

A Penny Saved: How Do Savings Accounts Help the Poor?

By Jake Kendall

It is estimated that more than half the world's adults do not have a bank account, and nearly 3 out of 4 adults in developing and middle income countries don't have bank accounts.¹ Further, 90% of the 2.5 billion people living on less than \$2/day in the developing world do not have an account.² In response to this massive gap in coverage, and guided by the belief that having a safe place to save allows the poor to better manage their money and can help them improve their lives, many governments, aid organizations, and donors have begun to develop policies and programs to promote broad access to savings services.³ But what hard evidence do we have to support the contention that access to bank accounts can deliver significant benefits to poor households?

This paper first lays out the challenges faced in establishing the 'impact' on households and the wider economy of improved access to savings services and discusses what impacts we might expect. Then it surveys the available experimental evidence on the impact of savings for the poor in the development context.

The poor are active savers

Before delving into the challenge of proving the benefits poor households' derive from savings accounts, it is worth pausing to consider whether poor households would want to save at all? Consider that a family of five living at \$1 per person per day would consume only \$150 worth of goods per month. For households at this level of income, saving money equates to a set of very tough choices about what will and will not be purchased. Nevertheless, research shows that the poor are active savers through both formal and informal means.

For instance, researchers regularly measure that the percent of income the poor consume is less than 100 percent, with the rest being saved or used to pay back loans.⁴ When queried in surveys, the poor often report savings accounts as their greatest financial need. For example, in 2006, FinScope Uganda found 43 percent of respondents said savings is their greatest financial need, compared to 31 percent who cited credit. The poor also save actively at home in cash and through informal mechanisms. For example, Rotating Savings and Credit Association (ROSCA) membership rates among the adult population have been estimated at over 50 percent of adults in the Democratic Republic of Congo, Cameroon, Gambia, villages in Liberia, Ivory Coast, Togo, and Nigeria and similar group savings schemes are widespread outside of Africa as well.⁵

¹Kendall, Mylenko, and Ponce (2009)

² Financial Access Initiative and McKinsey & Co. (2009)

³ For example the Financial Services for the Poor initiative of the Bill & Melinda Gates Foundation is dedicated to the belief that everyone deserves a safe place to save their money and is working with a wide range of public and private partners to harness technology and innovation to bring quality, affordable savings accounts to the poor of the developing world.

⁴ Collins (2005), Adams (1978), Townsend (1994)

⁵ Bouman (1995)

Most importantly, when given a compelling option, the poor take up formal saving products in great numbers and often at greater rates than they take up other financial services. In Indonesia, Bank Rakyat Indonesia (BRI) bank attracted 10 times as many low-income savings clients as borrowers when it revamped its savings product line, and similar ratios have been observed elsewhere among lower income clientele.⁶

Given that – against the odds – the poor can and do save, what benefits do they derive?

Many studies have looked at the experiences of poor savers and there is plenty of anecdotal evidence that savings accounts have resulted in greater asset accumulation, better risk mitigation, and other benefits for poor households. But, how well do these individual anecdotes generalize? And, are these individual experiences a good measure of the true potential of savings accounts as a development tool?

The challenge of establishing “impact”

Establishing the “impact” - or the average increase in household or individual welfare attributable to easier access to a savings account - is a difficult challenge for two primary reasons.

Establishing Causality: A first source of difficulty is the technical challenge of rigorously demonstrating causality by finding a valid control group.⁷ Generally, there are two primary ways to establish a control group. The researcher can search for so-called “natural experiments” where some change in policy or the economic environment has naturally created a group who were not given access to a savings account but who are reasonably similar to another group who were.⁸ The other approach is to be more purposeful and conduct a randomized control trial (or RCT) – sometimes referred to as the “gold standard” of evidence in empirical economics. In an RCT, researchers create two groups of individuals: a treatment and a control group, by randomly assigning individuals from the population into one or the other group. Because the groups were chosen at random, there should be no differences in the composition of the groups that could account for average differences in outcomes; thus any differences in outcomes we observe are attributable to having had access to a savings account.

Knowing where to look: The second and more fundamental source of difficulty in measuring impact of savings is that, as a multi-purpose tool, savings accounts will be used differently by different households in different situations (i.e. their impacts may be *heterogeneous* across households). As examples, some urban families might use bank accounts to save money for school fees, while farming households use the accounts to set aside money to buy fertilizer for the next planting season, and other households use the accounts to put away enough money to pay for treatment when malaria strikes. Each of these uses might confer a significant improvement on a given welfare indicator for the household in question, but

⁶ Johnston and Morduch (2007), Robinson (1992),

⁷ The trick in establishing a causal link between any particular intervention and a set of outcomes is to find a “control group” of individuals or households who are similar in every way to the group who experienced the intervention, except for the intervention itself. Once this control group has been established we can then plausibly attribute differences in the outcomes between the “treatment group” and “control group” as having resulted from the intervention itself.

⁸ With natural experiments, it is not always possible to assure that both groups are exactly the same. For instance, sometimes groups just on either side of an arbitrary cut off (a minimum age for participation for instance) are assumed to be similar enough for a valid comparison. The key is not that the control and treatment groups are exactly similar, but that either the differences are small enough to be negligible, or that they only differ in measurable ways where the effects of the differences between the groups can be controlled for.

each indicator – child schooling, farm productivity, health outcomes – may show very little movement on average because only a fraction of households chose to use the accounts in that way. A related source of difficulty is the fact that the benefits of having an account may take time to appear (e.g. over multiple school years or harvest cycles) depending on the purpose for which the funds are being saved. These factors make it difficult for researchers to know exactly which indicators are likely to be affected in a given savings study, which consequently increases the need to verify results with multiple long-term studies.

What impacts do we expect?

Given the difficulties inherent in measuring impact it is important to generate hypotheses as to what impacts we might expect from formal savings accounts. Understanding the financial needs of poor households and the ways in which savings accounts stack up against their existing tools informs our expectations of how savings accounts will achieve impact.

Financial needs of poor households

In Collins et al (2009) and Rutherford (1999), the authors lay out three types of situations in which poor households frequently find themselves that generate a need to use financial tools, each characterized by the desire to expend more than their recent income would allow.

Generating useful lump sums of cash: The poor often need to generate lump sums of cash for productive investments in microenterprises or in farming inputs like fertilizer; human capital investments like preventative health care, job searches, or school fees; and for major life events like a pregnancy or wedding.⁹ The poor are often constrained in their ability to generate lump sums, hence if savings accounts could meet this need we should expect to see better outcomes in terms of investments and schooling, and planning for life events such as weddings or pregnancies, which require major outlays.

Weathering bad times: A second situation, in which the poor find themselves all too frequently, is the need to weather an unexpected adverse event like a health emergency, crop failure, or loss of a job.¹⁰ Research indicates that what holds the poor back, as much as not having many options for climbing out of poverty, is that unexpected negative events knock them back into poverty by forcing them to liquidate what assets they have or borrow at expensive rates.¹¹ Additional research has shown that exposure to risk can distort incentives to invest in more productive activities and lower income.¹² To the extent that savings accounts help the poor build and hold on to buffer stocks more effectively, they may slow the rate at which the poor are knocked back and thereby help to move them out of poverty through being able to take risks and invest in themselves.¹³

⁹ Rutherford (1999);

¹⁰ Collins et al (2009); Microfinance Opportunities, Kenya and Malawi Financial Diaries project (forthcoming);

¹¹ Krishna (2003); Dercon (1994), Banerjee and Duflo (2007)

¹² Morduch (1995) finds that households make choices that may lower their income but also their risk, including investing less in fertilizer and other inputs. Rosenzweig and Wolpin (1989) finds farmers may sell bullocks and other productive assets when their harvests are poor.

¹³ Some research has also sought to document the ways in which exposure to risk distorts investment decisions, e.g. xxx().

Funding day-to-day expenses: A final financial need the poor often face – which does not usually receive as much attention as the need for lump sums or the need for emergency buffer stocks – is the need to store irregular income to fund basic day-to-day needs. This need is most acute for farmers and others who get few large lumps of income in the year. These households need to set aside money for the many months of no income and often for future investments (such as next year’s seed and fertilizer purchases) which are critical to household survival. This need is also important for daily laborers, market traders, piece workers, and many others whose income is intermittent and who must frequently bridge gaps in income which can last days or weeks. The ability to save between regular paychecks is also very valuable for those of the poor lucky enough to have regular wage or salary employment. Often, this need is met by cash savings at home, but the poor report many problems with cash savings and other informal saving options, including the risks of loss or theft and the pressure one faces to spend or loan out cash on-hand to needy family and friends. Savings accounts might meet this need more effectively than other options, but only if they are easily and cheaply accessible so that frequent trips to the bank are plausible.¹⁴

The three needs outlined above could be met by a variety of financial tools including formal and informal forms of credit and insurance. The question of what benefits would formal accounts convey if access to them were to expand is really better stated as what benefits would they convey, relative to the other (largely) informal options that the poor currently have?

Formal savings accounts vs. existing informal tools

Though the financial needs of poor households can be understood in fairly simple terms, it is less easy to make generalizations about the relative merits of formal savings versus informal options in meeting those needs.

Given that most of the poor do most of their saving through informal options, there are clearly some advantages these options exhibit over formal options. The primary advantage appears to be that informal options are available, whereas for many of the poor in the developing world, accessing formal financial tools is not realistic given the great distances they might have to travel and the high costs they would be charged. There are other disadvantages even if formal accounts are available. Formal accounts with fixed interest rates may lose value in periods of high inflation (unlike investments in real assets like livestock), and are not immune from bank failures and fraud. Some researchers have even found that social pressure inherent in some informal financial savings groups may help the members meet their goals.¹⁵ That said, there appear to be a few *intrinsic* advantages of formal options, if they can be made convenient and affordable (as some institutions have been able to do) including:

Privacy – Collins et al (2009) and other researchers have identified privacy as a desirable quality for a financial tool.¹⁶ Privacy helps to keep down the pressure to spend or lend out saved money from family

¹⁴ Recent advances in cell phone banking, such as the M-PESA product in Kenya, have demonstrated the power of these new approaches in expanding geographic outreach by removing the need for fixed infrastructure through the use of retail agents to complete transactions. See Mas and Radcliffe (2010) and Eijkman, Kendall, and Mas (2010) for more on these innovations.

¹⁵ Gugerty (2005)

¹⁶ Some of the work done studying women’s motivation for staying in ROSCAs has revealed that keeping money out of reach of relatives and husbands – e.g. Anderson and Baland (2002) – are key benefits. Fafchamps and Lund (2001) found that informal insurance arrangements operate through social networks and that individuals with extra cash to spare are often asked to give or “lend” it to others who are in a bind.

and friends and could reduce the threat of robbery and improve bargaining positions.¹⁷ Most informal savings options involve counterparties in the local neighborhood or social network and thus lack the ability to keep balance and transactional information private from all.¹⁸

Risk – Others who have studied informal financial options find that informal savings can be quite risky and often incur losses. While formal accounts are not immune from risk, formal accounts in well-regulated and supervised financial institutions are reasonably secure relative to many informal savings options.¹⁹

Reliability - Informal options are often unreliable in that they may break down when needed most – i.e. when the local economy experiences a downturn that may simultaneously affect savers and their counterparties in informal arrangements.²⁰ Additionally, they may not be easy to arrange and the initial terms agreed upon with counterparties may be unilaterally changed (e.g. by refusing to give back the money when asked). Most formal savings accounts, by contrast, are always available and the terms transparent and predictable.

Cost - Given fees that many banks charge and the minimum balances and other non-price barriers they impose on their customers, it may appear that informal savings options have the advantage in terms of lower costs. However, it seems clear that many banks do not target lower income segments and thus do not invest in processes and infrastructure that would facilitate no-frills low cost banking. The few who do (e.g. Equity Bank in Kenya, BRI in Indonesia, etc.) are often able to lower costs dramatically relative to other banks in the same market. Informal options, on the other hand, do frequently have high costs and don't seem to admit much scope for efficiency improvements. "Susus", or informal deposit takers often charge a few percent per month and the costs to individuals of attending regular 1-2 hour informal savings club meetings or of searching for a reliable loan counterparty or valuable investment for their savings can also be significant.²¹ Storing cash at home is an exception, in that it is free of fees and requires no effort to arrange, though the fact that many people who have this option choose to pay the costs of susu's and savings clubs is indicative of the disadvantages of this form of savings.²² Thus, while it is not clear that formal options will always be lower cost than informal ones, formal financial institutions may have an advantage in delivering certain service traits at low cost. Understanding which product features should be emphasized by formal institutions to meet the poor's needs and capitalize on their comparative advantage is an important topic for research.

¹⁷ This feature may be especially important for women, as discussed below.

¹⁸ Even storing cash at home seems to not afford much privacy, at least from other members of the household. Anderson and Baland (2002) show that some women seem to prefer savings clubs to saving at home because they keep the money away from their husbands.

¹⁹ Wright and Mutesasira (1999) found with a questionnaire that villagers in Ghana reported high losses on some informal saving options and lending to family and friends as a way of saving. Aryeetey and Gockel (1991) find that many people who save with informal deposit collectors have lost money due to malfeasance on the part of the collectors.

²⁰ Townsend (1994) and subsequent studies found – in a variety of contexts – that risk sharing in villages was imperfect meaning that individuals were not able to insure each other against shock.

²¹ Aryeetey and Gockel (1991). It's also true however that cost – both fees and less obvious costs borne by clients – is often a primary barrier keeping poor households from accessing banking services.

²² Aryeetey and Gockel (1991) find that many of the women they survey shift savings from their home to "susu" collectors where they will pay ~3% per month to save. Anderson and Baland (2002) and Gugerty (2005) implicitly investigate advantages of savings clubs over saving at home. They find that clubs reduce pressure from husbands to spend the money on alternate purchases and increased self-discipline respectively as advantages (conversely, highlighting the disadvantages of saving at home).

One can imagine other benefits, including that formal savings accounts may allow the poor to save more for longer than they normally would in informal arrangements and may also help avoid temptation to spend cash that is at home or otherwise close at hand (though, again, savings clubs have been found to exhibit this trait as well).

The evidence to date

Various studies have attempted to establish the impact that savings accounts have had on poor households ranging from rigorous field trials to anecdotal client interviews. This paper sets a fairly high bar and reviews only those studies which use the RCT methodology or where viable natural experiments were used to establish treatment and control groups.²³ While other approaches can produce valuable data and help inform our hypotheses, the question of impact needs to be addressed with very rigorous evidence, due to the inherent difficulties in establishing causality alluded to above.

Randomized Control Trial (RCT) studies

To date, only two RCT studies has attempted to investigate directly the welfare impact of improved access to a savings account for poor people in a developing country, though a few other studies do produce results relevant to the question of impact.

Dupas and Robinson (2010) conducted a randomized field experiment in western Kenya in which they offered a random sample of poor daily income earners (primarily micro-entrepreneurs who sold goods in the market or operated bicycle taxis) the chance to open an interest-free savings accounts in a local village bank without depositing the required minimum balance of approximately \$10. By significantly lowering the barrier to acquire a savings account for some in the sample and not for others, the authors were able to test the impact of having savings accounts on those in the treatment group.

The accounts paid no interest and charged withdrawal fees of close to \$0.40 and so offered a *de facto* negative interest rate, but the accounts were the only formal savings option available in the area. Accordingly, the authors found a wide variation in uptake and the intensity of account usage. Though fully 92% took up the offer, 39% made no deposit in 6 months. That said, 43% of those with accounts used them more than twice and some used them intensively. This rate of take up and active use seems high, especially given the high withdrawal fees. This high level of take up and use is in itself evidence that many individuals believed the accounts were useful and was higher than take up in recent experiments where credit products were offered to poor clients.²⁴

Those offered the accounts accumulated savings of \$37 on average, including those with zero balances, and those who made one deposit or more accumulated \$71 on average. Most of the intensive account users were women: while just over 10% of the men deposited more than \$25 in six months, nearly 25% of the women did and 10% of the women deposited more than \$160 (average income in the week

²³ While certain “instrumental variables” or panel time-series techniques might also be used to establish causality under the right circumstances, no studies using these techniques were found. See Woolridge (2001) for more on these topics.

²⁴ In contrast, the study of the impact of credit in the Hyderabad slums that is discussed in Box 2 below shows an increase in take up rate of only 8% (to 27%) from a base of 19% borrowing from MFI’s in the control group (both treatment and control were selected as areas with low microfinance penetration). This comparison is not an exact parallel, however, in that the offers were not made in the same way (savings offer was direct, the Hyderabad credit product was marketed more traditionally through outreach from their branches.)

before the survey took place was approximately \$1.30 per day, thus even \$25 is a relatively large sum). For women as well, there was no evidence that the bank based savings crowded out informal saving through savings clubs or via investments in livestock which means the bank based savings were a net increase. This was not true for the men, who tended to save less through clubs and livestock and thus did not measurably increase total savings (this indicates the men were probably not as constrained with their existing options as the women.) The authors analyze the data using statistical regression techniques and find that, though women and men differ widely in their usage behavior, gender is not as good a predictor of high levels of deposits as was being involved in savings group (mostly women join the groups) or having more livestock (i.e. wealth.)

Perhaps unsurprising, given the usage patterns, the effects of account access were evident for women, but not for men. Four to six months after opening an account, women in the treatment group were investing 45% (up to \$5.00, from \$3.40 in the baseline) more per day in their businesses (mostly in inventory), had higher daily expenditures including 10-20% higher daily food expenditures and 27%-40% higher personal expenditures than women who were not offered accounts.

It's not clear how the savings accounts lead to increased investments though the authors believe that the accounts may have helped the holders save by reducing the pressure from friends and neighbors to spend savings before they saved up enough to invest in their businesses.²⁵

The authors further report that the women in the control group (who didn't receive accounts) were more often forced to draw down working capital or even stop working in response to health shocks (like malaria, the most prevalent health problem in the study population). This indicates that ownership of a savings account helped the women build up a cash cushion, which allowed them to purchase treatment promptly when struck by malaria without taking money out of their businesses (or disinvesting).

This study has the limitation that the study sample is comprised of only 279 households, all of whom were micro-entrepreneurs in the same town using the same bank branch in Western Kenya.²⁶ It could be argued that the results occurring here may not occur in other settings or when savings accounts are given to other livelihood segments. On the other hand, the authors collect data from the women on a weekly basis, increasing the level of detail and likely the accuracy of the data.

Another study, **Duflo, Kremer, and Robinson (2009)**, uses RCT methodology to test the potential of better savings options to help small-scale farmers in Kenya conserve cash from harvest time when they are typically cash flush, to planting time when they are often scraping to get by. In the study, a randomly selected group of farmers are given the option to use proceeds from their harvests to buy vouchers for fertilizer - delivered for free during the next planting season. These vouchers are essentially a savings' instrument since they represent a safe store of value from harvest season to planting season.²⁷ Fertilizer

²⁵ The authors find that women who revealed themselves to be "present biased" or impatient in the survey questions were less likely to use the accounts and also find that the deposits made were large and infrequent, indicating that the women saved up money at home for short periods before dumping larger amounts into the accounts. Both of these facts cast down on the notion that the savings accounts helped women who were too impulsive control their urge to spend by keeping the money out of sight, and would seem to imply that they helped the women hold on to the money over longer periods.

²⁶ Often field experiments include samples of thousands and will attempt to achieve equal representation demographic and livelihood segments and even regional balance, where possible.

²⁷ The vouchers are in many ways similar to an equity investment as they entitle the owner to a given quantity of fertilizer whose future value is unpredictable. The authors argue they were also a commitment device in that they not only

usage-rates were 11 percentage points higher due to the vouchers (from a base of 25% of farmers in the comparison group using fertilizer) in year one of the study and 16.5 percentage points higher (from a base of 30% in the comparison group) in year two, indicating the vouchers were successful in helping more farmers invest. In previous work the authors had demonstrated that average returns to investments in fertilizer in Western Kenya were 70% per annum (though they found only 29% of households used fertilizer, a puzzle that prompted the voucher study to understand the low usage rate). Though the authors don't measure actual farm output in the voucher study, if the returns to fertilizer use were as high as those measured in their previous study, the farmers' welfare would likely have been significantly improved.

In a conceptually related study involving actual savings accounts, **Brune, Gine, Goldberg, and Yang (2010)** gave farmers in Malawi either ordinary savings accounts, commitment savings accounts that allowed them to specify a date when their deposited funds would be available, or neither type of account (for the control group). The farmers in the study were drawn from farmer groups formed to sell their crops collectively. For the farmers with accounts, the researchers allow them to specify how much of their proceeds the farmer group representative would deposit into the accounts and for the commitment accounts, also specify the date funds would become available which most farmers set to a time just before planting season. Given how the farmers used the accounts, this study has some conceptual similarities to the fertilizer study in that it allowed them to put away funds from harvest to planting season, but with the accounts they could spend it on any farm input, or on other expenditures.

Farmers who were given ordinary accounts deposited \$150 on average and those given commitment accounts deposited \$243 (only an average of \$36 was deposited in the control group where a few farmers did have accounts they had opened on their own). For both groups, almost all the money was withdrawn at or before the next planting season and appear to have been used for farm inputs which for the farmers with commitment accounts were 64% higher than control group farmers. Inputs were higher for the ordinary account holders too, but the effects were not statistically significant. (Interestingly, for both treatment groups the average amounts deposited are almost exactly equal to the increased investment). Farm revenues were higher by 54% in the commitment group and higher but not statistically significant in the ordinary savings group. Finally, daily expenditure after harvest was higher by 31% and food expenditure by 25% in the commitment group and again higher but not statistically significant in the ordinary savings group.

One open question is what role the direct deposit feature of the experiment played in helping the farmers save more. Also, the researchers believe one of the main benefits of the commitment accounts was that they helped farmers refuse demands for cash from family and others in the community. Interestingly, the commitment accounts seem to have worked to produce more deposits, rather than fewer withdrawals, indicating the accounts may have made farmers more willing to deposit, foreseeing the ability to ward off demands later. The researchers are still investigating whether the data supports this theory.

In a pair of RCT studies conducted in the Philippines, **Ashraf, Karlan and Yin (2006, 2010)**, offered existing clients of a savings bank commitment savings accounts, which allow savers to put away funds that they could not withdraw until a pre-specified date or until a pre-specified amount of deposits was

committed the farmers to save, but to purchase fertilizer rather than something else. They show evidence that there was little resale of the fertilizer to convert it to cash to purchase other things.

reached.²⁸ In the first study, the commitment savings product was only taken up by 13% of those who were given the option, but still led to a significant increase in formal savings of 80% among those offered the account and no evidence indicated that this increase came through reductions in savings held elsewhere (though, as before, their data does not *rule out* small reductions in other forms of savings).²⁹ In a follow-on study, using data from the same treatment and control groups plus incorporating an additional survey questionnaire administered a year after the treatment, the authors also found that the commitment product positively affected women's decision-making power within the household (measured by an index of decision-making authority over purchases, family planning and children's education), self-perceptions of savings behavior (women reported being more financially disciplined), and led to an increase in the household's purchase of durable goods traditionally associated with female use (such as sewing machines, kitchen appliances, etc.) relative to other purchases. The impacts were particularly strong for women whose survey responses placed them as having below median decision-making power within their household before being offered the account. Due to the fact that members of the control group were clients of the bank and had regular savings accounts, the effects measured are not the impact of formal savings more generally, but must instead be attributable to the commitment feature of the account or perhaps to the simple fact that having a second account facilitates the mental accounting necessary to meet savings goals.

Natural Experiments

Though the evidence from studies using the RCT methodology is limited at the moment, there are studies that generate evidence using other methods. So-called "natural experiments" occur when unexpected changes in the economic environment create natural treatment and control groups.³⁰ While natural experiments have limits, they are often the only source of evidence for the impacts of savings at the community, regional, or macro levels and often have the advantage of assessing impact of a program that is fully deployed and not just in the pilot phase. A final advantage of natural experiments is that they are often the only way to see the effects of a fully scaled program on the entire economy. For instance in the Kenya savings study it is not possible in principle to tell whether the increase in income that was observed came at the expense of others - i.e. because the treatment woman invested money in her business that she would have lent to help somebody else had she been saving at home (the is given as an example, the authors don't believe this is the case).

Aportela (1999) evaluated the impact of Patronato del Ahorro Nacional (PAHNAL), a government savings program in Mexico.³¹ In 1993, PAHNAL expanded its savings operations through the postal office network. By leveraging the postal offices, PAHNAL was able to open service points nearer to many

²⁸ The clients also had the option to purchase a "lock box", similar to a piggybank, which had a small opening in the top in which to deposit money in between trips to the bank (and to which, only the bank had the key). 83% of the clients opted to buy the box. Clients could also mark down what they are saving for: 48% report saving for Christmas, a birthday, or other celebration, 21% report saving for school fees or educational expenses, 20% were saving for some kind of business activity, the rest had other goals.

²⁹ This result comes from Ashraf, Karlan and Yin (2004) "Tying Odysseus to the Mast".

³⁰ The criteria being that the members of each group could not have selected themselves into one group or the other, or that no characteristic of the members could have moved them into either group that would also have affected the outcome in question. Changes in government policy or regulation often affect different groups in arbitrary ways and are thus good candidates for creating natural experiments.

³¹ Patronato del Ahorro Nacional turned into Bansefi in 2001, following the savings and credit law reconfiguration. Bansefi adopted several of PAHNAL's core savings products, including its basic no-fee savings account (CuentAhorro) and its term savings (TandAhorro).

people who would have otherwise been unprofitable to serve without the fixed cost of opening branches. The increase on formal-sector savings was noticeable: the average savings rate (savings/expenditure) augmented by 3 to 5 percentage points in the areas where new branches were opened. For low-income individuals it was even higher: an increase of 5.7 to 8 percentage points, presumably because they had been the least well-served before the expansion. Unfortunately data on the value of informal savings are, by nature, limited and in the end the author finds no evidence to indicate the increased savings came at the expense of savings held elsewhere, but neither can he rule out this possibility. Whether the increase in formal savings represents a net increase or a shift from informal to formal savings, it could very well represent a positive impact in either case if formal accounts have advantages over informal savings. Unfortunately, the authors don't have data that would allow them to verify whether the increase in formal savings balances led to any positive impacts on household welfare such as income, investment, or consumption.

Two other studies capitalize on "natural experiments" involving large scale opening of new bank branches to measure the effects of improved access to finance, including both savings and credit, as both were made available through the branches in these studies.

Burgess and Pande (2005) evaluated the impact of improved access to savings and credit on the rural poor, using as a natural experiment the introduction and eventual repeal of an Indian banking law requiring Indian banks to build four branches in rural areas for every one they built in urban areas. The program is found to increase formal sector credit and savings through rural commercial bank branches, decrease poverty, and increase non-farm output. The authors credit the program with a 15 percentage point drop in India's rural poverty ratio between 1967 and 2000 (roughly half of the 30% fall in this ratio over that period). While study does suggest that the rural branching program had a positive effect on rural development, the high default rate on rural loans during this period and large subsidies on rural interest rates indicate that this program acted as a substantial transfer of resources from urban to rural areas as well as bringing greater financial access through more bank branches. Thus, the authors can't distinguish which of the impacts they measure come from the implicit resource transfer or from improved access to credit and/or savings services.

Bruhn and Love (2009) conducted a study of a retail chain which simultaneously opened Banco Azteca branches in all 815 stores across Mexico in 2002. The authors find evidence that the advent of the branches increased employment, income, and new business openings in the surrounding municipality. Unfortunately, there is no way determine whether the observed impacts were attributable to improved savings options or whether they should be attributed to improved access to credit products that may have resulted as Banco Azteca took over the management of the retail chain's installment lending arm and expanded its product line and operations.

A final natural experiment comes from Kenya where the authors use panel data to assess the impact of M-PESA, a mobile phone based money transfer and e-wallet product.

Suri and Jack (2010 a, b) use panel survey data to show Kenyan households who have access to M-PESA are better able to maintain the level of consumption expenditures, and in particular food consumption, in the face of large negative income shocks, such as job loss, livestock death, harvest or business failure, or poor health. They also show that this effect falls off as users get further from the M-PESA retail agent, which could mean that one needs both an M-PESA account, and a nearby place to deposit and withdraw for the service to be most useful. Using regression techniques, the researchers have been careful to try and rule out alternative explanations (like the higher income) which are correlated with M-PESA. The

researchers are currently investigating the precise mechanisms that underlie this ability to spread risk. Though M-PESA is primarily used as a money transfer service, it also has an e-wallet and 90% of users report also using it as a savings device. Thus, it's not clear whether the saving functionality inherent in the e-wallet account or the ability to transfer money quickly to and from family and friends is what enhances the ability to handle shocks. If they hold up to further scrutiny, these results are significant given that by the end of 2009, M-PESA reached over 70% of households in Kenya and over 50% of the poor, unbanked, and rural populations.

With all the natural experiments cited above, it is not easy to verify that there was not some other change in the environment which occurred simultaneous to the advent of the branches that caused the observed effects. Despite this fundamental limitation, natural experiments are some of the only estimates of impacts on aggregate economic indicators and are thus very valuable.

Box: Studies on the impact of banking U.S. populations

There are a few studies that measure the causal impact of being banked on U.S. populations. While the context in the United States may not compare to a developing country, it is still worth considering this evidence. Two studies in this vein are:

A paper by **Mills, Gale, Patterson, and Apostolov (2006)** documents the results of a randomized trial in Oklahoma that finds that Individual Development Accounts (or IDAs) help to close the gap slightly in home ownership rates between blacks and whites and increase business investments in the white populations. However, these are specialized accounts that match qualifying withdrawals at 2:1 or 1:1 for specific purposes like home purchases, education, and business investments. The accounts were given to a population that included a large number of previously banked individuals and so are not a real test of the impact of formal savings but more a test of the impact of matching savings of poor households.

A more recent paper by **Chin, Karkoviata, and Wilcox (2010)** tests the impact of providing ID cards to recent undocumented Mexican immigrants for the purposes of opening a bank account (the authors believe there are no other benefits to owning the cards). The migrants in the treatment group were 38 percentage points more likely to open a U.S. bank account; increased their savings as a share of income by 9 percentage points; and decreased their remittances to Mexico as a share of income by 6 percentage points (from 46% in the baseline survey). Among migrants who report having no control over what happened to the money they sent home (as opposed to shared or sole control), the cards caused a higher take-up of U.S. bank accounts, a larger increase in savings, a shift away from Mexico savings toward U.S. savings, and an increase in income (14% for those with no control, no impact for those with shared or sole control). The author's favored interpretation of the results is that providing the cards lowered a key barrier to accessing formal financial services - that of applying for and obtaining an ID - thereby increasing rates of account ownership which caused the other effects though it's also possible to imagine the cards had an impact on these variables through other causal channels.

Many migrants in the treatment group were approached by bank representatives that positioned themselves at the consulate to talk to new card recipients about the benefits of saving and opening an account. This illustrates another channel for how the cards worked to expand the market by giving financial institutions greater incentive to bring poorer clients into the financial system through outreach and education.

Toward a better understanding of savings as a development tool

As the above review of the literature shows, there are only a small number of studies in the area of savings impact. Nevertheless, a few of the results from above seem to hold in more than one study and as such begin to shade in a more complete picture of how formal savings accounts benefit poor households. In comparing results, we would like to understand the mechanism by which households and

individuals were “savings constrained” (i.e. how their current options fail them) and how formal accounts overcame these constraints to achieve the measured impacts.³²

Who benefits most from savings accounts?

Women may benefit more than men. It is interesting to note that in two of the three RCT based studies above, women seem to have benefited the most, apparently because the accounts helped them gain greater control over their money, from their own temptation to spend it and/or from requests for money from others. In the Kenya savings study, savings accounts also appear to have increased women’s ability to handle health emergencies, and in the Philippines study, savings increased the women’s economic empowerment. It should be noted that the Philippines study did not seek to measure health outcomes and the Kenyan savings study did not administer the same assessment of individual economic empowerment, making it possible that both these impacts manifested in both situations but were not detected by the researchers. In the third study of the fertilizer vouchers, the scope of the intervention is by nature very targeted toward (typically male- dominated) farming activity so we would not expect any benefit for women, and since the researchers were not measuring health or other welfare outcomes, these would not have been detected either.

Livelihood segments? Households with different income generating activities have very different income streams (e.g. farmers get all their income in one or two big lumps per year, market traders have a highly variable income stream that may peak during market days, etc.) as well as different saving and investment needs. This implies they may also benefit differentially from improved access to a formal account. In the Kenya and Malawi studies, farmers appeared to benefit from being offered the vouchers and commitment accounts at harvest time which facilitated their need to save for the next planting season. The market traders in the Kenyan savings study appear to benefit from savings accounts but neither of these studies featured other livelihood groups to compare to. Understanding which livelihood groups derive the most benefit from savings accounts and through which channels is a priority for future research.

What account features are most important?

Does illiquidity help? The ability to shield money from pressure to spend or to give to family or friends may have come from the illiquidity of the accounts in question. In the Philippines study, the control group of women had access to regular deposit savings accounts, so it’s clear that the commitment feature of the account was the key factor in helping to save more and may have given the women an “easy out” when others asked them for money. In contrast to the Philippines study, the accounts in the Kenyan savings study were not formally designed as commitment savings accounts but they did feature large withdrawal fees (nearly \$0.50 per withdrawal), a form of illiquidity that might have acted similarly to the commitment features in the Philippines example.³³ In the Kenyan fertilizer voucher study, the authors conclude that the fertilizer vouchers help farmers invest more in fertilizer both by giving them a commitment device³⁴ to lock away the money and by the “nudge effect” of being given a time limited

³² We would also like to know how these effects play out in other contexts, though such speculation is mostly beyond the scope of this paper. Extrapolation from the results of these studies is probably most fruitful when considering a specific context where one would like to guess the effects of a particular savings intervention or product.

³³ It’s still very much an open question whether withdrawal fees have this effect and even if they did, this would not imply that clients are better off with higher withdrawal fees.

³⁴ The commitment feature comes from the fact that the vouchers could not be resold for full price.

offer of a discounted delivery fee at harvest time when they are flush with cash (something most banks do not do for account holders).³⁵ Very similar dynamics may have been at work with the Malawi farmer savings RCT.

Box: Impact of micro-credit

While the main focus of this review is to assess the evidence on the potential for savings accounts to improve the welfare of poor households in developing countries, there have also been significant debates over the potential impact of microcredit on the same populations. Credit and savings are often close alternatives and it bears keeping in mind the evidence on the impact of credit.

Banarjee, Duflo, Glennerster, and Kinnan (2009) use the RCT methodology to test the impact of microcredit on 6,000 poor households in Hyderabad, India.

The researchers randomly assigned 104 poor neighborhoods in Hyderabad into a treatment group in which a microcredit organization opened a branch, and a control group in which no branch was opened. Fifteen to eighteen months after lending began in treated areas, there was no effect of access to microcredit on average monthly expenditure per capita, but expenditure on durable goods increased in treated areas and the number of new businesses increased by one third. Additionally, households in treatment areas saw an 11% decrease in expenditure on “temptation goods,” such as alcohol, tobacco, and gambling, which may have been sacrifices made to start the businesses. The study found no impact of microcredit on health, education, or women’s decision-making, suggesting that access to microloans (at 24% APR) do not generate improvements in household welfare within 18 months. The authors caution that the results say nothing about the long-term effects of microcredit. They posit, for example, that households who are currently cutting back consumption to invest in businesses may eventually become wealthier, resulting in long-term impacts on health, education, and women’s empowerment.

Karlan and Zinman (2009) This RCT tested the impact of microcredit on 1,600 micro-loan applicants in Manila who were offered microloans from an MFI at 60% per annum, and on a control group which was not.

After 14 months, members of the treatment group exhibited 83% higher levels of borrowing than members of the control group, enabling the researchers to test the impact of microcredit on businesses and households. After 14 months, businesses in the treatment group had higher profits than those in the control group, though there was an 8% reduction in the number of businesses, suggesting that borrowers used the loans to consolidate their business activities into fewer, more profitable ventures. The study found no impact of microcredit on health, education, or women’s decision-making, suggesting that access to microloans (at 60% interest per annum) does not generate effects on household welfare within 14 months.

Taken together, the Banarjee and Duflo (2009) and Karlan and Zinman (2009) studies cast doubt on the notion that expanding access to microcredit generates welfare improvements in the general population (i.e. both business and non-business owners) within 18 months. However, it’s important to keep in mind that microcredit may lead to welfare effects in the longer-run if, after repaying their loans with interest, households re-direct any remaining profits into health, education, and other household expenditures.

Other important features. Going back to the Kenyan savings study provides some indication of the advantages formal accounts may have over informal options. The authors find that ROSCA members (an informal village savings club where participants make regular small deposits until it is their turn to withdraw) were 26% more likely to adopt the accounts and deposited more. This would seem to indicate

³⁵ Other studies have shown text message reminders to save sent by financial institutions to increase deposits. See Karlan, McConnell, Mullainathan, Zinman (2010), “Getting to top of mind: How reminders increase saving” for a summary of three of them.

that the accounts were perceived as having value over and above (or complementary to) ROSCA membership. ROSCAs already provide a way to shield cash from temptation and from family members as well as provide a disciplining device through regular required deposits and scheduled payouts, so it seems unlikely that the bank accounts' only value was as commitment devices (the authors find that impatient people, who might value commitment features the most, do not use the accounts more than others.) Instead, the accounts' value may have derived from perceptions that accounts are more private than the clubs, can store larger balances, and are accessible any time whereas ROSCAs tend to be for a fixed amount and duration.³⁶ Understanding which aspects of formal accounts are responsible for the value they deliver to clients, relative to their existing options and which set of delivery mechanisms and product features maximize this value, are key areas for future research.

How did the clients' usage of the savings accounts lead to impact?

Each of the studies sheds some light on how the savings accounts were used to meet the basic financial needs of households that were outlined above and how this in turn led to impact.

Generating useful lump sums of cash: The Philippines study, the Kenyan fertilizer voucher study, as well as the Malawi farmer savings study show how improved savings options can be an effective tool for successfully making investments and major purchases, but also show that commitment features may be useful to improve the outcome by reducing the pressure to spend the money on other things. Though the quantitative data doesn't show it very clearly, the authors of the Kenyan savings study also believe that, based on interviews and focus groups with some of the savings account holders, enhanced ability to save lump sums, which were then invested in the business, was a primary channel of action in that case as well.

Weathering bad times: The Kenyan savings experiment data does show that cheaper access to a basic deposit account seems to have helped women entrepreneurs in the study avoid drawing down their working capital to pay for treatment and avoid time away from work when they or family members were struck by malaria or other health emergencies.

Saving for day-to-day expenses: The studies surveyed here have little to say regarding whether the accounts were used to fund day-to-day expenses, as most of the savings options studied would have been well suited to serve this need. Further studies in other contexts may shed light on this important channel.

³⁶ There is a large literature on ROSCAs which indicates they are predominantly used by women and that some of their main benefits include keeping money from spousal and family demands and improved self control though as a consequence of funds having been locked up until the individual's turn to withdraw comes around. Additionally, as the funds are kept with other local women, the amounts and timing of the payouts are likely known to others in the family and social network.

Box: Overcoming Malaria quickly without spending working capital

On the question of how the use of the saved funds leads to better outcomes, the authors in the Kenya savings study (Dupas and Robinson) report that the women in the control group who didn't receive accounts were more often forced to draw down working capital or stop working in response to health shocks (like malaria, the most prevalent health problem in the study population). The authors interpret this as evidence that ownership of a savings account helped women build up a cash cushion allowing them to purchase treatment promptly when struck by malaria without taking money out of their businesses. Even though this clearly was a phenomenon in the data, it's difficult to say conclusively whether avoiding health-related disruptions to their businesses could have been the main way in which the accounts helped the women increase their investment and consumption, or whether there were other channels of impact which were not picked up by the researcher's data set.

Other studies have estimated that expenditures for a malaria induced outpatient visit in Rwanda, Tanzania, and Malawi fell in the range of \$1-\$5, and that days of work lost can vary from 1-5 days per episode, with potentially more days working at lower productivity.³⁷ This represents a severe disruption, both in terms of direct costs (\$5 would represent more than one day's average investment in inventory for the study participants and a few days of consumption expenditure) and lost time while recovering and building working capital back to previous levels.³⁸ Bouts of malaria occurred approximately once per month in the sample, giving credence to the argument that this could have been a main channel of impact.

From focus group discussions with similar entrepreneurs to the ones in the study, the authors believe that the accounts facilitated more investment both by giving the account holders a buffer to avoid disinvesting when sick, but also by giving them a safe place to save up for lump sum purchases to add new capital to their businesses (without having to pay high interest rates on loans, the primary alternative option for generating lump sums.)

What are the impacts of bringing savings accounts nearer to households through more branches and other access points?

Many in the development community believe that the lack of branches and other access points in developing countries is one of the primary reasons banking services are out of the reach of many of the poor in developing countries. Both Aportela's study of the expansion of the PANHAL savings institute and Burgess and Pande's study of the Indian rural branching requirements give fairly firm evidence in support of this notion by showing how a major expansion of the outreach of the banking sector through post offices or requirements to expand into rural areas can significantly increase formal savings, and may even increase total savings. Bruhn and Love's study in Mexico and Burgess and Pande's studies both hint that improved access to formal savings accounts generate improvements in the local economy, though the improvements could also be explained as due to improved access to credit or to implicit resource transfers from the government. The evidence from the M-PESA study seems to indicate the risk-mitigating power of the M-PESA product seems to drop off if the retail location is not nearby. The evidence base generated by these four studies is very limited and the question of how widespread access to savings and other basic banking services will impact the economy at the community, regional, and macro levels is still very much an open question.

³⁷ Chima, Goodman, Mills (2002)

³⁸ It is unclear from the paper whether these levels of investment represent net growth of inventory (working) capital or retained earnings to replenish inventory. If it's the latter, one day's worth of investment - \$4 - might represent nearly the entire capital stock of the business if inventory is turned over every day. A health shock which caused this to be liquidated could disrupt the business severely while capital was rebuilt.

Open questions

As we go forward with follow-on research, it's important to go beyond simple black or white impact measurements and synthesize the evidence generated into a more comprehensive understanding of the mechanisms by which savings interventions work to improve the lives of the poor and affect the wider economy.

Though the natural experiments mentioned above shed some light on the impacts of expanding branches, a comprehensive assessment of the impacts on the broader economy of bringing more and poorer people into the financial system is not yet possible. In particular, banking large numbers of the rural poor and giving them cash in and out points near to where they live and work may impact inter-regional financial flows and affect the geographic distribution of economic activity in unpredictable ways. Progress on this front will be difficult and will likely require theoretical modeling and careful analysis of aggregate data.

Additionally, impacts measured through RCTs do not give a clear picture of what the impacts after a full scale product roll out. It is not necessarily appropriate to extrapolate from individual household impacts in a controlled experiment to impacts at household or aggregate level when the market is at equilibrium. For example, the authors in the Kenyan savings experiment believe much of the value the women derived from the accounts was from an increased ability to resist demands on their money from family and neighbors. This ability to shield their cash from social obligation to lend it out might erode as more members of the community got accounts and became wise to the situation. It will take a better understanding of the mechanisms at work, and careful analysis and extrapolation to come to grips with this question.

It will be important to measure impacts among different livelihood groups and other market segments (e.g. rural vs. urban, or poor vs. very poor), as this will expand our understanding of the mechanisms. Progress here will be made through testing different products and delivery channels in different contexts, thereby improving our understanding of the various ways in which savings meet the financial needs of poor households.

More impact studies will also help to understand what product features and delivery mechanisms maximize the benefit for the poor. For example: are commitment features necessary for women or farmers to get the most benefit from accounts as some of the above research might lead one to believe? How close do banking agents or other access points need to be to make saving a viable option? Do we multiply the power of savings accounts when they are offered in conjunction with other financial services, such as credit and insurance?³⁹ How do we best combine savings accounts with health, education, and other development interventions to multiply the power of each?

A final challenge with all impact studies, is assessing how the observed results will extrapolate to other contexts. While researchers purposefully vary only one variable in an experiment, many variables change between one context and the next and between one implementation and the next. Assessing

³⁹ Increasingly, the M-PESA product is being used as a platform for delivery of other savings, credit, and insurance products which rely on (i) its ability to transfer money between the provider and the client and (ii) the dense network of cash in/out retail points which make the system useful for poor clients who live in a cash economy.

the likely impacts of savings programs across different implementations, institutions, countries, etc. will get easier as more experimental evidence accumulates but will never be a science. Each case will require careful analysis of the local conditions and a good amount of guess work to assess.

Conclusions

In the literature cited above (a fairly comprehensive compilation of the available experimental work), there are precious few pieces of incontrovertible evidence documenting the development benefits of formal savings services for poor households. That said, many development interventions suffer a similar or worse evidence gap (e.g. microcredit, for which the available RCT evidence is mixed on the question of impact) and the fact that the few rigorous studies that exist show positive impacts on savings behavior and welfare bodes well for finding positive results in future work (see the appendix for a summary of ongoing experimental studies funded by the Bill & Melinda Gates Foundation).

It's also worth remembering that the small number of results generated by these highly rigorous research methods is complimented by a larger body of data and observations confirming the conclusion that a safe place to store one's money is quite a valuable thing for poor households. As an example, the poor are often willing to pay for savings services, a notion that surprises many from the rich world who are used to being remunerated with interest for their savings.⁴⁰ This willingness to pay implies that the clients in question saw positive value in savings services likely from greater security, and reduced pressure to spend the money before savings goals are reached.⁴¹ In the Kenyan savings RCT cited above, the withdrawal fees and the minimum balance requirement implied a negative interest rate, and yet generated take up and active use among 40% of the treatment group. In fact, a negative return on formal savings accounts for poor small balance savers is probably the norm when all fees and costs of access are factored in, even with those institutions which have a reputation for successfully reaching out to poor savers.

Savings implies painful reductions in consumption in the short run and the fact that great numbers of the poor save (and are even willing to pay for the opportunity to do so) is a profound statement given the tough choices they have to make in their day to day struggle to get by. Until we can develop a larger body of experimental evidence, this may be the best evidence we have that better savings services can improve the lives of the poor.

⁴⁰ Aryeetey and Gockel (1991) find that ROSCA groups are ubiquitous despite the fact that they often require a commitment of over an hour a week in time spent going to group meetings. In Ghana, one study found that 70 percent of the women surveyed used informal deposit collectors who charged 5 percent per month for their services, and paid deposit collection or money guard services are common in many other places as well.

⁴¹ This argument - that because they are willing to pay, the poor manifestly derive some benefit from savings accounts - is referred to as "revealed preference" by economists and relies on the notion that the poor are able to judge accurately what is and is not good for them. This type of reasoning has been labeled "the moronic revealed preference argument" by Ester Duflo in *New Yorker* (2010) when it was invoked to imply that micro credit has positive impacts for the poor in light of some evidence that people may choose to over-indebt themselves even when it is not in their long term best interest. Revealed preference seems more appropriate when used in reference to savings where the parallel concept to over-indebtedness (over-savings?) does not exist. Thus - lest there be any doubt - it is the *un*-moronic revealed preference argument (used commonly in the economics literature) which is invoked here.

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Appendix: Ongoing research funded by the Bill & Melinda Gates Foundation

In light of the lack of a substantive body of evidence and given the many open questions alluded to in this paper, it's clear that more research is needed to fully develop our understanding of the benefits of savings accounts. Currently the Financial Services for the Poor initiative (FSP) at the Bill & Melinda Gates Foundation is funding a number of studies, which will investigate the impact of savings accounts in a variety of contexts. Here is a sampling of some of the ones most likely to generate rigorous impact evidence.

An ongoing panel survey of 3000 households in Kenya, conducted by Billy Jack and Tavneet Suri, has already produced preliminary evidence indicating that when households gain access to M-PESA through the advent of an M-PESA agent opening near them, they are better able to handle shocks such as health emergencies or losses in income without reducing their consumption. This study is still underway, however.

FSP is also funding Jon Robinson and Pascaline Dupas, the authors of the original Kenyan savings RCT discussed above, to replicate their study in four sites in Uganda, Malawi, Chile, and the Philippines. The studies will feature much larger sample sizes (nearly 2000 in each of the replications) and extend the timeline from 6 months to 24. By conducting the studies in four countries and with larger samples that will incorporate a wider variety of livelihood segments, the replications will address the question of how effects of savings accounts vary in different contexts. The studies will resurvey the participants multiple times over the 24 months to better understand the short-run dynamics of the impacts and the long-term effects. These studies are launching currently and are expected to begin producing results in 2012.

Aside from the replication project, FSP is funding two more savings RCTs, undertaken through Opportunity International Bank of Malawi (OIBM). In one, researchers from the IRIS center at the University of Maryland will seek to assess the impact of being offered savings accounts more conveniently through a truck-based mobile branch. In another, researchers from the U. Michigan and the World Bank will encourage farmers to deposit harvest funds into commitment saving accounts that allow them to lock up the funds until a pre-specified date, the idea being to help the farmers save from harvest time to planting time. Here, the hope is to test some of the hypotheses generated by the fertilizer voucher study referenced above but to investigate them via a savings product delivered through a commercially-viable bank rather than through a voucher system.⁴² Results from both of these studies are imminent, and the direct deposit study has shown preliminary evidence of positive impacts on savings rates and on farmer productivity. These results are not yet confirmed, but would be exciting new evidence as to the benefits of savings accounts.

Another set of three randomized control trials, conducted by Innovations for Poverty Action will study village savings groups in Africa to assess the welfare benefits of membership in these groups.

A study in Sri Lanka, funded through an FSP grant to the Consortium on Financial Services and Poverty (CFSP), will assess the impacts of allowing households to convert the value of their cell phone airtime minutes into a deposit in their bank account (transacting only over their mobile phone, and buying the minutes at their local airtime shop). This functionality mimics some of the products we are seeing in Kenya which use M-PESA to deposit to bank accounts, and gives the clients a way to deposit in their bank account without going to a distant bank branch.

A final study, funded through CFSP, and using Brazilian data, is taking a similar approach to the Banco Azteca and the Indian bank branching studies in using the roll-out of retail banking infrastructure as a natural experiment to measure the macro-economic impacts of greater geographic outreach of the banking sector (especially into poor areas). Of great interest, is the impact the proliferation of banking correspondents (or agents) have had on the level of financial access for communities and municipalities in Brazil which previously had no bank branch or other

⁴² We are also funding a limited data analysis which investigates the "natural experiment" created by the expansion of Brazilian bank branches and banking agents in the early 2000 to test their impact communities in Brazil (though this research is at a very early stage).

access point.⁴³ Given other research that show agents in Brazil are mainly used to pay utility bills, it seems unlikely that the welfare impacts of these agents will be significant.

⁴³ Another line of research FSP is funding through the Consortium on Financial Systems and Poverty seeks to develop theoretical models of how broad based availability of savings services could affect macroeconomic outcomes like poverty levels, income disparity, and growth.