual level as well as invitations for the community events as described above were submitted to a subsample of the individuals in treatment locations. This subsample had on average four individuals per EA and was drawn randomly within the EA. We call the individuals that were given the individual treatment and the invitations within a treatment EA the targeted individuals, and the individuals that were not given the individual treatment and the invitations the untargeted individuals.

<Figure 2 near here>

3.3. Measurement

Our measurement can be divided into adoption behavioral variables, survey variables related to information and trust, and behavioral measures of marginal willingness to save and to remit to migrants in the family. All measures that required the physical presence of the experimental subjects were taken immediately after the individual treatment was submitted.[11] Some adoption variables including administrative data on the transactions conducted by our panel are available for two months after the mKesh dissemination was finished on all treatment locations.

Our main adoption measures were taken from the administrative records of transactions carried out by our targeted and untargeted individuals in treatment locations. These records were made available by Carteira Móvel until the two months after the treatment was finished, i.e., until October 2012. They include for each cell number registered with us and for each transaction conducted: the date of the transaction, the type of transaction, and the amount involved in the transaction.

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[11] These measurements had 1 percent attrition when comparing to the baseline survey.

Another adoption outcome to which we devote some attention was composed from observing whether targeted individuals accepted the invitation to withdraw the cash they received as mKesh balance during the individual treatment (after the purchase at the agent's shop was carried out). This balance was 55 Meticais (which included 5 Meticais commission in case the withdrawal was actually done), around 2 USD. This invitation was posed at the end of the individual treatment, as the beginning of the post-treatment measurement activities. In case the invitation was accepted interviewers were available to help respondents withdrawing the mKesh balance.

During the post-treatment measurement activities we also proposed respondents in treatment locations two kinds of actions based on the sending of SMS (text) messages to our hotline. Both actions were meant to give a credible (behavioral) indication of whether these individuals were planning to use (or using already) mKesh services. Both actions involved the cost of writing and sending an SMS which could be small but is positive, giving some assurance of incentive-compatibility.

Our first SMS proposal was termed SMS mKesh. Individuals were proposed to send an SMS saying what part of mKesh they liked the most. A leaflet was left with the respondent explaining SMS mKesh. This is in Figure 3. Our written example referred liking saving money on mKesh, but any other service(s) offered by mKesh or any other aspect of the mKesh branding could be referred. The incentive to send the SMS was presented as: if many SMS were received, Carteira Móvel would try to improve the service focusing on the expressed preferences. The SMS mKesh could be sent until August 31.

<Figure 3 near here>

Our second SMS proposal was termed SMS mKesh Migrant. Individuals in treatment locations were proposed to contact close migrants in their family (spouse and or sons/daughters) that live in the Maputo city area. The cell phone numbers of these migrants were known to us from the baseline survey. They would ask these migrants to send an SMS saying they knew about the possibility of transferring money through mKesh. A leaflet was distributed to respondents explaining SMS mKesh Migrant. This is in Figure 4. The incentive to send the SMS was that both the respondent and the migrant would receive 50 Meticais in MKesh balance. The SMS mKesh

Migrant could be sent until August 31, with mKesh balance being transferred shortly after that date.

<Figure 4 near here>

We now turn to survey measurements related to information and trust. These survey questions were submitted as part of the post-treatment activities. The information questions were on financial literacy and on knowledge about mKesh. The literacy questions focused on whether respondents knew what savings, transfers, deposits, withdrawals are. All these concepts were mentioned and exemplified during the community and theater meetings and individual treatment. The mKesh questions tested knowledge about the link to mCel, the range of services that mKesh offers, and the role mKesh agents have on those services. The trust questions were of two kinds: general trust on family neighbors, local traders, and cell phone operators; trust on savings and transfers. The trust questions on savings and transfers measured trust on money saved with local trader, money transferred through driver, money transferred through family member, money transferred through bank transfer, and money transferred through 'new mCel bank'. For each of these questions we gave respondents two anchoring vignette questions in which we presented the extreme positive and negative trust scenarios for the corresponding question. We used the answers to the two vignette-questions to rescale answers given to the corresponding trust question for each individual. Table 1 presents the exact phrasing of these survey questions.

<Table 1 near here>

Finally, we conducted simple games to elicit the marginal willingness to save and remit to close migrants in the family living in the Maputo city area. Moreover, we distinguished between savings or remittances using mKesh, and savings or remittances using an attractive baseline alternative.

The savings game gave all individuals in both treatment and control locations 20 Meticais (around 1 USD) in cash. The respondent could either keep the 20 Meticais in cash or 'save' them. If the respondent answered he/she wanted to 'save', the respondent had to make an additional decision. 'Saving' could be through depositing the 20 Meticais in the respondent's mKesh account, or through default saving. Default saving in rural Mozambique typically means saving under the mattress. So we proposed the following type of default saving: depositing the 20

Meticais on a sealed envelope kept with the respondent, which would give the right to receive 5 Meticais in interest at the time of the next visit of the enumeration team, in case the envelope was still sealed at the time of that visit. See sealed envelope used in Figure 5. Note that the time of the next visit was uncertain when this game was run. The possibility of interest was meant to break indifference between cash-in-hand and cash-in-envelope. That way, in case there was already money under the mattress, the sealed envelope would become the most valuable 20-Metical bill under the mattress. It may be also seen as a hard test for the adoption of mKesh for saving.

<Figure 5 near here>

The remittance game also gave all individuals in both treatment and control locations 20 Meticais (around 1 USD) in cash. The respondent could either keep the 20 Meticais in cash or remit them to a close migrant in the family living in the Maputo city area. If the respondent answered he/she wanted to remit, the respondent had to make an additional decision. The remittance could be sent through transferring the 20 Meticais through the respondent's mKesh account, or through default remitting. A default remittance in rural Mozambique typically means sending money through someone, be it a family member, a friend, or a bus driver. So we proposed the following type of default remittance: sending the 20 Meticais in an envelope through 'us' (the enumeration team), without any costs. See Figure 5 for the envelope used for this purpose. We also believe this to be an attractive alternative to mKesh as we were giving the money to begin with and so there was no reason not to trust us to take the money to the migrant, and as we did not charge anything for the remittance (something highly unusual for the typical default options people have in Mozambique). Note that we also ran a version of the remittance game that did not allow respondents to keep the cash: respondents could only choose whether to send the remittance through mKesh or to send the remittance through 'us'. This version of the remittance game, which aims to assess adoption of mKesh for making transfers, was only run in treatment locations.

3.4. Specifications

Our empirical approach is based on estimating treatment effects on a variety of outcome variables. Namely, we are primarily interested in treatment effects on mKesh adoption (by comparing targeted and untargeted individuals within treatment locations), information and trust,

and savings and remittances. We now describe the main econometric specifications we employed, while using data at the individual level, for the estimation of these parameters.

Our design allowed us to estimate average treatment effects in different ways. Most simply, the effect of interest (d) could be estimated through the specifications:

$$Outcome_{il} = a + dt_i + \varepsilon_{il}, \quad (1)$$

$$Outcome_{il} = e + hT_l + \varepsilon_{il}, \quad (2)$$

where *Outcome* is an outcome of interest, *i,l* are identifiers for individuals and locations, t_i is a an dummy variable taking value 1 for targeted individuals within treatment locations, 0 otherwise, and T_l is a dummy variable taking value 1 for treatment locations, 0 otherwise.

We use equation (1) with data on treatment locations only for estimating the difference for some adoption measures between targeted and untargeted individuals within treatment locations. Adoption was very unlikely in control locations. We will employ equation (2) for estimating the difference between targeted and control individuals, our main experimental results (by employing data on targeted and control individuals only), and the difference between untargeted and control individuals (by employing data on untargeted and control individuals only). The latter is an approximation of indirect effects of the treatment or spillover effects.

Because of small sample size, we can also add location and individual-level control variables to compose one of our main specifications. This is in line with Duflo et al. (2007), who argue that, although controls do not generally change the estimate for the average treatment effect, they can help explaining the dependent variable, and therefore typically lower the standard error of the coefficient of interest. We then have the following core specifications:

$$Outcome_{il} = a + bY_l + cX_i + dt_i + \varepsilon_{il}, \quad (3)$$

$$Outcome_{il} = e + fY_l + gX_i + hT_l + \varepsilon_{il}, \quad (4)$$

where Y_l is a location-level vector of controls including regional dummies, and X_i is a vector of individual (demographic) controls. We display results for specifications (1)-(2) and for two

versions of specifications (3)-(4), one with regional dummies only, and the other with all location and individual controls.

For simplicity and transparency in the presentation of results we employ OLS on all estimations in this paper. We cluster standard errors at the level of the EA in all regressions at the individual level.

4. Econometric results

4.1. Balance

We begin by showing balance tests for a wide range of baseline variables. In Tables 2 we analyze location characteristics and demographic traits of our panel of experimental subjects, including basic attributes (age, gender, education, and marital status), occupation, religion and ethnicity, income and property, technology use and finance. At the location level we contrast treatment and control locations. At the individual level, we are able to compare control individuals with individuals in treatment locations that were reached individually by mKesh campaigners, i.e., targeted individuals, and with individuals that were not individually approached by campaigners, i.e. untargeted individuals. Because all these variables are unaffected by the intervention, and given our treatment assignment criteria, any differences between comparison groups should be understood as a product of chance.

<Tables 2 near here>

Among location characteristics we only find one difference between treatment and control that is statistically significant. Electricity supply is higher in control locations, but this difference is only statistically significant at the 10 percent level. At the individual level, we do not find differences across the three groups of respondents for basic demographics (age, gender, education, and marital status), occupation, religion and ethnicity, technology use and finance. We do however observe some differences for income and property. Specifically, owning some kinds of animals (goats and chickens) is more frequent in treatment locations (both targeted and untargeted individuals are more likely to have chickens when compared to control individuals. Moreover, we also observe differences on the variables relating to owning fridges and to owning radios: but this

time it is less frequent that targeted individuals own this type of durables, when comparing to control respondents.

4.2. Adoption

We begin by analyzing administrative records from Carteira Móvel on mKesh transactions of our rural experimental subjects. At this point in time we have access to two months of data after the mKesh dissemination efforts finished in the field in early August. We analyze here a range of indicators of mKesh use at the individual level: first we consider all types of transactions; then we distinguish between deposits, transfers received, transfers sent, purchases in shop, airtime purchases, and withdrawals. For each of these types of mKesh use, we display three types of outcomes: whether that transaction was performed at least once, the average value of transactions (in Meticais), and the number of transactions. Note that the average value of transactions and the number of transactions are considered for those that actually performed the transaction at least once. We focus on simple averages for treatment locations and this is what we display in Tables 3 on the top row (with standard deviation). We also estimate the treatment effect in terms of the same outcomes by comparing targeted to untargeted individuals within treatment locations. Specifications (1) and (3) are used: we first employ a specification without controls, then we add regional dummies, and finally we add location and individual controls to the regional dummies.[12] These are secondary results: we may interpret this difference as coming from the fact that only targeted respondents were invited to attend the community meeting and theatre, and were approached for individual treatment by campaigners. However, untargeted individuals still live in locations where an mKesh agent was recruited, and may still have attended the public events of mKesh dissemination. Hence, it is likely that the treatment has impact on their behavior as well.

<Tables 3 near here>

We observe considerable levels of mKesh adoption. Overall, we report that 64 percent of our experimental subjects in treatment locations did at least one transaction in the period after dissemination of mKesh until approximately two months after the last day of mKesh dissemination activities in the treatment EAs. The average value of mKesh transactions at the

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[12] Location controls include whether the location has a primary school, a secondary school, a health center, market vendors, police, church, meeting point, electricity supply, sewage, quality of mCel coverage, and time distance by chapa (bus) to nearest bank. Individual controls include age, gender, years of education, marital status dummies, religion dummies, ethnic group dummies, and property.

individual level was 172 Meticais (close to 6 USD), and the average number of transactions was 5.7 – these values do not take into account individuals performing no transactions. By looking at the difference between targeted and untargeted individuals, we can conclude that targeted individuals were more likely to have used mKesh. The point estimate was 0.57-0.58 percentage points, which was statistically significant at the 1 percent level for all specifications employed. Differences across targeted and untargeted were not significant for total value and number of transactions.

We now look at specific types of transactions. 20 percent of our rural experimental subjects in treatment EAs performed a deposit. The average deposit was 223 Meticais, and the average number of deposits was 2.5. There is evidence that targeted individuals were 7-9 percentage points more likely (than untargeted individuals) to make a deposit. 13/2 percent of our treated sample received/sent a money transfer. The average values for the transfers were 60 (received) and 69.2 (sent) Meticais. The average number of transfers received was 1.3, and the average number of transfers sent was 1.1. Targeted individuals were 12 percentage points more likely to receive a transfer, and 2 percentage points more likely to send a transfer. Regarding purchases in shop, we find that 5 percent of our treated sample performs that transaction. The average value of those purchases was 121 Meticais, and the average number of those purchases was 1.5. Targeted individuals were 5 percentage points more likely to make a purchase in shop. Airtime purchases constitute the most popular mKesh operation: 30 percent of our experimental subjects in treatment locations performed at least one purchase of mCel airtime. The average value of the airtime was 124 Meticais, and the average number of airtime purchases was 5.5. Targeted individuals were 25-27 percentage points more likely to pay for airtime using mKesh. Finally, only 7 percent of our treated sample withdrew any money from their mKesh accounts. The average amount withdrawn was 148 Meticais, and the average number of withdrawals was 1.2. Targeted individuals were 7-8 percentage points more likely to withdraw any money from their mKesh balance.

Our measurement design also included other measures of adoption. Apart from the self-reported intention to use mKesh gathered from the post-treatment survey, all the other measures we now analyze are behavioral. We look at whether targeted individuals wanted to withdraw the 50 Meticais they got as mKesh balance at the end of the individual treatment – campaigners made themselves available to help targeted individuals withdrawing that money from their mKesh accounts. We also observe whether each individual in treatment locations actually sent an SMS

mKesh and an SMS mKesh migrant. Sending an SMS mKesh is interpreted as credible evidence that the individual is interested in helping to improve mKesh services; sending an SMS mKesh migrant is interpreted as credible evidence that the individual is planning to use mKesh for money transfers. Finally, we had a version of the remittance game for treatment locations only: subjects were only given two alternatives, sending the 20 Meticais through mKesh or through the default method (us) – they could not keep the 20 Meticais for themselves. Whether subjects decided to send the money transfer through mKesh constitutes our final measure of adoption of mKesh. For all these measures of adoption we focus on averages for treatment locations. See Table 4 for these adoption results. For all outcomes except withdraw 50 Meticais, we also present the difference between targeted and untargeted individuals within treatment locations (untargeted individuals were not given the 50 Meticais to begin with). The different specifications are as in Tables 3.

<Table 4 near here>

We find that 66 percent of the respondents in treatment locations indicated an intention to use mKesh. Targeted individuals were 45-46 percentage points more likely to indicate this intention. All these estimates, across the different specifications, are statistically significant at the 1 percent level.

81 percent of our targeted respondents decided to keep the 50 Meticais in their mKesh account, i.e., they opted for not withdrawing this balance despite the expressed availability of campaigners to help them with the withdrawal. While there may be competing explanations for this finding, such as inertia or a desire to please campaigners, this result is at least an indicator that enough trust in the service was created so that targeted respondents chose to keep using the mKesh service to keep value, instead of immediately withdrawing the 50 Meticais at a minimal cost given the presence of the campaign team.

The SMS behavioral measures were relatively unpopular. Still 7 percent of our experimental subjects sent an SMS mKesh. But only 2 percent sent an SMS mKesh Migrant. This may be related to the requirement that the rural respondent had to convince a corresponding Maputo migrant to send a specific text message: it may have been too exigent given the level of detail involved, and the distance between sender (rural subject) and receiver (urban migrant) of the detailed information. We do not identify statistically significant differences between targeted and untargeted individuals on the sending of the SMSs. Finally, we observe that 55 percent of our experimental subjects in treatment locations decided to send the 20-Metical transfer through mKesh. We do not find statistically significant differences between targeted and untargeted

individuals on the sending of the 20 Meticais through mKesh. Overall, the evidence gathered through these behavioral indicators of adoption leads us to conclude for a clear willingness to use mKesh services. As expected we sometimes see higher willingness to use mKesh for the targeted individuals in our sample for treatment EAs.

4.3. Information and trust

We now turn our attention to survey measures of financial literacy and knowledge about mKesh, as well as to survey measures of trust. The survey questions that serve as the basis of these measures are described in detail in Table 1. We follow Kling et al (2007) in that we normalize all our survey measures using z-scores. This procedure enables homogenization of the interpretation of our treatment effects. The z-scores are calculated by subtracting the control group mean and dividing by the control group standard deviation. Thus, each variable has mean 0 and standard deviation 1 for the control group. For each outcome we display in Tables 5 and 6 treatment effects are estimated from employing specifications (2), i.e., without any controls, and (4), i.e., including regional dummies and then adding location and individual controls. Note that we only consider data on targeted and control individuals in these regressions; hence, the treatment effects we show in the referred tables represent the difference between targeted and control groups of respondents.

<Tables 5 near here>
<Tables 6 near here>

In Tables 5 we find the results concerning financial and mKesh literacy. Our measures of financial literacy are knowledge question about whether individuals understand the concepts of saving, transfer, deposit, and withdrawal. These are simple questions whose answers where classified as better or worse approximations of the full definitions. We can observe clear positive effects of the treatment. All effects are statistically significant at the 1 percent level, and robust across different specifications. Expressed in standard deviation units of the outcomes, these effects range 0.24-0.26 for savings, 0.29-034 for transfers, 0.26-0.28 for deposits, and 0.25-0.27 for withdrawals. Even though there are small differences across the different outcomes, it is interesting to note that the largest effects are for transfers and the smallest for savings. Our outcomes linking to knowledge about mKesh relate to hearing about mKesh, what mKesh is, what institution sponsors mKesh, and what services can be got with mKesh. Again, answers by

respondents were coded according to being closer or more distant from complete definitions. As expected, targeted respondents show much higher levels of information about mKesh. All effects are statistically significant at the 1 percent level, and robust across different specifications. Results range 0.76-0.78 for heard about mKesh, 0.82-0.83 for what is mKesh, 0.95-0.96 for who sponsors mKesh, and 1.04-1.05 for what can be done with mKesh (all effects are expressed in standard deviation units). We may then conclude that the dissemination campaign was very effective at increasing the knowledge rural Mozambicans have about finance/banking and about mKesh.

In Tables 6 we find the results regarding trust. We begin by showing measures of subjective general trust in family members, in neighbors, in the local shopkeeper, and in mCel. We observe clear positive effects of the mKesh dissemination efforts on increasing trust in the local shopkeeper. Indeed the local mKesh agent was typically the local shopkeeper, and so the mKesh campaign was able to bring additional trust to this local trader. This effect is statistically significant at the 1 percent level and robust across specifications. It ranges 0.21-0.27 standard deviation units. We also find a negative impact of the campaign on trust in neighbors. This is a 0.13 effect, significant at the 5 percent level. However it turns insignificant when location and individual controls are added. Our best interpretation for this effect is that since the campaign underlined the security advantages of mKesh for storing money, i.e., PIN protection, over traditional methods of storing money under the mattress or with neighbors, this emphasis may have caused a shift from trusting in neighbors. We do not find statistically significant changes on trusting in family or in the cell phone operator mCel. We then analyze treatment effects on trusting money transfers carried out through different channels: via bus driver, via friend or family member, via bank transfer, and via 'new mCel bank' (this was the most parsimonious way to refer to mKesh in both treatment and control locations). We show results regarding the simple answers to these subjective questions (Table 6b). We also show results for adjusted measures of the same outcomes (Table 6c), in which we take into account hypothetical extreme situations (anchoring vignettes) in order to take into account individual approaches to the subjective scale. Specifically, we adjust for the average response in the two extreme anchoring vignettes corresponding to a given money transfer method. Refer to Table 1 for the vignettes employed in each of these measures of trust. Hence, the adjusted measures attempt to account for the different pre-disposition of individuals to trust or distrust each channel. For both unadjusted and adjusted measures of trust, we only find statistically significant effects for trust in transfer via 'new Mcel bank'. These effects are 0.38-0.44 (unadjusted) and 0.26-0.30 (adjusted), and are significant at the

1 percent level. Classical methods for money transfer do not seem to have either benefitted or suffered from the treatment. We can conclude that the mKesh dissemination activities increased trust in local shopkeepers and in money transfers with the help of mCel.

4.4. Savings and remittances

We conducted games aimed to measure the willingness of our experimental subjects to save and remit. Since these behavioral measures were gathered in a setting where decisions were made against real money, they may be used to credibly show whether we should anticipate real effects of mKesh on savings and remittances. The assumption is that changes in the marginal willingness to save and remit translate into similar changes in the total savings these households hold and remittances these households send over a meaningful period of time. Note that the sending of small remittances in our games can always be interpreted as signaling the existence of the new method for transferring method and the need to receive remittances from urban migrants in the closest family. Hence, despite the fact that objectively we only measure willingness of our rural sample to send money, we may (less objectively) interpret effects on receiving remittances in the same direction. We show the corresponding results in Table 7. For each outcome we display in treatment effects without employing any controls, with regional dummies only, and with regional dummies as well as location and individual controls. Our focus is on contrasting targeted respondents to control respondents.

<Table 7 near here>

We show treatment effects both on willingness to save/remit and willingness to save/remit through mKesh. All dependent variables are binary. We find that overall willingness to remit increases with mKesh dissemination, while overall willingness to save does not seem to increase (not significantly at standard statistical levels). The overall effect on remittances is 6-7 percentage points. This estimate is statistically significant at the 5 or 10 percent levels. We also observe that the willingness to save through mKesh and the willingness to remit through mKesh clearly increase when comparing targeted and control experimental subjects. For savings the effect is 23-25 percentage points. For remittances the effect is 26-27 percentage points. All these estimates are significant at the 1 percent level. We infer from these results that the dissemination of mKesh induced an increase on the willingness to send money transfers independently of the money transfer method, and that at the margin mKesh substituted traditional methods of saving and

remitting. We see these results as an interesting indication of what may be longer-term effects of mobile money on savings and remittances of rural households in Mozambique.

4.5. Spillovers

We now devote our attention to the comparison between untargeted individuals in treatment locations and control individuals. We look at the main experimental outcomes from before, i.e. information and trust survey measures, and savings and remittances behavioral measures. The corresponding treatment effects may be interpreted as spillover effects given that untargeted individuals were not individually approached by mKesh campaigners. Note however that these spillovers may be due to attendance at the community meeting or the community theatre that were held for mKesh dissemination (despite the fact that only targeted individuals were explicitly invited). Other possible explanation for the spillover effects is social network transmission through the targeted. See Tables 8 for the results. The specifications we employ are depicted in equations (2) and (4) when employing untargeted and control individual data. We display estimates of treatment effects when employing no controls, when adding regional dummies, and when adding location and individual controls in addition to regional dummies.

<Tables 8 near here>

We look for spillovers regarding knowledge about savings, knowledge about transfers, heard about mKesh, trust in local shopkeeper, and trust in transfer via 'new mCel bank' (adjusted by the corresponding anchoring vignettes). We had found clear treatment effects for all these outcomes when contrasting targeted and control respondents. We observe that knowledge about savings increased by 0.15-0.17 standard deviation units, significant at the 10 percent level. Knowledge about transfers increased by 0.22-0.34, significant at the 1 or 5 percent levels. Hearing about mKesh increased by 0.18-0.21, significant at the 5 or 10 percent levels. We do not see significant changes in trust measures, with the exception of trust in local shopkeeper when employing full controls. We seem to be able to report weaker but positive spillover effects on information and trust outcomes. Turning to the saving and remittance games, we estimate spillover effects for the marginal willingness to save/remit, and the marginal willingness to save/remit through mKesh. We find results similar to the ones encountered for the targeted vs. control comparison. Overall remittance increases by 9-12 percentage points for the untargeted. These estimates are significant at the 5 or 10 percent levels. Saving through mKesh and remittance through mKesh also increase

for the untargeted, by 0.15-0.19 and 0.24-0.31 percentage points respectively. These effects are significant at the 1 or 5 percent levels. We conclude that spillovers were significant for savings and remittances. These spillovers were in fact similar to the effects we identified for the individuals that were individually approached by campaigners.

5. Concluding remarks

This paper presented evidence on the impact of mobile money (*mKesh*) dissemination in rural Mozambique. Initial evidence points to a high rate of mKesh adoption, which is consistent with our finding that there were improvements in financial literacy and trust on local agents due to the introduction of mKesh in the treatment rural villages in our sample.

We also find that the marginal willingness to send remittances increases after mKesh is made available. We do not however find the same result for savings. This result is in line with descriptive evidence for M-PESA in Kenya, which emphasizes the importance of mobile money in increasing remittances. We find that mKesh substitutes baseline methods for both saving and money transfers.

This paper is about the first results of this experiment. We plan to continue disseminating mKesh through urban migrants with a direct kinship connection (spouses, sons/daughters) to our panel of rural experimental subjects. We will conduct a sub-experiment with urban migrants by deploying three types of dissemination treatments: one in which basic information about mKesh is given and some experimentation is induced (just like what we did for their rural counterparts), one in which in addition to the first we subsidize mKesh operations by giving a price bonus per transactions (price margin), and one in which in addition to the first we give an initial mKesh balance for improving trust in the service (trust margin). The migrants will be contacted face-to-face – this contact will allow gathering survey and behavioral information from these migrants. Our main objective is to study the determinants of adoption of mKesh services, with a particular focus on remittances. Crucially we plan to continue measuring adoption at both rural and urban ends of our enlarged panel (i.e., including the migrants) by making use of mKesh administrative records. We will revisit our rural subjects to conduct a fully-fledged household survey, comparable with the baseline one we already conducted. Savings and remittances are hypothesized to be central to mediating any effects we may find on consumption and investment patterns of these rural households.

Of course the research agenda on the impact of mobile money is endless. Much more should be done on understanding how mobile money as a platform can carry a plethora of financial services that can be of great impact for unbanked populations. These services can go from simple savings accounts to more complex financial products related to farmer insurance. Since mobile money platforms can represent a revolution in banking, and banking is an industry requiring specific regulation by central banks that needs to be well informed, rigorous impact evaluation of mobile money introduction can shape the way the revolution may happen.

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Figure 1: mKesh leaflet

Front.

Main operations:

Self-registration.

Deposit.

Checking balance.

Paying for expenses at the mKesh shop.

Other operations and pricing:

Transfer.

Withdrawal.

Pricing.

Figure 2: Experimental locations

Geographic position of the sample across Mozambique

Legend:

Control Area   Treatment Area

Figure 3: SMS mKesh

Figure 4: SMS mKesh Migrant

Figure 5: Envelopes for default options in savings and remittance games

Savings envelope (with sealing wax).

Remittance envelope.

Table 1: Information and trust survey outcomes - phrasing (English translations) and scales.

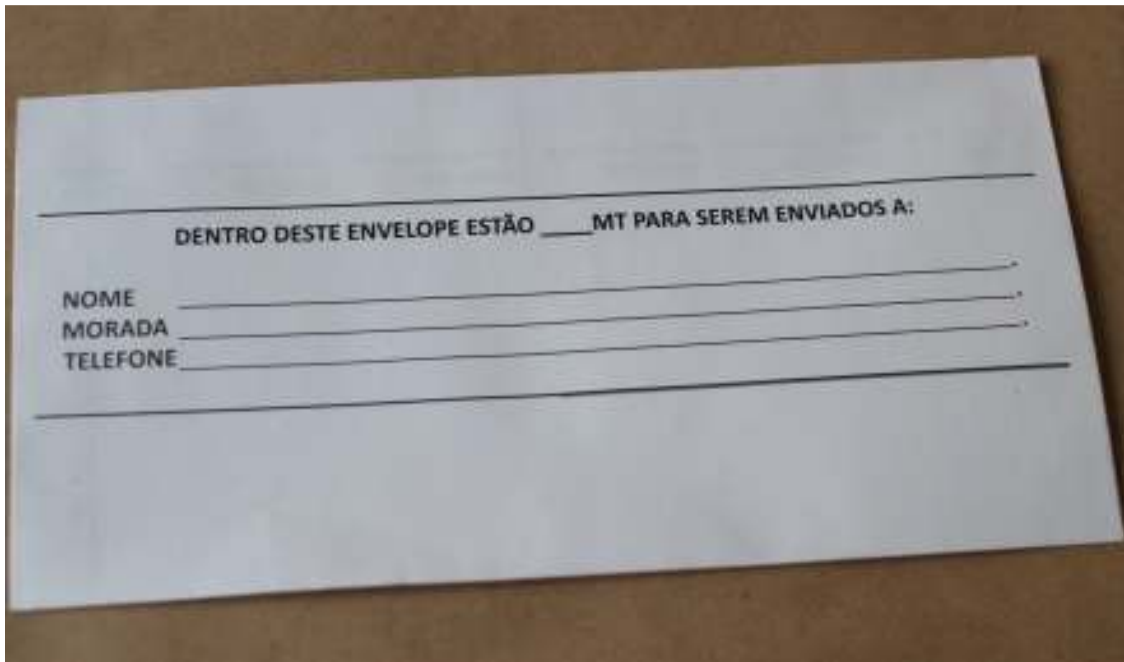|	variable	phrasing of the question	original scale
financial literacy	**knowledge about savings**	*Please tell me what can be understood as savings.* Answers ranged from the respondent not knowing to the respondent mentioning keeping money for later (to reach an objective or deal with an emergency).	**1 to 3**
	knowledge about transfers	*Please tell me what can be understood as money transfer.* Answers ranged from the respondent not knowing to the respondent mentioning the passing money from one person to another.	**1 to 3**
	knowledge about deposits	*Please tell me what can be understood as bank deposit.* Answers ranged from the respondent not knowing to the respondent mentioning going to the bank to ask them to keep some money. Other.	**1 to 3**
	knowledge about withdrawals	*Please tell me what can be understood as bank withdrawal.* Answers ranged from the respondent not knowing to the respondent mentioning going to the bank to take out some money.	**1 to 3**
information abot mKesh	**heard about mKesh**	*Have you heard about mKesh?* Possible answers: No-Yes.	**0 - 1**
	what is mKesh	*What is mKesh?* Answers ranged from the respondent not knowing to the respondent mentioning that mKesh is mCel's mobile money provider 'the bank in your hand' (mKesh slogan).	**1 to 7**
	who sponsors mKesh	*Who sponsors mKesh?* mCel/Other/Does not know	**0 to 2**
	what can be done with mKesh	*Which services does mKesh offer?* Answer summarizes total number of correct answers, ranging from the respondent mentioning deposits, withdrawals, transfers, saving on the cell phone, paying for goods in shop, buying mCel airtime.	**0 to 6**
general trust		*How much do you trust the following people?* Your family/Your neighbors/ Local shopkeepers/mCel. Distrust a lot-Trust a lot.	**1 to 5**
trust on transfers (with vignettes)	**transfer via bus driver**	(Extreme positive vignette:) Tobias has a family member living in Maputo who is going to send him 1000 Meticais via a bus driver that is his friend and that has been working as a bus driver for the last 5 years. The bus driver charges 50 Meticais for the service. How much do you trust that Tobias will receive this money? Distrust a lot-Trust a lot	**1 to 5**
		(Extreme negative vignette:) Samuel has a family member living in Maputo who is going to send him 1000 Meticais via a bus driver that he never saw before and that has been working as a bus driver for just the last 3 months. The bus driver charges 50 Meticais for the service. How much do you trust that Samuel will receive this money? Distrust a lot-Trust a lot	**1 to 5**
		How much do you trust that you will receive any money sent by your family in Maputo via a bus driver? Distrust a lot-Trust a lot	**1 to 5**
	transfer via friend or family	(Extreme positive vignette:) Domingos has a family member living in Maputo who is going to send him 1000 Meticais via a brother that will visit the village. Domings pays a small gratification to his brother to thank the service. How much do you trust that Domingos will receive this money? Distrust a lot-Trust a lot	**1 to 5**
		(Extreme negative vignette:) Horácio has a family member living in Maputo who is going to send him 1000 Meticais via someone that will visit the village. Horácio pays a small gratification to that person to thank the service. How much do you trust that Horácio will receive this money? Distrust a lot-Trust a lot	**1 to 5**
		How much do you trust that you will receive any money sent by your family in Maputo via a friend or family member visiting you village? Distrust a lot-Trust a lot	**1 to 5**
	transfer via bank	(Extreme positive vignette:) Lucas has a family member living in Maputo who is going to send him 1000 Meticais via a bank transfer to the local agency of BIM (a large Mozambican bank) which is 30min away from Lucas' village. How much do you trust that Lucas will receive this money? Distrust a lot-Trust a lot	**1 to 5**
		(Extreme negative vignette:) Elias has a family member living in Maputo who is going to send him 1000 Meticais via a bank transfer to the local agency of a small and unknown bank which is 30min away from Elias' village. How much do you trust that Elias will receive this money? Distrust a lot-Trust a lot	**1 to 5**
		How much do you trust that you will receive any money sent by your family in Maputo via a bank transfer? Distrust a lot-Trust a lot	**1 to 5**
	transfer via 'new mCel bank'	(Extreme positive vignette:) Pedro has a family member living in Maputo who is going to send him 1000 Meticais via a bank transfer to new local branch of the new mCel bank, which happens to be in the center of the village. How much do you trust that Pedro will receive this money? Distrust a lot-Trust a lot	**1 to 5**
		(Extreme negative vignette:) Daniel has a family member living in Maputo who is going to send him 1000 Meticais via a bank transfer to new local branch of the new mCel bank, which is 30min away by bus from his village. How much do you trust that Daniel will receive this money? Distrust a lot-Trust a lot	**1 to 5**
		How much do you trust that you will receive any money sent by your family in Maputo via the new mCel bank which works from a shop in your village? Distrust a lot-Trust a lot	**1 to 5**

Table 2a: Differences across treatment and control locations.

	control	treatment	difference
has primary school	0.940	0.979	0.039
			(0.040)
has secondary school	0.389	0.247	-0.143
			(0.091)
has health center	0.646	0.719	0.073
			(0.093)
has market vendors	0.603	0.555	-0.048
			(0.099)
has police	0.510	0.501	-0.010
			(0.100)
has church	0.981	0.981	-0.001
			(0.027)
has meeting point	0.468	0.382	-0.087
			(0.098)
has electricity supply	0.619	0.427	-0.192*
			(0.098)
has sewage	0.136	0.090	-0.046
			(0.062)
quality of mCel coverage	4.621	2.319	-2.302
			(1.798)
has paved road access	0.249	0.213	-0.035
			(0.084)
has land road access	0.706	0.723	0.017
			(0.090)
price of transportation to the nearest bank - MT	31.311	28.260	-3.050
			(3.062)
time distance to nearest bank - minutes	61.377	102.779	41.402
			(36.368)

Note: Standard errors of the differences reported in parenthesis; standard errors are corrected by clustering at the location (enumeration area) level. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 2b: Differences across treatment-targeted, treatment-untargeted, and control groups.

		control	treatment - targeted	difference to targeted group	treatment - untargeted	difference to untargeted group
basic demographics	age	38.524	36.888	-1.636 (1.054)	37.364	-1.160 (1.452)
	gender	0.627	0.609	-0.018 (0.036)	0.682	0.054 (0.046)
	years of education	5.554	5.736	0.182 (0.312)	5.380	-0.174 (0.406)
	single	0.176	0.200	0.024 (0.023)	0.168	-0.008 (0.037)
	married	0.665	0.644	-0.021 (0.029)	0.670	0.005 (0.039)
	separated	0.052	0.057	0.005 (0.011)	0.061	0.010 (0.018)
	widowed	0.107	0.098	-0.009 (0.018)	0.101	-0.006 (0.024)
occupation	farmer	0.464	0.427	-0.037 (0.040)	0.455	-0.009 (0.060)
	vendor	0.087	0.106	0.019 (0.019)	0.146	0.059 (0.039)
	manual worker	0.063	0.073	0.010 (0.015)	0.073	0.010 (0.023)
	teacher	0.050	0.064	0.014 (0.015)	0.045	-0.005 (0.019)
religion and ethnic group	non-religious	0.046	0.061	0.015 (0.014)	0.043	-0.003 (0.019)
	catholic	0.350	0.307	-0.043 (0.035)	0.310	-0.040 (0.049)
	zion	0.170	0.193	0.023 (0.035)	0.217	0.048 (0.049)
	other christian	0.401	0.419	0.018 (0.040)	0.418	0.017 (0.053)
	religious intensity	3.797	3.732	-0.065 (0.104)	3.839	0.041 (0.137)
	changana	0.706	0.688	-0.019 (0.082)	0.706	-0.000 (0.084)
	bitonga	0.075	0.069	-0.007 (0.042)	0.051	-0.025 (0.043)
	chitsua	0.135	0.129	-0.006 (0.056)	0.141	0.006 (0.063)
	chopi	0.051	0.082	0.030 (0.040)	0.073	0.022 (0.039)

Note: Standard errors of the differences reported in parenthesis; standard errors are corrected by clustering at the location (enumeration area) level. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 2c: Differences across treatment-targeted, treatment-untargeted, and control groups.

		control	treatment - targeted	difference to targeted group	treatment - untargeted	difference to untargeted group
income and property	individual monthly income - MT	2,734.241	2,638.780	-95.461 (420.717)	3,011.838	277.597 (725.576)
	machamba	0.863	0.883	0.020 (0.028)	0.887	0.024 (0.037)
	has goats	0.362	0.465	0.103*** (0.038)	0.441	0.079 (0.050)
	has pigs	0.277	0.354	0.077 (0.048)	0.328	0.051 (0.054)
	has chicken	0.588	0.679	0.091** (0.037)	0.688	0.100** (0.049)
	has ducks	0.283	0.315	0.031 (0.030)	0.263	-0.020 (0.042)
	owns mosquito net	0.555	0.558	0.002 (0.049)	0.565	0.010 (0.061)
	owns fridge	0.146	0.106	-0.039* (0.023)	0.118	-0.027 (0.031)
	owns sewing machine	0.031	0.042	0.011 (0.010)	0.038	0.007 (0.022)
	owns radio	0.512	0.513	0.001 (0.031)	0.500	-0.012 (0.048)
	owns tv	0.395	0.355	-0.039 (0.044)	0.357	-0.038 (0.054)
	owns bike	0.164	0.181	0.016 (0.031)	0.114	-0.050 (0.035)
	owns motorcycle	0.017	0.027	0.011* (0.006)	0.016	-0.000 (0.013)
	owns car	0.067	0.044	-0.024** (0.010)	0.032	-0.035** (0.015)
technology and finance	frequency of cell use	4.823	4.824	(0.001) 0.032	(4.876)	(0.053) 0.043
	has bank account	0.265	0.310	0.045 (0.035)	0.202	-0.063 (0.044)
	participates in rosca	0.218	0.211	-0.007 (0.031)	0.200	-0.018 (0.044)
	total savings - MT	4,731	5,312	(581) 975	3,268.521	-1,463 (897.834)
	has bank loan	0.041	0.033	-0.008 (0.010)	0.034	-0.006 (0.015)
	has family loan	0.056	0.040	-0.015 (0.012)	0.046	-0.009 (0.019)

Note: Standard errors of the differences reported in parenthesis; standard errors are corrected by clustering at the location (enumeration area) level. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 3a: Adoption outcomes - administrative records on all transactions (per individual).

dependent variable ------>		all transactions								
		at least one transaction			average value of transactions (>0)			number of transactions (>0)		
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
mean (treatment locations)		0.635	0.635	0.633	172.276	172.276	154.648	5.693	5.693	5.059
standard deviation		(0.482)	(0.482)	(0.482)	(795.276)	(795.276)	(640.328)	(19.256)	(19.256)	(9.434)
treatment effect (targeted vs. untargeted)	coefficient	0.583***	0.584***	0.571***	7.884	-20.488	3.322	-0.008	-0.608	-0.467
	standard error	(0.048)	(0.047)	(0.048)	(78.588)	(74.663)	(82.222)	(2.218)	(2.104)	(2.363)
r-squared adjusted		0.223	0.222	0.227	-0.002	0.008	0.057	-0.002	0.006	0.127
number of observations		993	993	912	631	631	577	631	631	577
regional dummies		no	yes	yes	no	yes	yes	no	yes	yes
controls		no	no	yes	no	no	yes	no	no	yes

Note: All regressions are OLS. Average value of transactions and number of transactions are computed for individuals that actually performed transactions. Controls are individual demographic and location characteristics, which include age, gender, years of education, marital status dummies, religion dummies, ethnic group dummies, property, and location offering primary school, secondary school, health center, market vendors, police, church, meeting point, electricity supply, sewage, quality of mCel coverage, and time distance by chapa (bus) to nearest bank. Standard errors reported in parenthesis; these are corrected by clustering at the location (enumeration area) level. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 3b: Adoption outcomes - administrative records on deposits (per individual).

dependent variable ------>		deposits								
		at least one transaction			average value of transactions (>0)			number of transactions (>0)		
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
mean (treatment locations)		0.203	0.203	0.197	223.198	223.198	196.606	2.446	2.446	2.189
standard deviation		(0.403)	(0.403)	(0.398)	(687.485)	(687.485)	(552.037)	(4.841)	(4.841)	(2.363)
treatment effect (targeted vs. untargeted)	coefficient	0.085**	0.087***	0.065*	137.403**	71.113	64.944	0.782	0.310	0.456
	standard error	(0.033)	(0.033)	(0.033)	(68.793)	(56.669)	(64.472)	(0.532)	(0.477)	(0.552)
r-squared adjusted		0.006	0.016	0.071	-0.001	0.019	0.102	-0.002	0.013	0.165
number of observations		993	993	912	202	202	180	202	202	180
regional dummies		no	yes	yes	no	yes	yes	no	yes	yes
controls		no	no	yes	no	no	yes	no	no	yes

Note: All regressions are OLS. Average value of transactions and number of transactions are computed for individuals that actually performed transactions. Controls are individual demographic and location characteristics, which include age, gender, years of education, marital status dummies, religion dummies, ethnic group dummies, property, and location offering primary school, secondary school, health center, market vendors, police, church, meeting point, electricity supply, sewage, quality of mCel coverage, and time distance by chapa (bus) to nearest bank. Standard errors reported in parenthesis; these are corrected by clustering at the location (enumeration area) level. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 3c: Adoption outcomes - administrative records on transfers received (per individual).

dependent variable ------>		transfers received								
		at least one transaction			average value of transactions (>0)			number of transactions (>0)		
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
mean (treatment locations)		0.126	0.126	0.128	59.984	59.984	60.162	1.272	1.272	1.274
standard deviation		(0.332)	(0.332)	(0.335)	(87.917)	(87.917)	(90.656)	(0.559)	(0.559)	(0.567)
treatment effect (targeted vs. untargeted)	coefficient	0.115***	0.116***	0.118***	24.493**	13.961	2.443	-0.590**	-0.608**	-0.973***
	standard error	(0.033)	(0.034)	(0.038)	(11.518)	(10.237)	(33.432)	(0.270)	(0.273)	(0.335)
r-squared adjusted		0.017	0.018	0.052	-0.005	0.049	0.134	0.044	0.033	0.152
number of observations		993	993	912	125	125	117	125	125	117
regional dummies		no	yes	yes	no	yes	yes	no	yes	yes
controls		no	no	yes	no	no	yes	no	no	yes

Note: All regressions are OLS. Average value of transactions and number of transactions are computed for individuals that actually performed transactions. Controls are individual demographic and location characteristics, which include age, gender, years of education, marital status dummies, religion dummies, ethnic group dummies, property, and location offering primary school, secondary school, health center, market vendors, police, church, meeting point, electricity supply, sewage, quality of mCel coverage, and time distance by chapa (bus) to nearest bank. Standard errors reported in parenthesis; these are corrected by clustering at the location (enumeration area) level. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 3d: Adoption outcomes - administrative records on transfers sent (per individual).

dependent variable ------>		transfers sent								
		at least one transaction			average value of transactions (>0)			number of transactions (>0)		
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
mean (treatment locations)		0.020	0.020	0.021	69.200	69.200	52.053	1.100	1.100	1.105
standard deviation		0.141	0.141	0.143	92.015	92.015	52.247	0.308	0.308	0.315
treatment effect (targeted vs. untargeted)	coefficient	0.018**	0.018**	0.016*	62.316**	30.333***	107.431***	0.105	-0.000	-0.103
	standard error	(0.009)	(0.009)	(0.009)	(24.484)	(11.363)	(28.841)	(0.070)	(0.000)	(0.143)
r-squared adjusted		0.002	0.001	0.021	-0.031	0.185	0.063	-0.049	0.120	0.327
number of observations		993	993	912	20	20	19	20	20	19
regional dummies		no	yes	yes	no	yes	yes	no	yes	yes
controls		no	no	yes	no	yes	yes	no	yes	yes

Note: All regressions are OLS. Average value of transactions and number of transactions are computed for individuals that actually performed transactions. Controls are individual demographic and location characteristics, which include age, gender, years of education, marital status dummies, religion dummies, ethnic group dummies, property, and location offering primary school, secondary school, health center, market vendors, police, church, meeting point, electricity supply, sewage, quality of mCel coverage, and time distance by chapa (bus) to nearest bank. Standard errors reported in parenthesis; these are corrected by clustering at the location (enumeration area) level. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 3e: Adoption outcomes - administrative records on purchases in shop (per individual).

dependent variable ------>		purchases in shop								
		at least one transaction			average value of transactions (>0)			number of transactions (>0)		
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
mean (treatment locations)		0.052	0.052	0.050	121.173	121.173	128.870	1.519	1.519	1.565
standard deviation		(0.223)	(0.223)	(0.219)	(344.330)	(344.330)	(365.392)	(1.915)	(1.915)	(2.029)
treatment effect (targeted vs. untargeted)	coefficient	0.045***	0.046***	0.047**	-21.041	-62.051	150.761	0.197	-0.103	0.602
	standard error	(0.017)	(0.017)	(0.018)	(107.797)	(107.240)	(217.547)	(0.408)	(0.365)	(1.349)
r-squared adjusted		0.005	0.018	0.087	-0.020	0.007	0.321	-0.019	0.054	0.377
number of observations		993	993	912	52	52	46	52	52	46
regional dummies		no	yes	yes	no	yes	yes	no	yes	yes
controls		no	no	yes	no	no	yes	no	no	yes

Note: All regressions are OLS. Average value of transactions and number of transactions are computed for individuals that actually performed transactions. Controls are individual demographic and location characteristics, which include age, gender, years of education, marital status dummies, religion dummies, ethnic group dummies, property, and location offering primary school, complete primary school, secondary school, health center, police services, religious services, meeting point, electricity, sewage, mcel coverage, price and time distance by chapa (bus) to nearest bank. Standard errors reported in parenthesis; these are corrected by clustering at the location (enumeration area) level. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 3f: Adoption outcomes - administrative records on airtime purchases (per individual).

dependent variable ------>	airtime								
	at least one transaction			average value of transactions (>0)			number of transactions (>0)		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
mean (treatment locations)	0.301	0.301	0.297	123.619	123.619	107.129	5.498	5.498	4.376
standard deviation	(0.459)	(0.459)	(0.457)	(412.536)	(412.536)	(247.110)	(22.472)	(22.472)	(9.285)
treatment effect (targeted vs. untargeted) coefficient	0.265***	0.266***	0.251***	33.538	15.088	-0.319	1.583	0.612	-0.184
standard error	(0.040)	(0.041)	(0.042)	(53.918)	(52.263)	(55.348)	(2.781)	(2.610)	(2.817)
r-squared adjusted	0.050	0.061	0.127	-0.003	0.029	0.094	-0.003	0.028	0.129
number of observations	993	993	912	299	299	271	299	299	271
regional dummies	no	yes	yes	no	yes	yes	no	yes	yes
controls	no	no	yes	no	no	yes	no	no	yes

Note: All regressions are OLS. Average value of transactions and number of transactions are computed for individuals that actually performed transactions. Controls are individual demographic and location characteristics, which include age, gender, years of education, marital status dummies, religion dummies, ethnic group dummies, property, and location offering primary school, complete primary school, secondary school, health center, police services, religious services, meeting point, electricity, sewage, mcel coverage, price and time distance by chapa (bus) to nearest bank. Standard errors reported in parenthesis; these are corrected by clustering at the location (enumeration area) level. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 3g: Adoption outcomes - administrative records on withdrawals (per individual).

dependent variable ------>		withdrawals								
		at least one transaction			average value of transactions (>0)			number of transactions (>0)		
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
mean (treatment locations)		0.067	0.067	0.068	147.612	147.612	151.452	1.179	1.179	1.194
standard deviation		(0.251)	(0.251)	(0.252)	(366.119)	(366.119)	(379.487)	(0.903)	(0.903)	0.938
treatment effect (targeted vs.	coefficient	0.076***	0.075***	0.074***	-43.030	106.250	760.346***	0.182	0.458	1.516**
untargeted)	standard error	(0.014)	(0.015)	(0.016)	(45.194)	(109.157)	(290.604)	(0.115)	(0.290)	(0.661)
r-squared adjusted		0.013	0.015	0.021	-0.015	0.052	0.188	-0.015	0.010	0.154
number of observations		993	993	912	67	67	62	67	67	62
regional dummies		no	yes	yes	no	yes	yes	no	yes	yes
controls		no	no	yes	no	no	yes	no	no	yes

Note: All regressions are OLS. Average value of transactions and number of transactions are computed for individuals that actually performed transactions. Controls are individual demographic and location characteristics, which include age, gender, years of education, marital status dummies, religion dummies, ethnic group dummies, property, and location offering primary school, complete primary school, secondary school, health center, police services, religious services, meeting point, electricity, sewage, mcel coverage, price and time distance by chapa (bus) to nearest bank. Standard errors reported in parenthesis; these are corrected by clustering at the location (enumeration area) level. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 4: Adoption outcomes - behavioral measures.

dependent variable ------>		intend to use mKesh			withdraw 50 MT	sms mKesh - actual			sms mKesh migrant - actual			mKesh mandatory remittance		
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
mean (treatment locations)		0.662	0.662	0.669	0.194	0.073	0.073	0.073	0.022	0.022	0.023	0.546	0.546	0.534
standard deviation		(0.467)	(0.467)	(0.464)	(0.395)	(0.259)	(0.259)	(0.261)	(0.147)	(0.147)	(0.150)	(0.498)	(0.498)	(0.499)
treatment effect (targeted vs. untargeted)	coefficient	0.457***	0.461***	0.454***		0.003	0.003	-0.002	-0.006	-0.006	-0.009	0.085	0.096	0.085
	standard error	(0.047)	(0.047)	(0.049)		(0.021)	(0.021)	(0.022)	(0.013)	(0.013)	(0.013)	(0.059)	(0.058)	(0.059)
r-squared adjusted		0.145	0.163	0.198		-0.001	-0.003	0.017	-0.001	-0.002	0.010	0.003	0.102	0.107
number of observations		993	993	912		993	993	912	993	993	912	678	678	626
regional dummies		no	yes	yes		no	yes	yes	no	yes	yes	no	yes	yes
controls		no	no	yes		no	no	yes	no	no	yes	no	no	yes

Note: All regressions are OLS. Controls are individual demographic and location characteristics, which include age, gender, years of education, marital status dummies, religion dummies, ethnic group dummies, property, and location offering primary school, secondary school, health center, market vendors, police, church, meeting point, electricity supply, sewage, quality of mCel coverage, and time distance by chapa (bus) to nearest bank. Standard errors reported in parenthesis; these are corrected by clustering at the location (enumeration area) level. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 5a: Financial literacy outcomes.

dependent variable ------>		knowledge about savings			knowledge about transfers			knowledge about deposits			knowledge about withdrawals		
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
treatment effect	coefficient	0.257***	0.242***	0.261***	0.301***	0.287***	0.336***	0.274***	0.262***	0.278***	0.262***	0.250***	0.270***
	standard error	(0.066)	(0.054)	(0.055)	(0.069)	(0.062)	(0.051)	(0.068)	(0.063)	(0.050)	(0.065)	(0.060)	(0.049)
mean dep. variable (control)		-0.118	-0.118	-0.096	-0.141	-0.141	-0.118	-0.118	-0.118	-0.091	-0.112	-0.112	-0.084
r-squared adjusted		0.016	0.055	0.124	0.022	0.041	0.155	0.018	0.033	0.157	0.016	0.031	0.161
number of observations		1,829	1,829	1,681	1,829	1,829	1,681	1,829	1,829	1,681	1,829	1,829	1,681
regional dummies		no	yes	yes	no	yes	yes	no	yes	yes	no	yes	yes
controls		no	no	yes	no	no	yes	no	no	yes	no	no	yes

Note: All regressions are OLS. All dependent variables are z-scores. Controls are individual demographic and location characteristics, which include age, gender, years of education, marital status dummies, religion dummies, ethnic group dummies, property, and location offering primary school, secondary school, health center, market vendors, police, church, meeting point, electricity supply, sewage, quality of mCel coverage, and time distance by chapa (bus) to nearest bank. Standard errors reported in parenthesis; these are corrected by clustering at the location (enumeration area) level. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 5b: mKesh literacy outcomes.

dependent variable ------>		heard about mKesh			what is mKesh			who sponsors mKesh			what can be done with mKesh		
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
treatment effect	coefficient	0.783***	0.779***	0.763***	0.824***	0.817***	0.838***	0.959***	0.952***	0.962***	1.042***	1.037***	1.045***
	standard error	(0.074)	(0.074)	(0.068)	(0.065)	(0.062)	(0.064)	(0.070)	(0.069)	(0.063)	(0.076)	(0.077)	(0.073)
mean dep. variable (control)		-0.330	-0.330	-0.319	-0.342	-0.342	-0.338	-0.398	-0.398	-0.392	-0.440	-0.440	-0.433
r-squared adjusted		0.150	0.155	0.248	0.162	0.172	0.221	0.223	0.230	0.304	0.263	0.266	0.317
number of observations		1,806	1,806	1,661	1,832	1,832	1,684	1,832	1,832	1,684	1,832	1,832	1,684
regional dummies		no	yes	yes	no	yes	yes	no	yes	yes	no	yes	yes
controls		no	no	yes	no	no	yes	no	no	yes	no	no	yes

Note: All regressions are OLS. All dependent variables are z-scores. Controls are individual demographic and location characteristics, which include age, gender, years of education, marital status dummies, religion dummies, ethnic group dummies, property, and location offering primary school, secondary school, health center, market vendors, police, church, meeting point, electricity supply, sewage, quality of mCel coverage, and time distance by chapa (bus) to nearest bank. Standard errors reported in parenthesis; these are corrected by clustering at the location (enumeration area) level. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 6a: General trust outcomes.

dependent variable ------>		trust in family			trust in neighbors			trust in local shopkeeper			trust in mCel		
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
treatment effect	coefficient	-0.026	-0.025	0.005	-0.131**	-0.126**	-0.084	0.212***	0.215***	0.265***	0.102	0.095	0.082
	standard error	(0.067)	(0.067)	(0.060)	(0.062)	(0.060)	(0.062)	(0.064)	(0.064)	(0.057)	(0.063)	(0.061)	(0.067)
mean dep. variable (control)		0.009	0.009	0.011	0.056	0.056	0.060	-0.092	-0.092	-0.085	-0.046	-0.046	-0.035
r-squared adjusted		-0.000	-0.000	0.027	0.004	0.007	0.048	0.011	0.011	0.045	0.002	0.008	0.013
number of observations		1,823	1,823	1,675	1,820	1,820	1,673	1,794	1,794	1,650	1,803	1,803	1,660
regional dummies		no	yes	yes	no	yes	yes	no	yes	yes	no	yes	yes
controls		no	no	yes	no	no	yes	no	no	yes	no	no	yes

Note: All regressions are OLS. All dependent variables are z-scores. Controls are individual demographic and location characteristics, which include age, gender, years of education, marital status dummies, religion dummies, ethnic group dummies, property, and location offering primary school, secondary school, health center, market vendors, police, church, meeting point, electricity supply, sewage, quality of mCel coverage, and time distance by chapa (bus) to nearest bank. Standard errors reported in parenthesis; these are corrected by clustering at the location (enumeration area) level. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 6b: Trust in money transfer channels - unadjusted measures.

dependent variable ------>		trust in transfer via bus driver			trust in transfer via friend or family			trust in transfer via bank			trust in transfer via 'new mCel bank'		
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
treatment effect	coefficient	-0.008	-0.008	0.018	0.066	0.056	0.048	0.017	0.004	0.012	0.384***	0.383***	0.438***
	standard error	(0.062)	(0.061)	(0.059)	(0.062)	(0.057)	(0.054)	(0.070)	(0.066)	(0.070)	(0.058)	(0.058)	(0.060)
mean dep. variable (control)		-0.002	-0.002	0.014	-0.029	-0.029	-0.022	-0.007	-0.007	0.001	-0.174	-0.174	-0.194
r-squared adjusted		-0.001	0.001	0.023	0.000	0.015	0.024	-0.001	0.016	0.043	0.036	0.035	0.045
number of observations		1,736	1,736	1,594	1,751	1,751	1,611	1,690	1,690	1,555	1,663	1,663	1,528
regional dummies		no	yes	yes	no	yes	yes	no	yes	yes	no	yes	yes
controls		no	no	yes	no	no	yes	no	no	yes	no	no	yes

Note: All regressions are OLS. All dependent variables are z-scores. Controls are individual demographic and location characteristics, which include age, gender, years of education, marital status dummies, religion dummies, ethnic group dummies, property, and location offering primary school, secondary school, health center, market vendors, police, church, meeting point, electricity supply, sewage, quality of mCel coverage, and time distance by chapa (bus) to nearest bank. Standard errors reported in parenthesis; these are corrected by clustering at the location (enumeration area) level. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 6c: Trust in money transfer channels - adjusted measures.

dependent variable ------>		trust in transfer via bus driver			trust in transfer via friend or family			trust in transfer via bank			trust in transfer via 'new mCel bank'		
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
treatment effect	coefficient	0.000	-0.005	-0.002	0.051	0.041	0.042	0.004	-0.011	-0.020	0.267***	0.264***	0.299***
	standard error	(0.061)	(0.057)	(0.056)	(0.058)	(0.051)	(0.052)	(0.072)	(0.067)	(0.069)	(0.052)	(0.052)	(0.057)
mean dep. variable (control)		-0.014	-0.014	0.006	-0.026	-0.026	-0.030	0.000	0.000	0.008	-0.117	-0.117	-0.136
r-squared adjusted		-0.001	0.007	0.019	0.000	0.016	0.022	-0.001	0.018	0.042	0.017	0.017	0.023
number of observations		1,694	1,694	1,557	1,697	1,697	1,563	1,618	1,618	1,487	1,612	1,612	1,479
regional dummies		no	yes	yes	no	yes	yes	no	yes	yes	no	yes	yes
controls		no	no	yes	no	no	yes	no	no	yes	no	no	yes

Note: All regressions are OLS. All dependent variables are z-scores. Controls are individual demographic and location characteristics, which include age, gender, years of education, marital status dummies, religion dummies, ethnic group dummies, property, and location offering primary school, secondary school, health center, market vendors, police, church, meeting point, electricity supply, sewage, quality of mCel coverage, and time distance by chapa (bus) to nearest bank. Standard errors reported in parenthesis; these are corrected by clustering at the location (enumeration area) level. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 7: Marginal willingness to save and remit.

dependent variable ------>		saving game			mKesh saving			remittance game			mKesh remittance		
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
treatment effect	coefficient	0.020	0.021	0.043	0.229***	0.229***	0.249***	0.057*	0.057*	0.067**	0.262***	0.269***	0.255***
	standard error	(0.039)	(0.033)	(0.037)	(0.033)	(0.032)	(0.032)	(0.032)	(0.031)	(0.029)	(0.066)	(0.056)	(0.073)
mean dep. variable (control)		0.588	0.588	0.579	0.115	0.115	0.117	0.161	0.161	0.151	0.459	0.459	0.429
r-squared adjusted		-0.000	0.037	0.040	0.076	0.085	0.118	0.004	0.014	0.036	0.067	0.155	0.100
number of observations		1,819	1,819	1,671	1,085	1,085	984	1,308	1,308	1,206	244	244	211
regional dummies		no	yes	yes	no	yes	yes	no	yes	yes	no	yes	yes
controls		no	no	yes	no	no	yes	no	no	yes	no	no	yes

Note: All regressions are OLS. Controls are individual demographic and location characteristics, which include age, gender, years of education, marital status dummies, religion dummies, ethnic group dummies, property, and location offering primary school, secondary school, health center, market vendors, police, church, meeting point, electricity supply, sewage, quality of mCel coverage, and time distance by chapa (bus) to nearest bank. Standard errors reported in parenthesis; these are corrected by clustering at the location (enumeration area) level. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 8a: Information and trust outcomes - spillover effects.

dependent variable ------>		knowledge about savings			knowledge about transfers			heard about mKesh			trust in local shopkeeper			trust in transfer via 'new mCel bank'		
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
treatment effect	coefficient	0.167*	0.154*	0.170*	0.231**	0.223**	0.342***	0.180*	0.181*	0.205**	0.076	0.078	0.158*	0.045	0.047	0.119
	standard error	(0.100)	(0.092)	(0.103)	(0.103)	(0.099)	(0.104)	(0.107)	(0.104)	(0.103)	(0.090)	(0.088)	(0.087)	(0.091)	(0.092)	(0.100)
mean dep. variable (control)		-0.118	-0.118	-0.096	-0.141	-0.141	-0.118	-0.330	-0.330	-0.319	-0.092	-0.092	-0.085	-0.117	-0.117	-0.136
r-squared adjusted		0.003	0.052	0.120	0.006	0.025	0.154	0.004	0.008	0.172	-0.000	0.002	0.030	-0.001	-0.002	0.005
number of observations		1,211	1,211	1,102	1,211	1,211	1,102	1,190	1,190	1,084	1,183	1,183	1,076	1,022	1,022	926
regional dummies		no	yes	yes	no	yes	yes	no	yes	yes	no	yes	yes	no	yes	yes
controls		no	no	yes	no	no	yes	no	no	yes	no	no	yes	no	no	yes

Note: All regressions are OLS. All dependent variables are z-scores. Trust in transfer via 'new mCel bank' is adjusted by anchoring vignettes. Controls are individual demographic and location characteristics, which include age, gender, years of education, marital status dummies, religion dummies, ethnic group dummies, property, and location offering primary school, secondary school, health center, market vendors, police, church, meeting point, electricity supply, sewage, quality of mCel coverage, and time distance by chapa (bus) to nearest bank. Standard errors reported in parenthesis; these are corrected by clustering at the location (enumeration area) level. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 8b: Marginal willingness to save and remit - spillover effects.

dependent variable ------>		saving game			mKesh saving			remittance game			mKesh remittance		
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
treatment effect	coefficient	0.034	0.030	0.046	0.155**	0.151**	0.188***	0.089*	0.088*	0.115**	0.238**	0.256***	0.311***
	standard error	(0.054)	(0.050)	(0.052)	(0.062)	(0.061)	(0.064)	(0.048)	(0.048)	(0.049)	(0.107)	(0.093)	(0.116)
mean dep. variable (control)		0.588	0.588	0.579	0.115	0.115	0.117	0.161	0.161	0.151	0.459	0.459	0.429
r-squared adjusted		-0.000	0.039	0.050	0.025	0.036	0.065	0.006	0.011	0.049	0.032	0.152	0.099
number of observations		1,207	1,207	1,098	715	715	640	889	889	813	155	155	134
regional dummies		no	yes	yes	no	yes	yes	no	yes	yes	no	yes	yes
controls		no	no	yes	no	no	yes	no	no	yes	no	no	yes

Note: All regressions are OLS. Controls are individual demographic and location characteristics, which include age, gender, years of education, marital status dummies, religion dummies, ethnic group dummies, property, and location offering primary school, secondary school, health center, market vendors, police, church, meeting point, electricity supply, sewage, quality of mCel coverage, and time distance by chapa (bus) to nearest bank. Standard errors reported in parenthesis; these are corrected by clustering at the location (enumeration area) level. * significant at 10%; ** significant at 5%; *** significant at 1%.