Systematic review

Does poor people's access to formal banking services raise their incomes?

by Rohini Pande
Shawn Cole
Anitha Sivasankaran
Gautam Gustav Bastian
Katherine Durlacher

February 2012

UKaid from the Department for International Development
IFMR Research CENTRE FOR MICRO FINANCE
3ie
EPPI CENTRE
IOE LONDON
Leading education and social research
Institute of Education University of London

The authors are part of Harvard University and were supported by the Evidence for Policy and Practice Information and Co-ordinating Centre (EPPI-Centre).

The EPPI-Centre reference number for this report is 2003.

This report should be cited as: Pande R, Cole S, Sivasankaran A, Bastian G, Durlacher K (2012*) Does poor people's access to formal banking services raise their incomes?* EPPI-Centre, Social Science Research Unit, Institute of Education, University of London.

ISBN: 978-1-907345-26-5

Contents

Abstract

Background

Inability to access financial services prevents consumption smoothing and investments in health, education and income generating activities, thus limiting growth opportunities for the poor. So, providing access to financial services has significant potential to help lift the poor out of the cycle of poverty.

Formal banking services, by exploiting economies of scale and/or making judicious use of targeted subsidies, may be able to reduce or remove market imperfections and facilitate financial inclusion of the poor, ultimately leading to higher incomes. However, supply and demand constraints may limit the ability of formal banking services to achieve growth.

Methods

We conducted a systematic search of published and unpublished material relevant to the impact of access to formal banking services on income. The search was guided by a causal mechanism, outlining the causal channels of interest and inclusion/exclusion criteria, as the requirements of studies to be included in the review.

A coding tool, based on the EPPI-Reviewer platform, characterizing studies and collecting information on context, mechanisms and outcomes, was used to collect information from the included studies. The review utilizes the realist synthesis methodology for analysis and only includes high-quality studies presenting evidence on impact of access to formal banking services.

Results

Innovative design of new savings products that increase the supply of savings and increase demand for savings by helping people address behavioral challenges were found to increase income at least in the short run. Improving banking technology by using mobile phones to facilitate remittances, transfers and payments, and enable savings, was found to have the potential to increase income by allowing households to smooth consumption and accumulate assets.

State-led expansion of the banking sector in rural areas was found to increase the supply of banking services, which in turn was found to reduce rural poverty, increase rural wages and increase agricultural investment. Access to credit could increase household income by increasing consumption and/or smoothing consumption. Further, it could raise agricultural incomes by allowing farmers to purchase better and more optimal levels of inputs, leading to higher outputs and income. Moreover, an individual’s access to credit could also increase incomes of members in the individual’s social network.

Conclusions

The review finds that offering new savings products can increase income by allowing households to accumulate assets. Improving banking technology has the potential to increase income by allowing households to smooth consumption and accumulate savings. State-led expansion of the banking sector in rural areas can reduce rural poverty, increase rural wages, and increase agricultural investment. Access to credit is associated with higher agricultural incomes and increased and/or smoother consumption for rural farming populations.

In terms of research implications, the review produced no evidence on financial literacy programs combined with formal banking services and technologies like debit cards. In terms of policy, the review finds that innovations in savings products and improvements in banking technology may be particularly effective. The review also finds that farmer's credit constraints are an important bottleneck in expanding agricultural output, and interventions that ease these constraints may be effective in reducing rural poverty and increasing agricultural production.

Executive summary

Background

Inadequate access to financial services is widespread in developing countries, with access as low as 5 percent of the adult population in places like Nicaragua and Tanzania. Moreover, in many developing countries, the poor have access, if any, only to informal financial service, such as moneylenders. The inability to access financial services prevents consumption smoothing and makes the poor more vulnerable to their highly volatile incomes. Further, inadequate access also prevents investments in health, education and income generating activities, thus limiting growth opportunities for the poor. So, providing access to financial services has significant potential to help lift the poor out of the cycle of poverty. In practice, this has led to the widespread creation and establishment of programs and policies with the goal of increasing the poor's access to financial services.

Financial services may be expensive to provide to the poor who lack pledge-able collateral, and informal services often charge exorbitant interest rates on credit to cover the high screening and monitoring costs that are required to keep default low. Formal banking services, by exploiting economies of scale and/or making judicious use of targeted subsidies, may be able to reduce or remove market imperfections and facilitate financial inclusion of the poor, ultimately leading to higher incomes.

In theory, formal banking services can provide poor households with a mechanism to smooth income and consumption over time and make efficient investments in health, education, agriculture and businesses. This in turn will allow them to earn higher incomes. However, in practice, supply and demand constraints may limit the ability of formal banking services to achieve growth. For instance, sustainable models of formal banking services may not be able to provide credit at sufficiently low rates that the poor can profit from borrowing. Moreover, take-up of formal banking services may be low if informational and/or social constraints restrict demand.

Objectives

This review investigates whether access to formal banking services can increase the incomes of poor people in low and middle-income countries. The review focuses on understanding the impact of access to formal credit, savings and payment facilities on income, investment, asset accumulation, consumption, poverty and welfare. Despite the large number of programs and policies, credible high-quality impact assessments in this domain remain scarce. In light of this, compiling what is empirically known and theoretically accepted, and identifying research areas where there is no empirical or theoretical agreement can facilitate future academic research.

Methods

The search for relevant studies was conducted using electronic bibliographic databases, journals and working paper series, and websites of developing country national banks, relevant research organizations and NGOs. Experts in the field of banking and financial services for the poor were also contacted to provide information on ongoing research. The resulting list of studies was screened using specific criteria relevant for the review. Included studies met the following criteria: they were conducted since 1980 in countries classified as low or middle income at the time of data collection; they focused on low-income households; they analyzed the impact of services which originated from private or public institutions that provided formal credit and savings facilities; and they assessed the impact on labor income, business and agricultural income, business and agricultural investment, asset accumulation including savings balances, consumption, poverty or welfare. Interventions considered included the expansion of credit and savings services, the provision of technological innovations and the introduction and expansion of financial education and awareness. Microfinance studies were excluded because of an ongoing systematic review on the impact of access to microfinance.

Studies were excluded if they were not published in English, did not measure the microeconomic impact of access to formal banking services, were general discussion papers that did not present data on impacts, did not explicitly address the issue of formal banking services on relevant outcomes, or had poor identification strategies.

The inclusion/exclusion criteria were applied in two stages: first to the title and abstract of all studies resulting from the search, and secondly, to the full text of studies that passed the first phase. The studies making it through the second screening stage were coded independently by two researchers using the full coding tool.

The review utilizes the realist synthesis methodology, which is process-oriented, and analyzes outcomes with explicit focus on context and causal mechanisms to evaluate the underlying theory of change. The coding tool used for data extraction classifies information on study population, intervention, comparison condition, outcomes, process, context, and relevance of the findings. The tool particularly focuses on extracting information relating to the mechanisms of change – whether supply or demand were affected, whether the primary channel was through credit, savings or a payment facility, and what relevant intermediate and final outcomes were affected.

Details of the included studies

The twelve included studies consist of three randomized controlled trials, four quasi-experimental studies, and five observational/econometric studies which examined the impacts of having access to or using formal financial services or new financial technologies on various measures of income. These studies evaluated ten distinct programs or policies involving the introduction of new financial products, the introduction of new financial technologies, policies that expanded rural banking, or increased bank saturation in agricultural areas and villages. The studies were conducted in South and Southeast Asia, Central and South America and Africa, including the Philippines, Thailand, Vietnam, India, Nicaragua, Kenya, Ethiopia, and Tanzania. The outcome categories considered by the included studies were labor and household income, household and business assets, household consumption, small and micro-business investment, small and micro-business income and output, and measures of poverty. Most of the studies considered interventions that affected the supply of financial services, while only two considered interventions that affected the demand for financial services.

Synthesis results

- Innovative design of new savings products that increase the supply of savings and increase demand for savings by helping people address behavioral challenges were found to increase income at least in the short run.

- Improving banking technology by using mobile phones to facilitate remittances, transfers and payments and enable savings was found to have the potential to increase income by allowing households to smooth consumption and accumulate assets.
- State-led expansion of the banking sector in rural areas was found to increase the supply of banking services, which in turn was found to reduce rural poverty, increase rural wages and increase agricultural investment.
- Access to credit could increase household income by increasing consumption and/or smoothing consumption. Further, it could raise agricultural incomes by allowing farmers to purchase better and more optimal levels of inputs, leading to higher outputs and income. Moreover, an individual's access to credit could also increase incomes of members in the individual's social network.

Conclusions and recommendations

We find compelling evidence that poor people's access to formal banking services can raise their incomes. There are five main conclusions on outcomes and pathways of change through which access to formal banking services can achieve this. First, offering new savings products, especially ones that address challenges that households would like to surmount, increase the supply and the demand for savings, and thus increase income by allowing households to accumulate assets. Second, we find preliminary evidence that improving banking technology by using mobile phones to facilitate remittances, transfers and payments and to enable savings has the potential to increase income by allowing households to smooth consumption and accumulate savings. Third, the review finds that state-led expansion of the banking sector in rural areas can reduce rural poverty, increase rural wages and increase agricultural investment. However, the distributional effects of such policies may be lopsided away from the poorest, while still benefiting socially backward groups. Further, the success of such a policy may depend on the specific context. Fourth, we find some evidence that access to credit is associated with increased and/or smoother consumption for rural farming populations, and some suggestive evidence that indirect access through social networks could also matter. Finally, we find that across different countries, access to credit is associated with higher agricultural incomes by allowing farmers to invest in optimal agricultural inputs.

In terms of research implications, first, the review produced no evidence on financial literacy programs combined with formal banking services. While there is evidence on financial literacy programs combined with microfinance programs, these findings cannot be generalized to formal banking services, which may address a different category of the poor and have different take-up and impacts. Secondly, the evidence on technology is at a preliminary stage and was limited to mobile banking technology. There was no rigorous evidence on other technologies like debit cards. It is important to assess the effectiveness of these technologies since they are rapidly growing in popularity. Thirdly, the review presents suggestive evidence that access to banking can have spillovers through social networks. This is an interesting area for more research, since spillovers can change the cost-benefit analysis of interventions. Finally, the review finds that innovative savings products may be effective in increasing asset accumulation at least in the short run. Further research on which product features can be changed to produce long-term impacts as well would be beneficial.

The review provides some grounds for cautious optimism about the positive effects of policies that expand formal financial access. Especially promising are innovations in savings products and improvements in banking technology which are addressing the behavioral and physical impediments to access. Such programs may be particularly effective because they simultaneously increase supply by breaking traditional barriers and reducing the costs of expanding services for banks, as well as reducing the financial and psychological costs of consuming banking for the poor. Additionally, we find that farmer's credit constraints are an important bottleneck in expanding agricultural output, preventing them from using optimal levels of inputs. Interventions that ease these constraints may be effective in reducing rural poverty and increasing agricultural production. Finally, we find that spillovers are an important factor that must be considered when formulating policies about financial access. Even targeted programs can lead to benefits for a larger population, perhaps giving policy makers reasons to consider mandating interventions that might otherwise be considered too costly.

1. Background

We start by describing the aims of the review. Then we indicate the major definitions and functional roles, allowing us to outline a causal mechanism framework summarizing the links among the main concepts. Next, we turn to the underlying policy and research motivations. Finally, we summarize the objectives of the paper.

1.1. Aim and rationale of review

Can formal banking services raise the incomes of the poor? That is, if the poor are provided with access to formal savings, credit and payment facilities, will they use them, and will this then translate to higher incomes? A simple intertemporal substitution argument suggests that the answer to this question is 'yes.' Savings facilities allow individuals to use money earned today to finance activities tomorrow. Access to credit allows individuals to borrow against future earnings and invest in higher return activities today.

According to basic economic theory, this intertemporal substitution is indicative of the availability of high-return activities. Borrowing money at a high interest rate, for instance, suggests the availability of high-return economic activities today. Thus, a prima facie interpretation of significant levels of borrowing by the poor at high interest rates is that returns to economic activity are high. If correct, this logic suggests that greater access to and use of formal banking services by the poor will aid intertemporal substitution of resources and increase incomes.

However, if individuals are subject to behavioral biases, then levels of borrowing may reflect myopia rather than access to high-return activities. Impatient individuals may borrow money to finance higher levels of consumption today or purchase temptation goods rather than invest in projects that generate greater returns in the future or to pay for urgent needs such as health care or high indebtedness due to catastrophic events such as crop failure or drought. Alternatively, limited financial literacy may lead the poor to make mistakes in assessing the relative returns to borrowing and saving activities, and access to credit may exacerbate such mistakes. Moreover, the design of financial products may limit the relevance of formal banking services for the poor. Collateral requirements for loans and identification requirements for savings accounts may limit take-up of available products. Furthermore, even with high demand, the small amounts saved or borrowed may not allow sufficient margin for the providers to earn a profit offering such products.

This systematic review is focused on reviewing the evidence base on how formal banking systems increase the income of the poor. While there are examples of new financial products such as mobile banking services reaching a surprisingly large percentage of poor populations, and evidence of firms in developing countries obtaining high returns to capital, there has been little systematic analysis of the impact of access to formal financial services on poor individuals, or on their ability to use financial services to generate high returns. The paucity of rigorous evidence stands in contrast to the hundreds of programs, regulations and initiatives offered by governments and non-profit organizations around the world to increase access to formal banking services (Giné, 2007). Additionally, a number of developing countries include strengthening of the formal banking sector as one of their private-sector development goals; for an example, see Uganda's Poverty Eradication Action Plans and Poverty Reduction Strategy Papers (Uganda Ministry of Finance, 2000 and 2004). Moreover, the World Bank emphasizes that financial sector policies help improve access to finance, which is central to growth, poverty reduction and equal distribution of resources (World Bank, 2007). IMF researchers have argued that financial development is a key factor in reducing poverty and they provide evidence that financial access improves consumption levels (Claessens and Feijen, 2007). Finally, key financial policymakers argue that access to finance plays a major role in inclusive growth and development, and as result it should be made a top priority (Fernando, 2007).

Our aim is straightforward. It is to systematically assess and synthesize high-quality evidence on the effectiveness of interventions that improve poor peoples' access to formal banking services. We also seek to address how access to formal banking services affects income and to identify relevant topics for further investigation.

1.2. Definitional and conceptual issues

1.2.1. Definition of formal banking services

In defining banking, we take a functional approach, since formal banking typically offers three basic services: lending facilities, saving facilities and payment services. While lending and saving facilities are more common, we include payment services because of their importance in facilitating remittances, an important source of income for many households in developing countries.

Table 1.1: Segments of financial systems by degree of formality

1	2	3	4
Incl./excl. from this review	**Institutions**	**Definition**	**Tier**
Included	Commercial banks	Licensed by central bank	Formal banks
Included	Development banks		
Included	Rural banks		Specialized non-bank financial institutions (NBFIs)
Included	Post bank		
Included	Savings and loan companies		
Excluded	Deposit-taking microfinance banks		
Excluded	Credit unions	Legally registered, but not licensed as financial institutions by central bank	Semi-formal
Excluded	Microfinance NGOs		
Excluded	Savings collectors	Not legally registered at national level (though they may belong to a registered association)	Informal
Excluded	Savings and credit associations		
Excluded	Moneylenders		

Note: Columns 2-4 are sourced from Steel (2006), Table 1

For the purposes of this review, we use an inclusive definition of formal banking services and consider financial services that originate from private or public institutions that provide formal credit and savings facilities to customers. Table 1.1, which is adapted from Steel (2006), describes the institutions and services that are within the scope of this review. We consider banking services provided by commercial and development banks, as well as banking services from 'specialized non-bank financial institutions,' including rural banks (like the Rural Regional Banks in India), savings and loans institutions, and postal banks.

Formal banking institutions (including mobile banks) almost universally face stringent licensing regimes, with regulatory oversight of their operations. Microcredit or lending services, which originate from microfinance institutions, do not face as much regulatory oversight as formal banking. Microfinance institutions are typically non-government organizations that that use joint-liability lending and/or primarily disburse very small loans, using loan officers to visit clients and collect payments.[1] We exclude studies that examine microcredit as defined above from our review. Two recent systematic reviews however, thoroughly cover the microcredit literature. Duvendack *et al.* (2011) examine the literature on the impact of microcredit on the incomes of the poor, while Stewart *et al.* (2011) synthesize studies on the impact of microfinance on the poor in Sub-Saharan Africa. Additionally, Stewart *et al.* (2012) review the impact of giving economic resources (including microcredit) to women on family well-being.

1.2.2. Other definitions

We define our target group to include low-income households in low and middle-income countries. Studies examining countries classified as upper income are excluded. A list of countries included in the study is given in Appendix 2.1. We use both local and global definitions of poverty to define our target population, resulting in a more inclusive systematic review.

We use a comprehensive definition of income, motivated by the fact that credit and savings facilities may affect income in several ways, and that income in poor countries can take many different forms, including in-kind receipts. Our definition of income includes measures of labor income, business income including agricultural or microenterprise output, business and agricultural investment, asset accumulation, consumption and welfare measures.

1.2.3. The functional roles of a financial system

Formal banking services facilitate intertemporal capital substitution, thus giving individuals the ability to invest in high-return projects. In order to specify the mechanisms through which this happens, it is useful to adopt a functional approach, focusing on the services that a well-functioning financial system provides. In a review of the macroeconomic literature linking finance and growth, Levine (2005) defines the role of financial systems as being to:

1. produce information ex ante about possible investments and allocate capital;
2. monitor investments and exert corporate governance after providing finance;
3. facilitate the trading, diversification, and management of risk;
4. mobilize and pool savings;
5. ease the exchange of goods and services.

These categories provide a helpful framework to understand and measure the microeconomic impact of financial services on income. Levine (2005) reviews the evidence on the impact of financial systems on growth, and the strongest evidence presented in the review suggests that financial systems improve growth through the second and third channels described above. He concludes that financial systems can ease the financial constraints that firms face and thus positively impact on growth. Other empirical macroeconomic evidence supports these correlations.

[1] For the purposes of this review, we specifically excluded studies relating to institutions which self-define as microfinance institutions.

Many emphasize the particular role of a well-functioning and inclusive financial system in achieving faster and more equitable growth (Honohan, 2004). And, at a very broad level, the presence of established formal institutions is associated with higher average incomes (Acemoglu, Johnson and Robinson, 2000).[2]

1.2.4. Causal mechanisms and theory of change

Using Levine's functions of a financial system (2005), we can outline the ways in which having access to and using formal financial services can increase the poor's income.

1.2.4.1. Producing information ex ante about possible investments and allocating capital

Financial systems can help to produce financial information so as to minimize institutional and individual financial ignorance and the problems of asymmetric information. Perhaps the most compelling example of this is microcredit, wherein borrowers' peers and loan officers identify potential clients, with investment opportunities, and pass this valuable information to the microcredit institutions. Microcredit and other financial institutions also have begun providing their poor customers with informational services which aim to remedy the fact that poor individuals may not know about the opportunities to increase their income through the use of financial services.

Formal financial systems can also produce information on possible high-yield investments and allocation of capital, allowing individuals to take advantage of these opportunities. Indeed, when combined with business training opportunities, which provide the poor with information so that they can identify or improve investment opportunities, lending services can reduce credit constraints. This in turn can facilitate high-return investments, entrepreneurship and new income generating businesses, provided these opportunities exist (Kaboski and Townsend, 2009; Karlan and Valdivia, 2011).

Also, savings opportunities in financial systems can produce information about clients, which can facilitate both further savings and credit opportunities. By allowing the poor to save and establish a track record of savings, the financial system creates information about individuals' cash flow. This can increase the poor's access to credit, further assisting them to make high-return investments and increase their income (Aportela, 1999; Jayachandran, 2006; Dupas and Robinson, 2009).

Finally, low incomes, credit constraints and the need to fulfill immediate needs may restrict human capital investments that provide returns over a longer horizon. Access to credit in such contexts, facilitated by the production of financial information benefiting both institutions and individuals, can support investment in education and health, subsequently generating higher future incomes.

1.2.4.2. Monitoring investments and exerting corporate governance after providing finance

Monitoring investments represents a key challenge for formal financial service providers when serving the poor, as the cost of staff time is often high relative to

[2] The focus of this review is on financial services for the poor; hence, the general question of the degree to which financial development facilitates growth is outside its scope.

the size of any individual loan. Formal financial systems can produce information on individuals, as formal banks are in a good position to screen and monitor clients. Nevertheless, these formal institutions may offer efficiencies in scope and scale, allowing them to offer loans with more favorable conditions, such as lower interest rates, than less formal providers, making them particularly effective in raising incomes (Aleem, 1990). The threat of reporting borrower behavior to formal credit agencies may also act as a discipline, reducing the likelihood that loan funds are misused.

1.2.4.3. Facilitating the trading, diversification, and management of risk

From a risk-management perspective, banks are better suited to manage risky investments than individual entrepreneurs or informal lenders. Bank equity is typically held by a set of diversified shareholders, comprising only a small fraction of an investor's portfolio. Moreover, banks lend to many projects, smoothing idiosyncratic risk, and across a variety of industries. For these reasons, they may be able to offer credit at more favorable terms than informal lenders.

Credit and savings opportunities in formal financial systems can aid poor people in managing their risk and smoothing their highly volatile incomes. Access to credit allows consumption smoothing by helping the poor overcome negative shocks to income through borrowing. Savings services can facilitate consumption smoothing over time by providing a secure means to accumulate a buffer stock during positive shocks. Consumption smoothing can raise income by many channels, including preventing fire sales of high-return assets, which would otherwise lead to loss of future income.

1.2.4.4. Mobilizing and pooling savings

Savings facilities can directly help the poor make investments in human capital and income-generating activities with high returns. For instance, saving services may provide a means to fund high-return lumpy investments (i.e. investments that cannot be acquired in small increments but must be made in large, discrete units) that may not be made otherwise. Moreover, savings facilities also offer security of deposits and some protection against inflation protection, thus helping to mobilize savings.

1.2.4.5. Easing exchange of goods and services

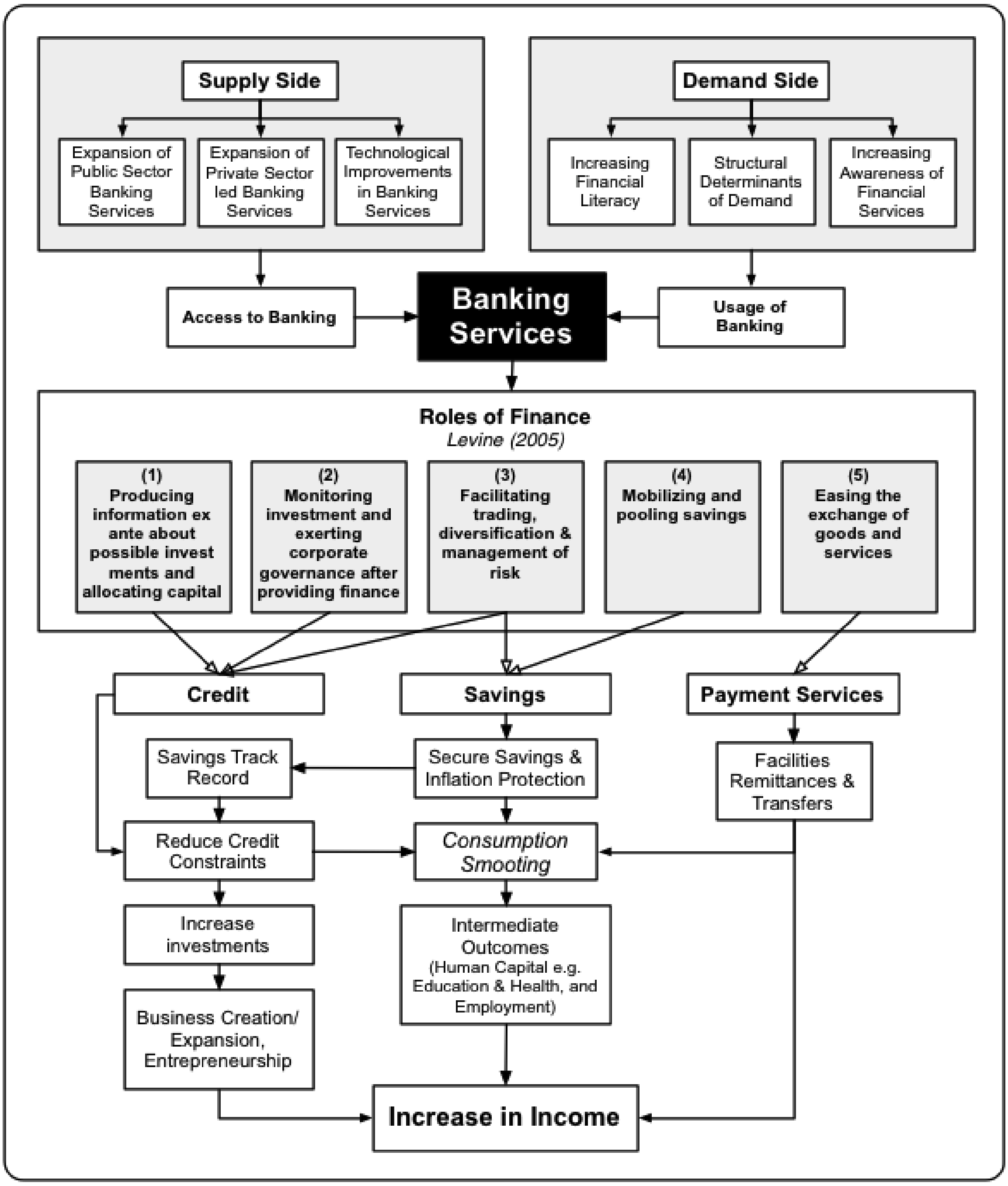
Payment services, particularly remittances, facilitate the poor's ability to migrate for higher wages, and transfer money back home. Reliable payment channels, with low transaction costs, can substantially increase remittances and transfers, which in turn allow consumption smoothing and could also increase savings (Ashraf *et al*., 2009). Payment services also ease transaction costs and enable exchange of goods and services, which is important for many income-generating activities.

To help understand how policy and practice interventions can influence the access to and take-up of financial services and their eventual impact on income, this review considers programs and policies affecting supply-side and demand-side constraints. Figure 1.1 shows the various types of supply and demand interventions and the ways in which they may ultimately increase income. On the supply side, access to financial services can be increased through programs or policies which expand public sector or private sector led banking services, or through the development of banking technologies. On the other hand, financial literacy programs and programs that increase awareness about financial products may increase the demand for financial services. Policies that affect structural determinants of demand, such as migration policies (which create the need for payment services) or interest rate changes (which may make savings and credit attractive), may also increase the demand for financial services.

The discussion so far has focused on how formal financial services may raise the income of the poor. However, to answer the question this review addresses, it is very important to note that formal financial services, and programs and policies promoting them, may instead decrease the income of the poor, or simply not affect it.

There may be several reasons for this. First, the presence of formal institutions need not imply that the poor have access to them. The poor may not know about available facilities or may not trust these entities. Second, the poor may be excluded from access to credit, because banks may find it too expensive to lend to very poor households that may not have collateralizable assets. Alternatively, capture of these institutions by the political elite may skew credit towards the rich. Third, behavioral biases such as shortsightedness and lack of self-control may cause poor individuals to misuse formal financial services at much higher economic cost than the rich (Banerjee and Mullainathan, 2010). For instance, there is a robust debate over the possibility that microfinance organizations over-lend to the poor. There are multiple reports of over-borrowing, especially with microfinance institutions that could be extended to the formal finance context. Such outcomes are, of course, possible in the formal financial sector as well. Individuals who over-borrow often tend to borrow from multiple sources, paying off one loan with another or financing consumption rather than high-return investments, ultimately leading to lower incomes.

Figure 1.1: Theory of change: causal mechanisms



1.3. Policy and practice background

The belief that financial services may lift the poor out of the cycle of poverty has led to the widespread establishment of programs and policies aiming to increase the poor's access to formal banking services. They include policies to increase regulation and government ownership of financial service providers, governmental initiatives with a secondary goal of increasing access to banking services, programs that develop and expand microfinance programs and institutions (outside the scope of this review), programs to increase financial literacy and awareness, and the development of technologies that ease the geographical and temporal constraints that the poor face in accessing formal financial services.

In the post-war period, many developing countries initiated broad-ranging economic policies with the goal of increasing the poor's access to and use of financial services. Due to their restrictiveness, critics have dubbed these policies 'financial repression'; for an empirical examination, see for instance Demetriades (1997). One example of this occurred in India between 1969 and 1990, when the government began requiring all banks to open 80 percent of new branches in unbanked areas. The policy also required 40 percent of each bank's lending to go to small enterprises and agriculture, and 20 percent of lending to go to marginalized sections of the population. These policies are believed to have led to a higher take-up of formal financial services, especially among the lower castes and tribes, and showed that the rural areas with greater bank expansion were associated with lower poverty rates (Burgess, Pande and Wong, 2005).

In many countries, governments have chosen to directly subsidize financial service initiatives aimed at the poor. In Peru, for instance, the government has subsidized housing loans for the poor through the *Techo Propio* program. The poor are often excluded from mortgage loans because the administrative costs of mortgages are only covered if loans are large, usually above USD 15,000. *Techo Propio* targeted people interested in homes listed at USD 4,000 to 8,000. The interest rates were kept low — at 15 percent, well below the 30-40 percent interest rates of microloans in Peru — and large commercial banks provided loans, rather than smaller microfinance institutions. While the program attracted a lot of attention, take-up was low, mainly due to the lack of availability of homes in the targeted price range (Accion, 2007).

Financial awareness and literacy programs have also garnered increasing attention in the developing world. In 2006, for example, USAID partnered with Rural SPEED in Uganda to promote awareness of financial services in the country by creating and distributing radio advertisements, skits, dramas, outdoor advertisements, live theatre road shows and promotional materials. And, in 2007, the Reserve Bank of India launched an initiative to establish financial literacy and credit counseling centers offering free financial education and counseling across the country. In a similar vein, the Indonesian government declared 2008 'the year of financial education,' with a stated goal of improving access to and use of financial services by increasing financial literacy. Survey data from India and Indonesia demonstrate that financial literacy is an important correlate of household financial behavior and household well-being (Cole, Sampson and Zia, 2011).

Technology has created many new opportunities to reach unbanked populations. Mobile phone or internet transactions allow banking services to reach areas without a brick-and-mortar presence, dramatically expanding access. Electronic money does not require physical transport and is therefore less subject to physical security risks. Perhaps most importantly, the cost of enrolling and servicing customers drops dramatically when this type of automation is possible. In Kenya, the UK Department for International Development (DFID) has partnered with Vodafone and Commercial Bank of Africa to increase access and decrease barriers to financial services by creating secure software that allows customers to make basic financial transactions on their mobile phones. By exploiting the high density of mobile phones in Kenya, this program allows geographically isolated populations to access formal banking services. This service has reached nine million customers in just over three years, with around 20 percent of the Kenyan population now using 'e-mobile' bank accounts on their mobile phones. Following this example, similar services are being developed in other parts of the world.

Additionally, there are policies that simply aim to improve access to finance. *Access to Finance*, a report published by IFC Advisory Services in 2010, gives a good indication of the magnitude of these projects worldwide. At the end of the 2010 financial year, the IFC reported 'an active portfolio of 238 financial access projects, in 68 countries, valued at almost $290 million.' This is clearly just a fraction of all projects currently undertaken by governments, bilateral development agencies and other stakeholders, but gives a good indication of the focus and scale of efforts aimed at increasing access to finance that are currently taking place.

1.4. Research background

Since this review focuses on the specific question of the impact of access to banking on the incomes of the poor, in this section we briefly summarize the broader body of research on government schemes, technological developments and financial literacy aimed at increasing access to banking, ending with a discussion of the existing literature reviews. This section explicitly excludes any discussion of the studies included in the systematic review.

Research analyzing the impact of government-led schemes aimed at increasing access to banking services shows that financial services do not always reach the poor despite these interventions (Beck *et al.*, 2008). Moreover, these programs do not always yield the intended effects. In fact, the provision of formal credit in rural areas may worsen existing informal lending systems and hamper rural development (Adams *et al.*, 1984). Braverman and Guasch (1986) provide evidence that subsidized credit programs failed to increase agricultural output or rural income cost-effectively. They argue that theories of change that rely on credit rationing and the inter-linkage of credit contracts with labor and land contracts, without considering institutional environments, are not supported by empirical evidence. However, in more recent work, Burgess, Pande and Wong (2005) analyze the reach and take-up of services provided by a social banking program in India. They use household data to demonstrate that state-led branch expansion into rural unbanked locations decreased poverty rates. Using a policy experiment, Cole (2009) found that nationalization of banks increases lending to government-targeted borrowers and lowers interest rates, but no evidence that these increases in agricultural credit improve agricultural outcomes.

Research on new technologies has been scarce even though they have the ability to 'ease the exchange of goods and services,' one of the functional roles of financial services stated by Levine. Pulver *et al.* (2009) investigate the role of innovative technology of banking services using the case of M-Pesa, a money transfer product developed by Vodafone and the DFID that allows customers to conduct basic financial transactions on their phones. A small household survey, as well as phone data, suggest that take-up of the technology has been large and has eased payments and transfers, especially remittances.

Financial literacy programs can produce information and allow individuals to exploit all the functions of financial systems. Evidence from household surveys in developed countries suggests that there is a relationship between financial literacy and participation in the formal financial system (Hogarth and O'Donnell, 1999; Alessie, Lusardi and van Rooij, 2007). Cole, Sampson and Zia (2011) apply this idea to the developing world and, using survey evidence from India and Indonesia, found that financial literacy is a good predictor of demand for financial services. This indicates that financial literacy may be particularly important in translating access to financial services into usage of financial services, thus providing the key link between supply and demand constraints.

Ultimately, for access to financial services to increase incomes, there must be opportunities for individuals to invest in high-return goods and services. While there is evidence from developing countries on returns to capital for firms, there is limited evidence on returns to capital for individuals (Banerjee and Duflo, 2005). It is particularly important for individuals to have access to opportunities providing high returns to capital, as that is the pathway through which formal banking can increase income. However, the challenge in measuring individual returns to capital limits the available evidence.

To conclude, a wide literature examines policies aimed at improving access to finance, with the assumption that access can lead to the use of some or all of the functional roles of financial systems. As highlighted earlier, Levine (2005) provides an excellent literature review of the macro evidence on financial deepening and growth. Beck, Demirgüç-Kunt and Honohan (2008) provide a detailed overview of access to finance, with careful attention to policy prescriptions and the need for future research. Barr, Kumar and Litan (2007) provide a detailed coverage of commercial banking and the role of mobile banking in their book *Building Inclusive Financial Systems*. Much of the new and current literature on financial services focuses on microfinance. However, while we have used some of the broader microfinance literature to motivate this review, this systematic review excludes microfinance and focuses solely on formal finance.

To our knowledge, no systematic review of the evidence of the effect of formal banking services on income of the poor has been conducted. As noted earlier, three systematic reviews of the literature on microfinance are currently under preparation.

1.5. Objectives

This paper aims to conduct a systematic review of the literature that examines the impact of poor people’s access to and usage of formal banking services on income and income-related outcomes. By systematically comparing and contrasting what is empirically known and theoretically accepted, the review aims to synthesize key lessons for academics and policy makers from the available empirical evidence. The review also aims to identify important research gaps and create a context that has the potential to facilitate future academic and policy research.

1.6. Organization of this report

This review is organized as follows. Chapter 2 discusses the methodology used in searching for and synthesizing the evidence available. Chapter 3 outlines the search results. The analysis and synthesis of our findings is reported in Chapter 4. Strengths and limitations of the review methodology are discussed in Chapter 5, and conclusions and recommendations are presented in Chapter 6.

2. Methods

We surveyed the literature in a systematic and comprehensive manner using an approach based on the realist review methodology inspired by King *et al*. (2010), and then, utilizing specialized review software, we diligently collected, organized and analyzed the relevant high-quality studies. The methodology was intended to ensure a comprehensive search, unbiased analysis and pertinent conclusions and recommendations based upon sound empirical work.

2.1. User involvement

We involved several groups of users and experts at various stages of this systematic review. To ensure that we covered the most pressing and relevant policy questions, we defined the scope of this review in close consultation with policy makers in the academic and international development communities. Further, we contacted academic researchers active and interested in the field to guarantee that we covered the most relevant published or unpublished literature on the topic.

The principal users of this review are expected to be policy makers and those individuals and organizations interested in seriously evaluating the evidence base regarding the impact of formal financial services on income. Prospective users are those individuals or organizations which may benefit from a sound understanding of the impact of formal financial services and who may integrate their new knowledge into further high-quality empirical research efforts on the topic and/or new or altered policies or programs with more beneficial impacts on the lives of the poor. Further, this report is primarily intended for a technical audience with an interest in understanding how the review was conducted and the details of the studies synthesized to generate the findings. To facilitate wider dissemination of the results of this review, a non-technical policy brief accessible to policy makers will be published through the Centre for International Development (CID) at Harvard Kennedy School.

The technical report will be disseminated to the international development community through the Harvard Kennedy School (HKS), Harvard Business School (HBS) and CID, among other development policy institutions. Both the technical report and the policy brief will also be made available to developing country policy makers through organizations such as the Centre for Micro Finance at the Institute for Financial Management and Research (IFMR) and Innovations for Poverty Action (IPA). Additionally, the systematic review will be disseminated through the International Initiative for Impact Evaluation (3ie), which organized an independent peer review of this protocol and the draft review.

2.2. Identifying and describing studies

2.2.1. Defining relevant studies: inclusion and exclusion criteria

2.2.1.1. Study design and methodological inclusion criteria

For our in-depth review, we concentrated on microeconomic studies with relevant outcome variables. We focused on studies with the following three methodologies that aim to identify causal evidence: randomized controlled trials (RCTs), quasi-experimental designs (e.g. regression discontinuity, instrumental variables) and regression-based approaches with strong identification strategies. However, in order to inform our process and provide background to our review, we also used (though did not include in our in-depth review) descriptive, qualitative and non-academic studies.

The regression-based approaches differ from the RCTs and the quasi-experimental designs in that, while they employ statistical techniques to correct for endogeneity, they are not as robust in examining the pure impact of having access to or using formal financial services. We were thus careful to only include high-quality regression-based approaches, with greater weight given to studies with well-understood sources of variation and stronger empirical bases. We ensured that any included regression-based studies employed empirical techniques known to control for the possibility of selection bias, such as propensity score matching and switching regression models.

In addition to having sound designs, included studies' analytical methods must have been both described clearly in the studies and used appropriately. Where applicable, included studies must have had and described clear treatment and comparison groups without systematic biases, sound sampling procedures, proper data collection methods, and relevant and accurate analysis, and be free from other systematic errors.

2.2.1.2. Population inclusion criteria

We included studies set in low-income and middle-income countries as defined by the World Bank at the time of the reviewed program or policy (the complete list is provided in Appendix 2.1). We concentrated on low-income households but did not further restrict the review to specific genders, professions or education levels. Though not restricted, the study populations informed and influenced our analysis of included studies. For instance, in the included studies, we looked for heterogeneous treatment effects based on gender, geography, profession, education and wealth, within the geographical and wealth restrictions described above.

2.2.1.3. Program or policy inclusion criteria

We included studies that considered programs or policies in the following categories:

- the expansion of credit and savings services to low-income households and individuals, their micro-businesses and/or their agricultural activities;
- the provision of technological innovations, including mobile payment services, to make banking more accessible to the poor;
- the introduction and expansion of financial education to increase financial literacy, or other programs intended to improve knowledge or awareness of banking services among the poor.

We focused our attention on the following:

- government-led or aid-promoted programs and policies;
- formal private and public banking services firms;
- formal private non-banking financial services companies as defined in Section 1.2.1.

2.2.1.4. Study outcome inclusion criteria

As income is a difficult concept to understand and measure, we synthesized the results using multiple outcome measures as indicators of income. While the specific outcome variables and their measurements differed from study to study, the broad outcome indicators which we examined included:

1. Labor and household income;
2. Small and micro-business income;
3. Household and business assets;
4. Household consumption;
5. Small and micro-business investment;
6. Small, micro-business or agricultural output;
7. Measures of poverty, global or local;
8. Quantitative measures of welfare.

2.2.1.5. Specific exclusion criteria

In addition to the inclusion criteria described above, we explicitly excluded studies with certain characteristics, i.e.:

- not published in English;[3]
- focusing on the impact of microfinance services, as defined in Section 1.2.1;
- examining the impact of non-banking financial services such as insurance;
- descriptive studies discussing the topic but not presenting data on impacts;
- aggregating or comparing primary research but not presenting original research.

2.2.2. Identification of potential studies: search strategy

We identified relevant studies by searching electronic bibliographic databases, specific journals and working paper series, and websites of developing country national banks and relevant research organizations and NGOs, and by contacting key area experts[4] and by identifying studies from reference lists by prominent authors and in major papers, such as other reviews of the subject. A special attempt was made to identify studies produced by domestic research bodies in low-income countries, including NGOs and central banks.

Searches were limited to studies published after 1979, and our review was further restricted to studies examining data, of which at least some was collected after 1979. These search restrictions included as many studies as possible while retaining a strong degree of relevance to contemporary policy making. In particular, we included studies of programs or policies conducted in the 1980s because that decade saw a strong backlash against social banking which it was important to cover.

We used different methods, summarized below, to search different sources. For searchable sources, we developed a comprehensive search phrase, found in Appendix 2.2, which we used as the foundation for all searches. It used keywords to outline and combine the key concepts of studies we wanted to include: formal financial services, impact evaluations, low-income countries and poor households.

---

[3] Due to resource and time constraints, we restricted our searches to English studies. This is a limitation of our review, and we recommend further research and review of non-English publications.

[4] We contacted several experts for their inputs; however only four experts responded to our requests, namely: Prof. Joseph Stiglitz (Columbia University), Prof. Luigi Guiso (European University Institute), Graham Douglas (Integrative Improvement Institute) and Prof. Kul Luintel (Cardiff University).

If the electronic search engine allowed, we searched for the entire phrase within the whole text of articles.

Due to its length, most search engines would not accept the entire search string. In these cases, we worked in the search engine to optimize the search and produce the most relevant search results, dropping as few parts of the search phrase as possible. When any of our searches resulted in large numbers of irrelevant results, we sorted them by relevance and imported the most relevant studies. More specifically, we examined the study titles in our search results and imported all results by page (usually showing between 25 and 100 results) until an entire page of results did not include any studies possibly related to our topic with any degree of reason. Sorting by relevance before this step helped us to ensure that we did not miss potentially relevant studies. Although we recognize that sorting by relevance might have reduced the exhaustiveness of individual searches, we believe that the large number of sources that were searched offset this potential shortcoming. A comprehensive table of all searched databases, journals and websites, as well as the methods used to search them, may be found in Appendix 2.3.

Some volumes of journals, especially more recent ones, and organizations' websites did not allow for systematic searches. In these cases, we browsed, or 'hand-searched,' the journals and websites to find all relevant studies.

After searching, the citation details of identified studies, including study abstracts where applicable, were imported or manually entered into the EPPI-Reviewer software.[5]

In addition to conducting our own searches, we contacted experts in the field of development who specialized in studying financial services and its effects. We requested references or copies of any unpublished studies or documentation from ongoing studies related to access to banking for the poor that they were authoring, participating in or aware of. Lastly, we made sure that we included relevant references from literature reviews on the topic and other key papers by examining all analyzed and cited papers and importing any relevant titles.

2.2.3. Screening studies: applying inclusion and exclusion criteria

The inclusion and exclusion criteria were applied to all the studies imported into EPPI-Reviewer during the search process. We applied the criteria within EPPI-Reviewer using our inclusion and exclusion coding tool, found in Appendix 2.4, developed from our inclusion and exclusion criteria found in Section 2.2.1. In the first stage, the criteria were applied to the titles and abstracts of the papers. Any studies not meeting the inclusion criteria were excluded. The included papers from the first stage advanced to the second stage, in which the full-length papers were obtained and the criteria reapplied to each study in its entirety. This screening process substantially narrowed the collection of papers which we included in our in-depth review and ensured that all included papers met our criteria for relevant, high-quality studies.

2.2.4. Characterizing included studies

The included studies were also characterized in the EPPI-Reviewer software, using our characterization-coding tool, which is reproduced in Appendix 2.5. We recorded

[5] EPPI-Reviewer is a web-based software developed by the Evidence for Policy and Practice Information and Co-ordinating Centre at the Social Science Research Unit of the Institute of Education, University of London. The application software allows researchers to manage the lifecycle of a systematic review in a single online location (Thomas et al., 2010).

characteristics about the studies themselves as well as the programs and policies they examined, and we recorded which reports were related to each other, as several of our documents examined the same programs or policies, allowing us to later examine and analyze them together. We also recorded the examined programs or policies and the contexts and environments of the studies. We further noted the a priori theories of change suggested for how the programs and policies might affect the poor's income. Additionally, we recorded the specific analytical and statistical methodologies of the studies, looking at their regression specifications, identification strategies, data sources, and quality of the methods. For quality assessments, we noted sample sizes, omitted variable bias, functional form misspecification, sample selection bias, errors-in-variables bias, and simultaneous causality bias. We also recorded the specific outcome variables of the studies in the EPPI-Reviewer software. Moreover, we recorded relevant regression outcomes and other technical information (in a separate spreadsheet, to ease analysis). Lastly, any additional comments about the study were recorded, and a decision taken to include or exclude the study in the in-depth review; if a study was not appropriate for the in-depth review, but would be useful to inform the background of the study, that was also noted.

2.2.5. Identifying and describing studies: quality assurance processes

The search for studies, the application of the inclusion and exclusion criteria to studies and the characterization of studies were carried out by three team members. Quality was assured during the search process by having a master search phrase from which all team members worked and by recording our searches. During the two-phase application of the inclusion and exclusion criteria, studies were randomly assigned to team members during each phase in order to prevent systematic bias. While the application of inclusion and exclusion criteria in each stage was completed by one team member, during pilot rounds of the stages team members applied the criteria to the same studies, discussing results, refining the criteria and ensuring the same application of the criteria by each team member. Additionally, any studies which team members were unsure about whether to include or exclude based upon the criteria were discussed as a group until a consensus was reached, ensuring that questionable studies were analyzed by the group.

During the characterization coding of the studies, all outcomes and theories of the studies were double coded (i.e., coded independently by two researchers). However, the administrative details such as authors, times and locations were only single coded. In this way we maximized our time and resources by only double coding the analytical sections of the studies in which there may have been disagreements.[6] After double coding, one of the two members reconciled the codes. If there were any differing codes between the two coders which were not easily reconcilable, the studies were discussed among the team. Additionally, where either of the coders was unsure about whether to include a study in the in-depth review, it was discussed and resolved with the whole team. Double coding ensured a high-quality characterization process and ensured that uniform standards were applied to studies in our in-depth review.

[6] This is a deviation from our protocol; however, because we did double code any results or theories and only single coded administrative details and facts, it did not compromise the quality of our review.

2.3. Methods for synthesis

Prior to synthesis, we ensured the quality and relevance of our studies. Then, guided by the realist review approach based on the methods used in King *et al.* (2010) we synthesized and analyzed the studies.

2.3.1. Assessing quality of studies

2.3.1.1. Assessing quality: inclusion and exclusion criteria application and characterization coding

We developed and adhered to objective quality criteria which were first applied to the studies as part of our inclusion and exclusion criteria application. Quality standards were further applied during study characterization with our characterization-coding tool, found in Appendix 2.5. During these initial rounds of coding, most studies were excluded on other more easily judged characteristics; however, we did look for sound methodology and would immediately exclude a study based on quality if it lacked:

- clarity in the description of the program, data, methods and/or research design;
- appropriate methodology for sampling, data collection and analysis;
- control and treatment groups which, where applicable, were properly assigned and without systematic differences or differential attrition;
- acceptable strategies for causal identification and controls for omitted variables in case of non-random assignment to treatment and control groups;
- a sound process ensuring accuracy of the estimated effects.

2.3.1.2. Assessing quality of characterized included studies

After study characterization, we looked methodically at each study and ensured that our inclusion, exclusion and quality criteria were stringently applied to all included studies. Only those characterized studies that met these criteria were included in the final synthesis presented in Chapter 4. Additionally, we gave each characterized study a quality rating, in order to make the quality of studies more easily accessible and comparable during synthesis; for this, we adapted a set of quality ratings based upon Van der Knaap *et al.* (2008), who had based their ratings on the Maryland Scientific Methods Scale (MSMS). A large part of our quality focus was on problems of identification of causal effects, as there are many potentially confounding factors (such as income, education, proximity to financial institutions) that may affect the use of financial services. Without properly accounting for these relationships, it would not be possible to understand whether observed differences between users and non-users of financial services could be attributed to access to or use of financial services. We excluded any studies which had been included until this point but had a quality score of 2 or lower (see Table 2.1).

Although we rated RCTs as the most preferred methodology while assessing the quality of characterized studies, it is important to note that they face certain limitations. Apart from being resource intensive and time consuming, it is often difficult to capture general equilibrium effects. Attanasio *et al.* (2005) have attempted to overcome the latter limitation by combining RCT results with structural models, offering a promising avenue which could be explored further in empirical development finance literature.

Table 2.1: Modified MSMS quality rating scale

	Quantitative studies
5-Excellent	
	• Randomized controlled trials o Sound data collection o No systematic differences between treatment and control o No major or minor uncontrolled-for attrition issues o No other methodological concerns or problems
4-Good	
	• Sound data collection • No major methodological concerns or problems • Randomized controlled trials with: o Minor yet controlled-for systematic differences o Attrition or other controlled-for minor methodological concerns • Quasi-experimental studies o With good statistical controls o Self-selection and endogeneity controlled for o No systematic differences between 'treatment' and 'control' o No major or minor uncontrolled-for attrition issues o No other methodological concerns or problems
3-Acceptable	
	• Quasi-experimental studies with moderate controls for omitted variables/endogeneity o Good statistical controls (otherwise) o No major systematic differences between 'treatment' and 'control' o No uncontrolled-for attrition o No other methodological concerns or problems • Econometric study which attempts to deal with the problem of endogeneity including switching regressions models and propensity score matching models o No systematic differences between 'treatment' and 'control' o No major uncontrolled-for attrition problems o No other methodological concerns or problems • Sound data collections methods • No major methodological concerns or problems
2-Fair	
	• Pre- and post-test results of a program reported • RCTs, quasi-experimental studies, econometric studies which do not meet the criteria above in that they have serious methodological issues
1-Not appropriate	
	• Descriptive study which looks at one point in time, no attempt made to measure impact • Qualitative study • Any other methodology with major methodological problems

2.3.2. Overall approach to and process of synthesis

Following Van de Knaap *et al.* (2008) and other systematic reviews, we were guided in our synthesis by the realist synthesis approach. We did, however, alter the approach slightly in order to best synthesize the data from empirical studies on the income effects of formal financial services and to determine the mechanisms of change which influence income when there is access to and usage of financial services.

Pawson *et al.* (2004) outline the theory and logistics of the realist synthesis approach. This process-oriented methodology examines the context of the study and the mechanisms through which it was implemented to evaluate the underlying theory of change (Greenhalgh, Kristjansson and Robinson, 2007). In other words, using the realist synthesis approach, we attempted to uncover the mechanisms that determined the outcomes of the studies we reviewed.

Informed by the realist synthesis approach, we thus not only gathered data on the outcomes of the studies to determine the common and differing effects on income of having access to or using formal financial services, but also to determine the mechanisms which worked to raise (or lower) the income of the poor when they did have access to formal financial services. Additionally, we examined the environmental factors, such as the study participants, political environments and timings, which could impact on the effects of having access to or using formal financial services. We collected this information within our characterization-coding tool and a separate spreadsheet (for outcomes and other technical information). We then produced detailed tables, reproduced in Appendix 3.1 and Chapter 4, which enabled us to easily see and compare the specifics of studies beyond just their outcomes.

Additionally, following the realist review approach, we identified the theories of change proposed by the papers and programs as well as those theories of change that would have been plausible for the results, and produced another set of tables, reproduced in Appendices 4.1 – 4.6, which allowed us to visually compare, inspect and classify the theories of change of our included papers. These tables on the theories of change, as well as on the specific study population characteristics allowed us to see the literature as a collection, understanding the parts of the policies and programs which affect the poor’s income, the pathways in which the parts worked together to establish those effects and the environmental characteristics outside the programs and policies which could alter their effectiveness, so that we could develop a cohesive understanding of the driving mechanisms of change in the literature.

The realist synthesis approach is of special interest to policy makers because of its focus on the mechanisms of change and the context of programs. Acknowledging the multiple factors that influence the outcomes of social interventions, such as location, people and timing, and the often-made changes in interventions during the study, this approach does not suggest a perfect program or intervention to a policy maker. Instead, it offers the policy maker the ability to see how and why a program works or does not work, influencing the policy maker’s thinking and logical framework. Ideally, the policy maker will better understand how to use different mechanisms of change in different situations to build successful programs (Pawson *et al.*, 2004). From a research perspective, the realist synthesis allows us to give insights into the specific channels through which access to finance impacts on income and where the mechanisms break down. This is particularly important because the empirical evidence is mixed and difficult to interpret.

2.3.3. Selection of studies for synthesis

We did not include all studies chosen for characterization in our in-depth synthesis. We had an additional round of quality and relevance appraisal while determining quality ratings, as detailed in Section 2.3.1.2. Any studies which did not meet our minimum quality criteria or were judged irrelevant were excluded from our in-depth synthesis. Additionally, at this time, we refined our definitions of formal financial services as reflected in Section 1.2.1, to be sure to only include studies examining the impacts of formal financial services. Studies excluded at this point can be found in Appendix 2.6, along with the reasons for their exclusion.

2.3.4. Selection of outcome data for synthesis

For the studies that were included in the synthesis, regression outcomes were recorded in a spreadsheet. In choosing which results to record, we followed these guiding principles:

- The outcomes must have been among our specific income indicators as listed in Section 2.2.1.4.
- The quality of the specific analysis must satisfy the criteria listed in Section 2.3.1.

In reports where many types of results and regressions were presented, we recorded the results of either (1) the preferred regression as indicated by the authors or (2) the most complete specification, containing the highest number of control variables, interaction terms and fixed effects. That is, if several regression results were presented in the paper, we chose the most complete of these regressions, unless there was an obvious reason not to do so. All results from these regressions were recorded, including estimates of control variables and insignificant results. Results from analysis of specific subsamples were also recorded.

2.3.5. Process used to combine/synthesize data

After extracting the relevant data and regressions from the papers, we grouped studies into two major categories. We further broke down the groups by the interventions and outcomes the studies examined. We then created outcome tables for each group, organizing them, depending upon the types of regressions, by similar outcome or input variables. This organization allowed us easily to compare similar studies. We directly compared the sign, magnitude and significance on similar outcomes. We also noted the quality rating scores given to the studies which we were comparing. We were then able to determine for each group the main outcome results supported by the literature.

In following the general principles of a realist review methodology, we also wanted to examine the causal pathways and specific mechanisms of change in those pathways for the studies and their outcome results. Continuing to work with our studies one category at a time, we developed mechanisms of change charts for each group, showing for each study in a group:

- how the programs or policies were expected to change the income of the poor;
- the pathways and mechanisms of change assumed a priori to raise income;
- the evidence for or against the a priori pathways;
- other alternative pathways and mechanisms of change to raise the income of the poor in the study, suggested by the data and outcomes;
- the evidence for the alternative pathways of change to raise income.

This allowed us to easily compare the different pathways and mechanisms of change, as well as the evidence for or against them. We were then able to determine for each group of studies the main pathways of change supported by the evidence in the literature. Additionally, we examined the different characteristics and contexts, which allowed us to identify patterns in environments or samples in the group, and allowed us to comment on the possible effects of the studies' contexts on the outcomes and mechanisms of change, as well as on the generalizability of the synthesized group results. Finally, we compared the synthesized outcomes and mechanisms of change results from each section.

We were unable to complete a meta-analysis because the outcomes measured, as well as the way they were measured varied greatly between each study, and meta-analysis relies on homogeneity in outcome measures for its quantitative comparisons and synthesis.

2.4. Deriving conclusions and implications

Upon synthesizing the available high-quality data and analysis, the review team began to form broader conclusions about the synthesis results. We first noted the limitations of each group of synthesis results, especially regarding generalizability to other contexts. We then determined the similarities and differences of the impacts and limitations among the groups of studies. In addition, through discussion and collaboration, we developed a list of the key findings.

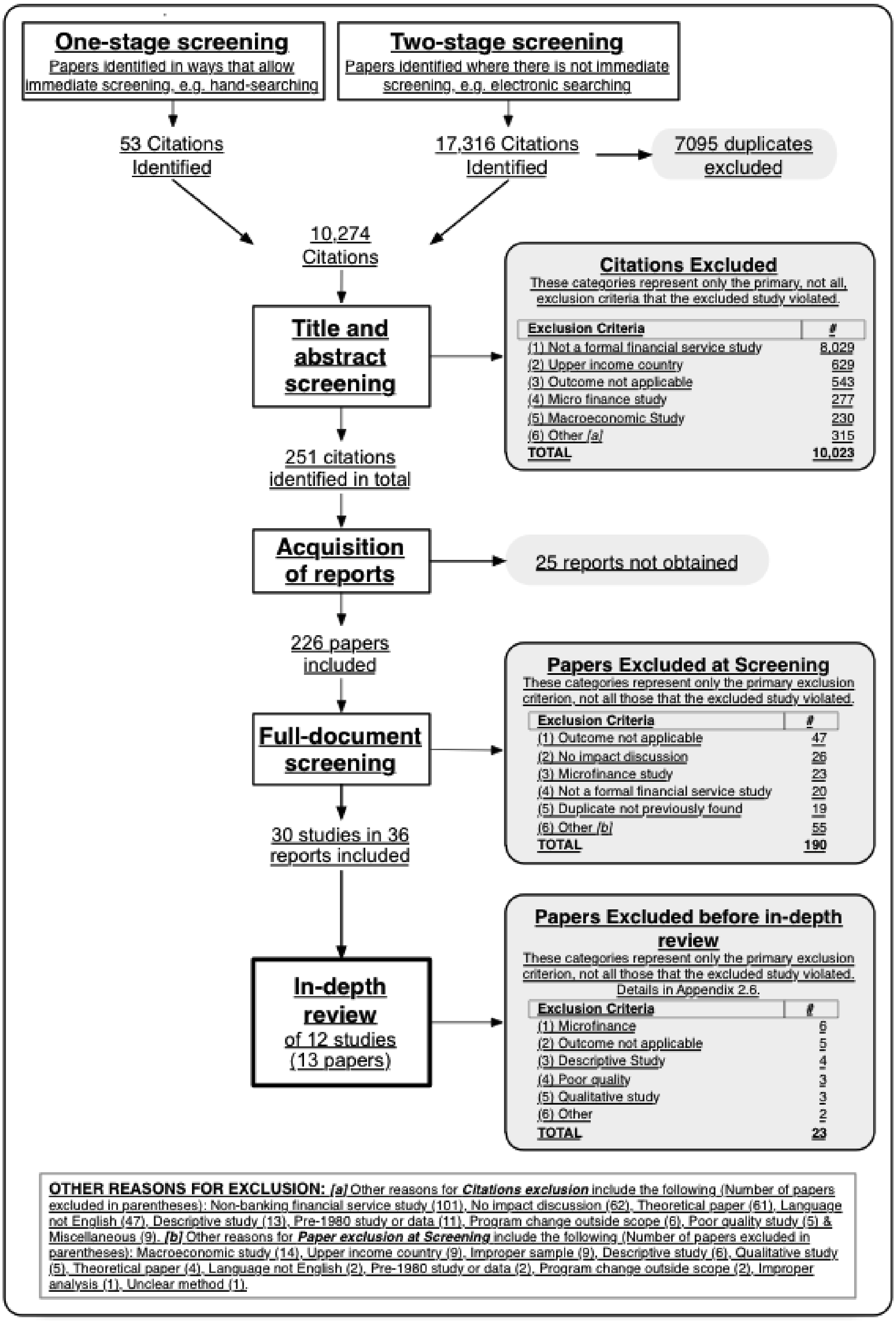
The limitations of our study search, analysis and synthesis drove our research recommendations for the topic. Because of our extensive search of the literature, we have been able to definitively point to areas in which further study is necessary. By examining the studies which provided the highest quality results, we have also been able to recommend the best research methods and data types for this topic.

To determine the policy and practice implications for our research, we closely examined the contexts of the studies which we synthesized. We kept the scope of our conclusions and recommendations narrow because we did not have a broad range of studies for any category to examine. Additionally, we drew upon our knowledge of the related broader economic and policy literature as well as the review team's policy experience to inform our policy conclusions and suggestions.

3. Search results

3.1. Studies included from searching and screening

Figure 3.1: Systematic filtering of papers for the review



3.2. Details of included studies

3.2.1. General overview of included studies

Our included studies consist of RCTs, quasi-experimental studies and econometric studies that clearly compensated for identification problems. They all examined the impacts of having access to or using formal financial services or new financial technologies on various measures of income. The studies examined introductions of new financial products, introductions of new financial technologies, policies that expanded rural banking, and the effects of increased bank saturation in agricultural areas and villages. Table 3.1 gives a brief overview of the included studies. Further details and discussion can be found in the following sections as well as in the appendices referred to in those sections.

Table 3.1: Summary characteristics of included studies

Type of financial service	
Lending/credit	8
Payment services	2
Savings	6
Financial awareness	1
(Studies may cover more than one)	

Study design	
RCT	3
Quasi-experimental	3
Econometric[7]	6

Quality	
5-Excellent	3
4-Good	3
3-Acceptable	6
Mean	*3.8*

Locations	
South East Asia	4
Sub-Saharan Africa	4
Indian Sub-continent	3
Central and South America	1
Lower-middle income	4
Lower income	8

Population	
Rural	8
Urban	2
Mix	2
Farming	6

Political environment	
Free	2
Partly free to free	3
Partly free	5
Not free	2

Years	
(of programs, policies and data)	1961-2010

3.2.2. Programs and policies of included studies

The in-depth review covers 12 studies evaluating 10 programs or policies.[8] We found rigorous high-quality studies which examined:

[7] Studies classified as econometric are econometric specifications that did not necessarily have exogenous variation but had methods to compensate for identification problems

[8] While this number may strike those familiar with financial inclusion policies as quite low, it is worth emphasizing the difficulty of making credible causal inferences from observational data. Thus, many descriptive studies were excluded. As academics increasingly recognize the value of careful identification of causal relationships, we expect the number of high-quality studies to increase dramatically in the near future.

- the expansion of banking, credit and or savings services to low income rural households through *policy changes*;
- the expansion of savings services through the introduction of *new savings products*;
- the *introduction of technology* to make banking services more easily accessible;
- the expansion and introduction of savings and savings *product 'marketing'* to improve awareness of savings services;
- the effects of increased *regional bank saturation*.

While we searched for studies on the effects of financial literacy programs, we did not find any which met our inclusion criteria. The financial literacy studies captured by our search either examined the impacts of financial literacy and microfinance together or examined the effects of financial literacy on financial usage and awareness. Both of these groups are specifically excluded from our review: the former for not assessing a formal financial service, the latter for not examining the impact on an income indicator.

3.2.3. Program and policy characteristics and contexts

The characteristics and contexts of our 12 included studies are detailed in Appendix 3.1. The studies were set in Ethiopia, India, Kenya, Nicaragua, the Philippines, Tanzania, Thailand and Vietnam. As can be seen in Table 3.1, the countries are classified as both lower and lower-middle income according to the World Bank classifications at the time of study. According to the Freedom House (2011) Political Freedom Ratings, the countries examined range from not free to free. Our savings studies took place in mostly urban settings, but all of our other studies focused on rural settings or settings with a mix of urban and rural populations. There was a mix of target populations, including farmers, existing bank clients and rural unbanked villages. Often, some portion of the target population had access to informal or formal banking services before the implementation of the program or policy studied. Lastly, the studies examined programs, policies and characteristics implemented between 1961 and 2010, although all the studies took place and had at least some of their data from the years between 1980 and 2011, as indicated in our inclusion criteria.[9]

3.2.4. Study characteristics

As seen in Table 3.1, the methodologies of the studies covered in the review included RCTs, quasi-experimental studies using instrumental variables, and econometric and observational studies using switching regressions and propensity score matching models or other methods to control for identification problems. The outcome categories which our included studies examined include: labor and household income, household and business assets, household consumption, small and micro-business investment, small and micro-business income, small and micro-business or agricultural output, measures of poverty and a few other income-related outcomes. It is also noteworthy that although the studies covered both low- and lower-middle-income countries, the included studies focused exclusively on the

---

However, a lot of the new research focuses not on formal finance but rather on microfinance.

[9] Our search criteria lists are publication dates from 1980 to 2010; however, we do have one study published in 2011, which was referred to us by an expert in the field.

poor. Appendix 3.3 summarizes the income and asset profile of the samples used in each study.

While our stringent inclusion, exclusion and quality assurance processes did not leave us with a large number of studies to examine, we did synthesize a range of types of studies, programs, contexts and outcomes.

4. Synthesis results

4.1. Further details of studies included in the synthesis

In order to synthesize the results, we grouped the studies included in the in-depth analysis into two main categories, based upon how they examined the impact of formal financial services on income. These were: (1) *Interventions and policies studies* and (2) *Bank saturation studies*. While the intervention and policies studies examined the effect on income of increased provision of financial services, the bank saturation studies examined the effects on income of using financial services, employing econometric techniques to avoid identification problems. This methodological difference makes it more accurate to compare the outcomes of the two groups separately as income changes in the former group reflect an increased supply of financial services while income changes in the latter group reflect use of financial services and provide an estimate for the overall effect of access to banking.

To further organize the results, we divided the intervention and policies studies into groups based upon the type of program or policy examined, including provision of new savings products, introduction of a new banking technology and government policies influencing access to formal banking services. We also divided the bank saturation studies based upon the outcome variables analyzed, including agricultural outcomes and household consumption.

In the following subsections, we provide details of the studies. Textual summaries of each study may be found in Appendix 4.1, and summaries of the programs and polices examined by the studies may be found in Appendix 3.1 (discussed further in Chapter 3 above). Lastly, Table 4.1 summarizes the methodologies, samples, and treatment and control groups of the studies.

Table 4.1: Study methodologies

Title	Study design	Sample size	Treatment and control groups
Ashraf (2006a)[10]	RCT	346 Green Bank clients *in 10 branch areas*	-196 treatment group -150 control group
Ashraf (2006b/c)	RCT	4,001 Green Bank clients *in 2 branch areas*	-2,001 treatment group (commitment savings) -1,000 treatment group (marketing) -1,000 control group
Binswanger (1995)	Quasi-experimental	82-85 districts *For 2-9 years* *228-765 observations*	Comparison condition is lower access to credit and absence of bank saturation
Burgess (2003)	Quasi-experimental	375-636 observations *In 16 Indian states*	-1961-76 data are used as a ‘control’ -1977-89 data are used as a ‘treatment’
Carter (1989)	Econometric *Switching regressions model*	582 farms	Comparison between 298 farmers with credit and 284 farmers without credit

[10] For brevity, we refer throughout to the first author of each study. Full details of all authors can be found in the references.

Title	Study design	Sample size	Treatment and control groups
Dupas (2009)	RCT	279 individuals	Treatment: 144 (91 women, 53 men) Control: 135 (96 women, 39 men)
Freeman (1998)	Econometric *Two-stage switching regressions model*	186 small dairy farmers	Credit-constrained farmers are compared to Non-credit-constrained farmers
Jack (2010)	Econometric *Difference-in-difference method*	2,016-3,000 individuals	Compares effects of shocks for mobile bank users and non-users
Kinnan (2010)	Econometric *Regression analysis with solid controls and fixed effects*	531-789 households *over 84 months*	Compares those with direct or indirect access to banking to those without it
Kochar (2011)	Quasi-experimental	29,472 households	No new bank branches were opened in control districts
Nguyen (2007)	Econometric *Propensity-score matching*	4289 farming households	Compares propensity matched loan takers to non-loan takers
Winter-Nelson (2005)	Econometric *Switching regressions model*	250 coffee growers	117 Credit-constrained 86 Non-credit-constrained

4.1.1. Interventions and policies

4.1.1.1. Savings products

We include three RCTs that study the impact of different savings products. Two of these examined the impact on savings balances of clients of the Green Bank of Caraga in the Philippines. Ashraf (2006a) analyzed the impact of a deposit-collecting service for savings in a population of 346 clients of the Green Bank from 10 branches. Ashraf (2006b/c) analyzed the immediate and long-term impact of a commitment savings product and savings marketing treatment in a population of 4,001 Green Bank customers. The third study Dupas (2009) evaluated the impact of the introduction of an interest-free savings account with an effectively negative interest rate because of withdrawal charges imposed by the bank. The study was conducted in 2006-08 in collaboration with the Bumala FSA (Financial Services Association), a village bank in rural western Kenya, with a sample of 279 individuals.

4.1.1.2. Technology

We include one study that analyzed the impact of M-Pesa, a mobile phone based money transfer service in Kenya. The working paper, Jack (2010), used panel data of 3,000 users and non-users on mobile banking to make preliminary assessments of the impacts of M-Pesa on consumption smoothing.

4.1.1.3. Policy

We include three studies that analyzed the impact of a state-led expansion of the banking sector in India. Burgess (2003) used data from 16 states with sample sizes between 375 and 636 villages. The authors used an instrumental variable approach exploiting a change in policy that encouraged rural bank expansion to analyze the impact on rural poverty. Binswanger (1995) analyzed data over time from approximately 80 districts, and used the number of branches of financial institutions to predict credit supply, and then the predicted credit supply to estimate the impact on farm investment. Kochar (2011) used household data for 29,472 households in Uttar Pradesh from national sample surveys and a well-identified instrument variable design to isolate the impact of bank branch expansion on household per capita expenditure. These studies analyzed the impact of the same policy, but on different outcomes and populations, and using different methods.

4.1.2. Bank saturation

4.1.2.1. Agricultural outcomes

We include three studies that used switching regression models to study the impact of access to credit on agricultural inputs and output. Freeman (1998) analyzed the impact on milk production among 168 smallholder dairy producers from Kenya and Ethiopia. Winter-Nelson (2005) analyzed the impact on coffee production among 250 farmers in Tanzania, and Carter (1989) analyzed the impact on corn and bean production in 582 households in Nicaragua.

4.1.2.2. Household consumption

We include two studies that examine the impact of access to credit on household consumption. Kinnan (2010) used panel data from 789 households in Thailand to analyze the impact of having a loan, or having a direct connection with someone who had a loan, on changes to consumption over time as well as investment. Nguyen (2007) used propensity score matching to study the impact of loan take-up on consumption among 4,289 farming households in Vietnam.

4.2. Synthesis of evidence

4.2.1. Impacts: interventions and policies

4.2.1.1. Savings products

The first two savings studies examine the impact of offering new savings products and services on savings balances. The relevant results and details are in Table 4.2. The studies have been given an *excellent* quality rating as they used rigorous and carefully designed RCTs that allowed causal analysis.

As seen in Table 4.2, Ashraf (2006a) found that treatment with a deposit-collecting service increased total savings balance measured after 10 months and after 15 months, and these effects were statistically significant. Ashraf (2006b/c) found a positive and significant impact on savings balance after six and twelve months following treatment with a commitment savings product. However, after 32 months, the effects were positive but smaller and insignificant. Marketing the savings product without offering the commitment product did not produce any statistically significant effects. These studies suggest that transaction costs and behavioral biases matter, and new savings products that try to overcome these can increase household assets measured by savings balances and thus mobilize savings at least in the short run.

Table 4.2: Summary of savings product studies

Short title →	**Ashraf (2006)a**	**Ashraf (2006) b/c**	
Intervention →	**Deposit collection**	**Commitment savings**	**Financial awareness**
Outcomes	*(Std. Err.)*	*Coefficient (Std. err.)*	*Coefficient (Std. err.)*
Change in Green Bank savings balance after 6 months (Pesos)		234.68 ** (101.75)	
Change in all savings balance after 6 months (Pesos)		411.47 * (244.02)	
Savings balance after 10 months (Pesos)	343.41 *** (100.28)		
Savings balance after 15 months (Pesos)	530.42 *** (192.42)		
Change in savings greater than 0%		0.10 (3.82)	
Change in savings greater than 20%		0.10 * (0.02)	
Green Bank savings, 12 months (Pesos)		404.32 * (246.31)	115.88 (153.85)
Green Bank savings, 32 months (Pesos)		163.52 (289.63)	-145.72 (196.03)
Household total savings, 12 months (Pesos)		-36.16 (244.13)	573.72 (2098.01)
Client's own formal savings, 12 months (Pesos)		4994.05 (8906.51)	1119.03 (1585.84)
Applied for a loan, 12 months		0.10 *** (0.03)	-0.0012 (0.03)
Total debt, 12 months (Pesos)		1511.81 (1870.30)	-402.22 (2077.65)
Sample size	640	1777 (1629 for 32 month follow-up)	
Method	RCT	ITT-RCT/Probit	
Country	Philippines	Philippines	
Data year	2004	2004	
MSMS quality rating *(5-excellent, 1-poor)*	5	5	
* Significant at 10% level. ** Significant at 5% level. *** Significant at 1% level.			

Ashraf (2006a) found that over 10 months, savings balances increased by approximately $7.59 US and over 15 months they increased by approximately $11.73 US with the treatment of a deposit-collecting savings service. Ashraf (2006b/c) showed that over 12 months, savings balances increased by approximately $8.94 US, but over 32 months they had only increased by $3.40 US if they were treated with a commitment savings product. We can see that the two savings products had similar midterm effects, both increasing savings in the 10-15 month range by $8 to $12 US. While the there is no information on the long-term effects of savings collection, it seems that the initial gains in the magnitude of savings caused by the commitment savings product tapered off in the long term.[11]

Dupas (2009) evaluated an existing savings product which had some commitment savings elements enforced through an escalating set of withdrawal fees which were higher for larger amounts. The product was offered to micro-entrepreneurs operating in a rural market center. In spite of the costs of participating, 92 percent of those who were offered help to open the account accepted, and 53 percent went on to actively use them in the first six months. As seen in Table 4.3, the study found positive and significant effects of formal savings and business investment in the full sample as well as on women. However, considering the small number and high attrition among men, it is difficult to analyze these results as gender differences. After six months of opening the savings accounts, household expenditures also increase significantly, indicating increased income.

Dupas (2009) further found that demand for a costly savings product was indicative of negative returns of a higher magnitude, which the participating women micro-entrepreneurs faced, from their existing savings alternatives. Apart from strong evidence that the savings were used to increase their incomes and expenditures, they were also used to weather unexpected health shocks and to better smooth inventory over shocks. Further, 40 percent of the market women actively used the accounts within the first six months, which was much larger than take-up observed in microcredit programs, and consistent with other findings that indicated a larger demand for savings than for credit.

Table 4.3: Summary of savings product studies

Short title →	**Dupas (2009)**	
Intervention →	**Interest-free bank account**	
Outcomes	*Coefficient (Std. err.)*	
Daily average bank savings (Ksh) – *full sample*	9.05 (3.37)	**
Women only	*10.85 (4.38)*	**
Total hours worked – full sample	0.14 (0.36)	
Women only	*0.39 (0.41)*	
Amount invested in business (Ksh) – *full sample*	188.04 (94.99)	**
Women only	*225.92) (134.65)*	*
Daily average total expenditure (Ksh) – *full sample*	29.78 (14.53)	**
Women only	*35.87 (18.23)*	*
Daily average food expenditure (Ksh) – *full sample*	13.51 (6.03)	**
Women only	*17.45 (7.98)*	**
Daily average private expenditure (Ksh) – *full sample*	9.42 (3.36)	***

[11] In inflation adjusted 2010 US dollars, using the exchange rate from Philippine Pesos to US dollars recommended by the authors.

Women only	*8.41* *(3.68)*	**
Net transfers to spouse – *women only*	3.82 (6.65)	
Total volume of transfers to spouse – *women only*	-4.35 (6.74)	
Net transfers outside HH – *women only*	-26.41 (28.16)	
Total volume of transfers outside HH – *women only*	-28.17 (28.16)	
Sample size	222 to 279	
Method	ITT-RCT	
Country	Kenya	
Data year	2006-08	
MSMS quality rating *(5-excellent, 1-poor)*	*5*	

Notes: Only whole sample results are reported with no controls. The sample of men is too small for the results to have analytical value. Ksh = Kenyan Shillings. * Significant at 10% level. ** Significant at 5% level. *** Significant at 1% level.

The results show support for savings products' ability to raise income; it is important to also examine *how* the savings products might achieve this. A summary table of the pathways of change, showing how savings might raise income, can be found in Appendix 4.2. In Ashraf (2006a and 2006b/c), the a priori pathways of change are that an increase in the supply of savings opportunities will increase the use of savings, subsequently securing and growing the savings balances. Both provided evidence for this pathway, finding an increase in savings balances for the group treated with a commitment savings product. Ashraf (2006b/c) also examined a marketing treatment, the offering of a savings product without commitment; it was assumed that this could increase demand for savings by first increasing financial awareness. However, the authors did not find evidence for this effect. In Dupas (2009), the a priori pathway of change was that as the program increased the supply of financial services, incomes would rise through increased savings and business investments; additionally there was some evidence of consumption smoothing, investments, and ultimately an increase in income.

Examining average daily savings balances, Dupas (2009) found an increase of $0.13 US in that metric, which considering that the sample was drawn from a group well below the 2-dollar a day poverty line was a significant change.[12] This was significantly less than the other magnitudes of change; however, it indicates a different outcome – average daily savings balance rather than the change over some length of time. The savings studies together point to savings interventions and products increasing savings balances. The studies were largely too small to point to any valid heterogeneous effects.

Alternative pathways of change were presented by both Ashraf (2006a) and Ashraf (2006b/c). While the study could not disentangle the effects, Ashraf (2006a) suggested that the intervention helped people commit to savings and overcome time-inconsistent preferences through face-to-face interactions with the deposit collectors. Moreover, the deposit collectors lowered transaction costs involved in making savings deposits at the bank. Ashraf (2006b/c) suggested a new structural determinant of demand – changing demand by using product design to overcome behavioral challenges to saving, such as time-inconsistent preferences and the inability to commit. Therefore, we might believe that the development of products

[12] Using author-recommended exchange rates and adjusting for inflation, the numbers are reported in 2010 US Dollars.

and/or processes that overcome these factors can lead to increased usage of banking services.

Contextual factors can also affect the impacts of the studies. Ashraf (2006a and 2006b/c) were conducted in mostly urban populations in the Philippines, a lower-middle-income country, according to the World Bank, that is free, according to the Freedom House Political Ratings. Dupas (2009) was conducted in rural Kenya, which was a lower income country according to the World Bank during the project period, and deemed partly free in the Freedom House Political Ratings for that period. With RCTs such as those used in these studies, the issue of generalizability to other contexts remains. These studies were conducted with relatively small populations that may not extend to the entire country. The rigorous methodology of these studies allows causal interpretation of the findings within the population studied, and thus contributes to our understanding of the empirical relationships between savings and income. However, in applying the findings from these studies to other contexts, the most relevant applications are in the underlying needs and mechanisms that these studies identify.

Since the interventions were conducted with private banks, if they are to be scaled up, it might be important to use the same banks or replicate the models used by those banks. However, these studies do not provide much information on cost-benefit analysis, which limits our ability to address the scalability of these interventions.

4.2.1.2. Technology

We review one study that examined the impact of M-Pesa, a mobile phone based money transfer service. Jack (2010) gets an *acceptable* quality rating based upon the usage of a difference-in-difference econometric approach. As seen in Table 4.4, the study found that M-Pesa usage had a positive effect on consumption smoothing. Further, negative income shocks did not significantly impact on changes in consumption for M-Pesa users, while they did for others, suggesting that M-Pesa usage helps to smooth consumption. A negative income shock caused non-users to experience a 7 percent reduction in household income, while M-Pesa seemed to be able to smooth income seamlessly. This finding became more salient in light of the 3 percent that such shocks had on the average household.

Table 4.4: Summary of technology studies

Short title →	Jack (2010)	
Intervention →	**Mobile money (M-Pesa)**	
Consumption-smoothing outcomes	*Coefficient (Std. err.)*	
Overall effect of negative shock for users on log (per capita household consumption)	0.001 (0.024)	
Overall effect of negative shock for non-users on log (per capita household consumption)	-0.072 (0.027)	***
Overall effect of negative shock on log (per capita household consumption)	-0.0312 (0.019)	***
Sample size	3,000	
Method	Econometric panel data	
Country	Kenya	
Data year	2008-10	
MSMS quality rating *(5-excellent, 1-poor)*	3	
* Significant at 10% level. ** Significant at 5% level. *** Significant at 1% level.		

How might mobile phone banking technologies actually be affecting income? The possible pathways of change, explaining how these technologies might increase income, can be found in Appendix 4.3. The a priori pathway of change that was assumed prior to the study, was that an increase in the supply of banking services through technological improvements would lead to increase in usage of payment services, increased remittances and transfers, and ultimately increased income. The evidence supporting this is that mobile users were better able to weather negative shocks. The study also suggested that the technology has an impact on income through providing an opportunity for secure savings. The authors of Jack (2010) propose that early evidence, not reported above, suggests that M-Pesa increases both the share of savings held in the M-Pesa system as well as total savings of participants.

This study also had unique environmental factors. It was conducted among urban and rural populations in Kenya which was a lower-income country at the time of the study according to the World Bank, and which was partly free at the time of the study according Freedom House political ratings. It is important to note that in the sample populations, there is a large proportion of rural to urban migrants who financially supported rural family members and contacts. The study provides evidence that mobile money can help to smooth consumption, and suggests that it may be able to increase both savings and credit, leading to higher incomes, especially among populations where there are large numbers of migrant remittance senders. As discussed in Chapter 1, improved ability to smooth consumption can increase income for a variety of reasons including reducing the need to make fire sales[13] of high-return assets during negative shocks to income.

[13] Any instance of offering goods or assets at greatly reduced prices in the event of a consumption shock, with the primary motivation of smoothing consumption in the short run.

In extending these findings to other contexts, it is important to recognize that external factors in the environment, such as light regulation in Kenya, enabled this technology to take off. Thus, similar banking technology may not be as effective in other contexts. Within this context, it is also probable that the consumption smoothing and credit effects are due to the specific population characteristics, which require money to be sent over long distances.

4.2.1.3. Policy

We review three studies that examined the impact of a state-led expansion of the banking sector in India. All studies were given a *good* quality rating due to the use of rigorous quasi-experimental methods. The studies used policy changes as instruments to address concerns of omitted variables. As seen in Table 4.5, Burgess (2003) found that a one percentage point increase in the number of rural bank branches in previously unbanked locations in India was associated with an almost 5 percent decline in rural poverty rates and 4 percent decline in overall poverty rates, while there was no significant effect on urban poverty. Increases in rural bank credit and savings share were also similarly found to have a beneficial impact on rural and overall poverty rates, while leaving urban rates unaffected. The impact of bank branch expansion was also found to be positively associated with agricultural wages, with no significant effect on factory wages. Binswanger (1995) similarly found significant improvements in agricultural investment, particularly elasticity of fertilizer demand and investment in milk and draft animals, in response to commercial bank branch expansion. However, there were no significant effects on crop output, or investments in pumps or small livestock, though the direction of the results was positive for the first two outcomes and negative for the third. Kochar (2011) focused on the heterogeneous effects of bank expansion, finding that while overall household expenditure increased by 13 percent in response to bank expansion, this was primarily driven by increases in socially and economically privileged groups, with smaller or no significant impact on underprivileged groups. For instance, backward castes experienced a smaller and less significant increase in household income which was lower than the full sample average and the effect on non-backward castes.

The results show some heterogeneous effects on the impact of increasing supplies of financial services on incomes – what, then, are the possible pathways of change, the ways in which the expansion of banking services can increase income? A detailed summary of the studies' pathways of change can be found in Appendix 4.4. In all the studies, the a priori pathways of change, the assumed pathways before the study, were the same. The pathways suggest that an increase in the supply of finance, due to policy-led expansion of public and private banking services can reduce credit constraints.

Table 4.5: Summary of policy studies

Short title →	**Binswanger (1995)**	**Burgess (2003)**			**Kochar (2011)**
Policy →	Commercial bank expansion	Bank nationalization and rural bank expansion			
Measure of credit →	Bank Branches	Increase in Bank Branches	Rural Bank Credit Share	Rural Bank Savings Share	Rural Bank Branches
Outcomes	*Coefficient*	*Coefficient*	*Coefficient*	*Coefficient*	*Coefficient*

	(Std. err.)	*(Std. err.)*	*(Std. err.)*	*(Std. err.)*	*(Std. err.)*
Small and micro-business investment					
Fertilizer demand	0.25 * (0.037)				
Investment in draft animals	0.71 * (0.362)				
Investment in milk animals	0.52 * (0.198)				
Investment in pumps	0.38 * (0.105)				
Investment in small stock	-0.16 (0.381)				
Household income and expenditure					
Agricultural wage (n=545)		0.08 * (0.04)			
Factory wage (n=553)		0.05 (0.08)			
Per capita household expenditure:					
Full Sample (n=29,472)					0.13 ** (0.05)
Landholding: bottom 25% (n=7,862)					0.05 (0.05)
Landholding: top 25% (n=7,512)					0.16 ** (0.05)
Caste: scheduled castes/tribes (n=7,270)					0.10 * (0.06)
Caste: other castes (n=22,202)					0.13 ** (0.05)
Wealth: bottom 25% (n=9,802)					0.05 (0.05)
Wealth: top 25% (n=6,588)					0.20 ** (0.06)
Measures of poverty					
Rural headcount ratio (n=627)		-4.74 ** (1.79)	-1.52 ** (0.69)	-2.22 *** (0.78)	
Urban headcount ratio (n=627)		-0.66 (1.07)	-0.67 (0.47)	-1.05 (0.67)	
Aggregate headcount ratio (n=627)		-4.1 ** (1.46)	-1.37 ** (0.59)	-2.01 *** (0.65)	
Aggregate agri. output (index of 17 crops)	0.02 (1.37)				
Sample size	765	[See above]	503	503	[See above]
Units	Elasticity	Percentage changes			Percentage changes
Method	IV	IV			IV
Country	India	India			India
Data year	1971-81	1961-2000			1983-93
MSMS quality rating (*5-excellent, 1-poor)*	4	4			4

NOTE:
* Significant at 10% level. ** Significant at 5% level. *** Significant at 1% level.

Credit constraints are reduced either by (1) allowing consumption smoothing, improving intermediate outcomes and increasing incomes, or by (2) increasing investments, expanding businesses, improving intermediate outcomes and subsequently increasing incomes. Additionally, the policy changes could increase secure savings, allowing consumption smoothing and helping to build a savings track record which can be used to improve access to credit, ultimately possibly leading to an increase in income. Burgess (2003) provided evidence that the effects on rural poverty were at least partially mediated through increased deposit mobilization and credit disbursement by banks in rural areas. Binswanger (1995) found significant impacts on investment but not agricultural output, which suggested that while income measured by investment increased, this may not have translated into increased agricultural output. Kochar (2011) found improved household expenditure outcomes for socially backward groups, but not for economically less-advantaged groups as a whole, which suggested that different populations are affected differently by financial system expansion.

The studies have similar contextual characteristics. All the studies were conducted in India, which was a lower income country at the time of the studies, according to the World Bank, and was either partly free or free at the times of the different studies according to the Freedom House political ratings. The population involved was mostly rural in Binswanger (1995). In Burgess (2003), while the target population of the intervention was mostly rural, the effects were compared for urban populations. Kochar (2011) focused on Uttar Pradesh, a state in northern India. The populations studied in Binswanger (1995) and Burgess (2003) were representative of the country. However, Kochar (2011) focused on a particular state and was less representative of the entire country. The studies suggest that an increase in the supply of banking services in rural areas reduces rural poverty, and increases rural wages, agricultural investment and household expenditure, but that the effects may not reach the most backward groups in society.

Since all three studies evaluated the same policy in India, it is an open question whether the specific nature of the rural bank expansion mandate made this intervention particularly powerful, suggesting a need for further analysis of the mechanisms. Burgess (2003) and Binswanger (1995) also undertook cost-benefit analyses, and both showed an ultimate net benefit measured by increased output and/or incomes that were greater than the cost to the government.

4.2.2. Impacts: regional bank saturation

The studies in section 4.2.1 estimated the causal impacts of specific interventions and policies. The following studies targeted specific sections of the population and provided micro-evidence of impacts which may be hard to generalize to the entire population. In this section we consider studies that did not evaluate specific policies or interventions, but provided a more comprehensive picture of the micro-evidence on the impact of access to banking on larger and more representative samples.

4.2.2.1. Household outcomes

We review two papers which examined the effects of having access to credit on household consumption. Table 4.6 summarizes the main findings.

Nguyen (2007) measured credit access by the likelihood that someone uses credit based on their characteristics through a propensity score matching methodology.

This methodology yields an *acceptable* quality rating. Nguyen found that that the propensity to take loans was correlated positively and significantly with household consumption; however, the significance does not hold when examining the long-term effects of propensity to borrow, suggesting that the impact may not be long-lasting. Nguyen (2007) observed an increase of approximately 280 Vietnam Dong in consumption in the medium term, which increased to 761 Dong in the long term. It must be noted that 1992-98 was a period of high growth for Vietnam; the World Bank[14] reported an increase in per capita GNI from 1.56 million Dong in 1992 to 4.69 million Dong in 1998. Although average inflation was modestly high by global standards, it had come down dramatically from the hyperinflation of the 1980s and early 1990s.

Kinnan (2010) examined whether one individual's borrowing affected the consumption or investment of individuals socially close to the borrower. The author's identification strategy involved looking at the change in consumption and using time variant fixed effects in investment regressions, for which we assigned them a quality rating of *acceptable*. Kinnan found that having a link with the bank helped to smooth consumption; i.e. the effect of a negative shock on the consumption of individuals socially linked to a bank was smaller than that for unconnected individuals. Interestingly, being linked to a bank was not significant for investments.

Table 4.6: Summary of household outcomes

Short title →	**Nguyen (2007)**		**Kinnan (2010)**			
Intervention →	**Credit propensity and household consumption**		**Differences in consumption changes with shocks to income between those with links to commercial banks and those without**			
Explanatory variable →	**Credit propensity (all data)**	**Credit propensity (1992-93)**	**Household income**			
Coefficients reported →	**Differences between credit and control coefficients**		**Household income**	**Household income x any link to a bank**	**Household income**	**Household income x any link to a bank**
Outcomes	*Coefficient (Std. err.)*	*Coefficient (Std. err.)*	*Coefficient (Std. err.)*	*Coefficient (Std. err.)*	*Coefficient (Std. err.)*	*Coefficient (Std. err.)*
Household consumption	280.391 ** (481.668)					
Long-run household consumption 1997-98		761.674 (1032.609)				
Change in consumption			0.0595 *** (0.0057)	-0.0331 *** (0.0057)		
Investment (I/K)[1]					0.1586 *** (0.04)	-0.0143 (0.0203)
Sample size	4289		510 Households over 84 months			
Units	Vietnam Dong		Thai Baht			
Method	Propensity score matching		OLS			
Country	Vietnam		Thailand			

[14] Calculated by multiplying GNI per capita, PPP (current international $) by the PPP conversion factor, GDP (LCU per international $) for each year as reported on http://data.worldbank.org.

Data year	1992-93 and 1997-98	1995-2005
MSMS quality rating *(5-excellent, 1-poor)*	3	3

** Significant at 5% level. *** Significant at 1% level.
[1] Investment is measured by I/K, which is investment over total capital, so that investment is measured as a fraction of total capital.

The results of the studies show heterogeneous effects of having access to credit on household consumption in terms of time and social proximity to financial services. In both studies the a priori pathways of change expected that a reduction credit constraints would allow for smoothing consumption, increasing investments, or both. Nguyen does not allow us to further determine the specific pathways of change, but the findings support the conclusion that reducing credit constraints increases incomes. Kinnan, however, does help our examination of the causal mechanisms at work. The analysis shows that while being linked with a formal bank may increase consumption smoothing, it does not further increase investment, which is what our second a priori pathway suggested. Additionally, Kinnan suggested another causal pathway – that increased credit can raise the incomes of those socially connected to credit recipients. For a detailed summary of the studies' causal pathways, see Appendix 4.5.

The environments of the studies can also affect their measured impacts. These two household consumption studies were set in samples drawn from agricultural populations in Thailand (Kinnan, 2010) and Vietnam (Nguyen, 2007). Thailand was a lower-middle-income country whereas Vietnam was a lower-income country at the time of study, according to the World Bank. Thailand was classified as partly free whereas Vietnam was classified as not free during the study periods, according to the Freedom House political ratings.

Both studies suggest that increasing access to credit can increase incomes. Nguyen found that increased credit correlates with increased consumption, one of our income indicators, and Kinnan found that increased credit or connections to credit correlated with smoother consumption patterns. The similar outcomes across countries are suggestive that this result may be more general; however, we cannot easily extend the results outside rural farming populations. We must consider the possibility that the rural farmers have a special characteristic because of which credit specially impacts on consumption and income; however, we would need further evidence to understand any agriculture-specific mechanisms at work.

4.2.2.2. Agricultural outcomes

We examine three papers which studied the impacts of credit on agricultural outcomes, or more specifically the impact of credit on the marginal effects of inputs on agricultural output. All three papers used a strategy of switching regression models, similar to propensity score matching, to address the identification problem. They were all assigned an *acceptable* quality rating due to their observational methodologies. Table 4.7 highlights the main findings. Freeman (1998) showed that a credit-constrained farmer had a significantly higher marginal rate of return in terms of milk production for an additional cow than a non-credit-constrained farmer in both Kenya and Ethiopia. We can see this in the differences in coefficients and in the fact that additional cows were more likely to have significant impacts on milk production for credit-constrained farmers. The same effects cannot be seen from other inputs, which, the authors postulated, was because they were not as important to milk production as cows. Similar effects can be seen for credit-constrained coffee growers in Tanzania in Winter-Nelson (2005). A credit-constrained farmer had a significantly higher marginal rate of return in terms of coffee production for additional coffee plants. There were smaller insignificant effects on the age of plants and other inputs. Carter (1989) also found a large input intensity effect on corn and bean production in Nicaragua. Isolating it from the rest of the inputs, he found a large additive shift, again suggesting that credit-constrained farmers faced much higher marginal rates of returns on significant inputs.

These higher marginal rates of return suggest that higher amounts of credit would lead to increased inputs and output, and thus higher incomes, but what are the pathways through which this could happen? See Appendix 4.6 for a detailed summary table of all of the pathways of change. The a priori pathways through which access to credit was intended to raise income was through reducing credit constraints, allowing the purchase of better inputs, leading to higher outputs and incomes. And all three studies provide strong evidence for this pathway as they show that credit-constrained farmers have much higher marginal rates of return on inputs.

The studies were set in Kenya and Ethiopia (Freeman, 1998), Tanzania (Winter-Nelson, 2005) and Nicaragua (Carter, 1989), which have income classifications of lower income, lower income and lower-middle income respectively during the times of their studies according to the World Bank measures. While Kenya and Ethiopia were classified as not free, Tanzania and Nicaragua were classified as partly free at the times of the studies, according to the Freedom House political ratings. The samples in the studies are very similar in that they were all small farmers. While the results thus may not be extendable beyond farmers, these three studies provide evidence for credit being able to raise poor farmer's income through allowing them to purchase more inputs, leading to higher outputs and income, independent of location. Moreover, the consistency in the findings in different populations allows us to be more confident about the generalizability of these results to other contexts.

Both Freeman (1998) and Winter-Nelson (2005) examined the effects on agricultural production for credit-constrained versus non-credit-constrained farmers. Freeman (1998) found that the absence of a credit constraint raised milk per cow output by 0.13 liters in Ethiopia and 0.93 liters in Kenya per year. Average daily total milk production in the sample was about 6 liters in Ethiopia and almost 9 liters in Kenya. Winter-Nelson (2005) similarly found that credit constraints might reduce the incremental increase in coffee production from adding a coffee tree by a third of a kilogram. Together these studies suggest that increased access to credit improves farmers' ability to make optimal production decisions and improve output.

Discussing inputs, Freeman (1998) indicated that while additional expenditure on milk production in Ethiopia yielded about a tenth of a liter in additional output in the absence of a credit constraint, in Kenya there was no significant difference. Winter-Nelson (2005) again found that the coffee producers without credit constraints were able to benefit from a higher return on their expenditure on inputs. Moreover, Carter (1989) also found that absence of credit constraints resulted in a large input intensity effect on corn and bean production in Nicaragua.

Table 4.7: Summary of agricultural outcomes

Short title →	**Freeman (1998)**						**Winter-Nelson (2005)**			**Carter (1989)**
Outcome →	**Annual total milk production**						**Coffee production**			**Corn and bean production**
Group →	**Credit-constrained**	**Non -credit-constrained**	**Differ-ence**	**Credit-constrained**	**Non-credit-constrained**	**Differ -ence**	**Credit-constrained**	**Non-credit-constrained**	**Differ-ence**	**Additive Shift**
Explanatory Variables	*Coefficient (Std. Err.)*	*Coefficient (Std. Err.)*		*Coefficient (Std. Err.)*	*Coefficient (Std. Err.)*		*Coefficient (Std. Err.)*	*Coefficient (Std. Err.)*		*Coefficient (Std. Err.)*
LIVESTOCK AND CROP CHARACTERISTICS										
Number of local breeding cows	0.145 * (0.064)	0.016 (0.057)	0.13	1.145 * (0.633)	0.21 (0.633)	0.93				
Number of cross-bred cows	0.633 * (0.310)	0.385 * (0.162)	0.25	1.615 * (0.633)	0.87 * (0.633)	0.75				
Number of exotic breed cows				0.334 * (0.633)	0.10 (0.633)	0.23				
Coffee Tree Count							1.170 *** (0.633)	0.813 *** (0.633)	0.357	
Coffee Tree Age							0.353 (0.633)	0.273 (0.633)	0.080	
INPUTS										
Total Expenditure on Inputs	0.181 * (0.633)	0.001 (0.633)	0.18	-0.008 (0.633)	0.02 (0.633)	-0.03				
Chemical inputs expenditure							0.069 * (0.633)	0.051 (0.633)	0.018	
Avg. input intensity										0.46 (0.3)
Sample size	74			94			117	86		592
Units	Liters						Kilograms			Kilograms
Method	Switching regression, with final stage WLS						Switching regression			Switching regression
Country	Ethiopia			Kenya			Tanzania			Nicaragua

Data year	1993-95	2001-02	1981
MSMS quality rating *(5-excellent, 1-poor)*	3	3	3

* Significant at 10% level. ** Significant at 5% level. *** Significant at 1% level.

4.3. Synthesis: quality assurance results

We took a number of steps to ensure the quality of the results. The final set of studies were discussed by the team and classified into different categories based on interventions and outcomes. The entire team discussed the main findings for each group of studies. Following the discussion, one reviewer drafted each section of the synthesis. The senior reviewers then reviewed this and any changes were discussed and incorporated. External reviewers provided feedback on the first draft of the report. The team discussed the suggestions and comments from the external review and one of the reviewers incorporated the responses to the comments. Finally, each member of our entire team reviewed the final report.

4.4. Summary of the results of the synthesis

- Innovative design of new savings products that increase the supply of savings and increase demand for savings by helping people address behavioral challenges such as short-run impatience can increase income by allowing households to accumulate assets (savings balances) at least in the short run. This is supported by evidence from three excellent quality studies that used RCTs to evaluate impact. These studies also shed light on a specific channel of influence. However, two of these studies used the same sample of current and former clients of a single bank. This suggests that replication of this study in different settings will help us better understand how generalizable the results are.
- While mobile banking technology is expanding and has the potential to reach large scale, we only have suggestive evidence that this technology, which facilitates remittances, transfers and payments and enables savings, can increase income through consumption smoothing and accumulation of savings. This evidence is provided by one preliminary empirical study of acceptable quality. Given the widespread use of mobile phones in the developing world, this mechanism offers a promising way to increase the availability of banking services for the poor. Further studies in this area would be important in helping us understand the extent to which light regulation and the dominance of the mobile operator in the domestic market are important.
- State-led expansion of the banking sector in rural areas increases supply of banking services, which reduces rural poverty, and increases rural wages and agricultural investment. This is supported by evidence from two studies of good quality that used quasi-experimental methods to analyze the effects following a policy change. However, a third study of good quality explores the distributional effects among the poor and found more mixed evidence. Focusing on a specific region, it found that the non-poor benefited more from the policy than poor and socially backward groups. In generalizing the findings, one must keep in mind that all three studies analyzed the same policy change in India, and there may be characteristics of the context, particularly the socioeconomic and political conditions in India and features of the Indian banking sector, that drove the results.
- Access to credit can increase household income by increasing and/or smoothing consumption. Moreover, access to credit may also increase incomes of members of an individual's social network. Evidence for this result is provided by two studies of acceptable quality that use econometric techniques to analyze impacts. The similar finding in two countries suggests significant generalizability; however, the rural farming populations in both

studies might influence the channels through which access to credit affects consumption.

- Access to credit can raise agricultural incomes by allowing farmers to purchase better quality and levels of inputs, leading to higher outputs and income. This is supported by evidence from three studies of acceptable quality that used econometric techniques to analyze impacts. The findings are very similar across settings. Given these findings, the stage is ripe for more directed research exercises that evaluate similarity of the findings across countries, as they suggest that these results could be extended to other contexts. However, since these studies did not estimate the impact of specific policies or interventions, the implications regarding the policies that would be most effective are unclear.

5. Strengths and limitations

5.1. Strengths

This review's strengths lie most directly in the high-quality studies it examines. Our meticulous search and inclusion processes ensured that we identified the most relevant studies of high-quality. Subject to our inclusion and exclusion criteria, we are confident that through our searches and expert contacts, we ascertained and gathered the best data and analyses on whether having access to formal financial services can raise the poor's income. Thus, for synthesis, we were able to closely examine the most rigorous evidence on the topic. This allowed us to determine the trends, and the exceptions to those trends, of the impacts of formal financial services found in the literature. Additionally, we were able to point to the gaps and weaknesses in the literature and indicate where future research is most needed.

The review methodology which we developed further strengthened our analysis, conclusions and recommendations. Guided by the realist review approach, we not only examined the results of the impact assessments, but also the ways in which the programs or policies most likely affected results and the mechanisms of change. By including an examination of the locations, timings, political environments and other contexts of the policies and programs, we were better able to identify the parts of the programs which made them successful or unsuccessful. In this way, we were able to determine the pathways of change for financial services affecting the poor's income and give more specific and informed conclusions and recommendations.

5.2. Limitations

The systematic review methodology places some constraints on the search for, inclusion and synthesis of studies that are applicable to this review as well. The search process was limited to evaluating the available evidence base, which may have been subject to publication bias and other types of biases. We identify three main limitations that we face: process limitations, topic limitations, and the limitations of the included studies.

The review process placed certain limitations on our findings. For instance, the process focused our search on formal financial services as defined in Section 1.2.1, which excluded microfinance institutions and other informal credit institutions such as credit cooperatives. There is a large literature on various aspects of these services, which we have therefore had to exclude. Additionally, due to resource and time constraints, we restricted our examination to English language studies. Further review of non-English publications in this field may help deepen the understanding of the evidence on this issue. We excluded macro-economic studies and focused on micro-economic evidence that allows us to make more nuanced claims about the causal linkages between financial services and the income of the poor.

Next, the evidence we were able to include in our final review was constrained by the limited rigorous evidence available on the topic. For instance, we did not find any rigorous studies looking at the income impacts of financial literacy which were not combined with microfinance program participation. Moreover, we only identified one rigorously evaluated technological innovation program, M-PESA, for which there was only a preliminary quantitative assessment available.

Finally, we were limited by the fact that measuring the causal effects of formal financial services on income is a very challenging task. Rigorous impact studies are few in number because other variables may be correlated with both income and access, and income levels themselves may affect access and usage. Additionally, the difficulty of measuring income precisely meant that the studies used different methods to measure income. While this review incorporated several different indicators of income to allow for flexibility in the definition, this limited our ability to compare results across studies. Further, many studies did not provide details on the costs of the programs and policies evaluated, which limited our ability to provide useful cost-benefit analysis in relation to recommendations for replication or scale-up. As cost to benefit analysis is a large determinant of program and policy decisions, we urge future researchers to provide more information on program and policy finances.

6. Conclusions and recommendations

6.1. Main conclusions

This review has identified twelve rigorous studies that evaluate the impact of access to formal banking services on income. Given the importance of the topic, the number of studies identified is surprisingly small, though this may reflect the strict criteria for inclusion in the review.

We find compelling evidence that poor people's access to formal banking services can raise their incomes. In particular, the studies we identified in this review provide direct evidence on four of the channels described under the role of financial systems in Chapter 1. The findings of this review demonstrate that access to formal banking services produces information ex ante about possible investments and allocation of capital. Specifically, we find that state-led expansion of the banking sector in rural areas in India reduced rural poverty, and increase rural wages and agricultural investment. One study of this state-led expansion found that the benefits are concentrated among socially backward groups, and might not reach the poorest of the poor.

However, this banking expansion required substantial commitment of government resources, and the studies do not present detailed cost-benefit analyses. To the extent that rural branch expansion in India has been very low since the 1991 financial liberalization, it would appear that banks do not perceive this sector as being profitable. More generally, the limited use of formal sector banking services by the poor suggests that the private sector has been reluctant or unwilling to serve this market, or that the market-clearing price for banking services is above the willingness or ability of the poor to pay. If costs are indeed the most important barrier, we find two encouraging trends offered by recent financial innovations.

First, new savings products can increase both supply and demand, causing households to accumulate assets. Successful products analyzed by studies in this review reduced transaction costs for those making small deposits, and facilitated commitments to save. These findings support the view that financial services can help mobilize and pool savings, especially when combined with innovative product design. While the studies reviewed here were from a specific geographic region, the underlying needs in the population and mechanisms identified suggest that such product innovations would be quite useful in other contexts as well. The decision to promote these products elsewhere would also depend on cost-benefit analysis.

Second, there is preliminary evidence that improving banking technology by using mobile phones can facilitate savings, remittances, transfers and payments among the poor and increase incomes by allowing households to smooth consumption and accumulate savings. As discussed in Chapter 1, consumption smoothing could increase income if, for instance, it reduced the need to sell productive assets during negative income shocks. Mobile banking technology has the potential to reach a large scale and have a significant impact because of the widespread use of mobile phones in the developing world, and because by reducing transaction costs, this technology could bring the benefits of banking services to even low-income households for whom transactions are often very small. The studies on mobile technology for banking provide evidence that financial systems ease the exchange of goods and services, and this in turn facilitates risk management through consumption smoothing and mobilizes savings.

Returning to the broader issue of what credit delivers, we find evidence that access to credit is associated with increased consumption and/or smoother consumption for rural farming populations. Moreover, some evidence suggests that even indirect access to credit (through social networks) could matter.

Finally, reiterating the role of financial systems in allowing optimal investment, we find that across different countries access to credit is associated with higher agricultural incomes by allowing farmers to invest in optimal agricultural inputs. However, these bank saturation studies do not identify specific policies or interventions.

6.2. Note on heterogeneous effects

The small number of studies identified in this review limits our ability to meaningfully discuss heterogeneous effects. However, some of the studies point to different effects of access to formal banking based on the pathway of change it may affect. Many of these results are suggestive, and provide directions for further research on the heterogeneous effects of access to banking.

The savings studies suggest that factors such as time-inconsistency, intra-household bargaining and risk of expropriation by people in one's network may be important in determining the effect of access to savings facilities. Ashraf (2006b/c) found that women who had a preference for commitment, measured by a lower discount rate for future relative to current trade-offs, were significantly more likely to open the commitment savings account. Ashraf (2006a) found that married women were more likely to take up the deposit collection service than single women, while there was no such difference amongst men. Dupas (2009) found a larger effect for women in the sample than men, and women in the treatment were less likely to transfer business revenues to people outside their household.

The studies in this review also found heterogeneous effects for improvements in banking technology and government-led bank expansion with regard to improvements in banking technology. Jack (2010) found evidence that mobile banking technology was particularly important for rural to urban migrant populations, who could use the technology to send remittances to their families. Kochar (2011) found that although there was a positive impact on household expenditure overall and for socially backward groups, the effects were heterogeneous, with non-poor households experiencing a positive and significant improvement while poor households saw no significant effect.

The bank saturation studies suggest that access to credit improves agricultural outcomes and household consumption across different populations and countries. As discussed, the small number of studies does not allow us to provide a useful discussion of heterogeneous effects here. Kinnan (2010) shows that social proximity to banking has an effect on household consumption, but for investments, this effect is larger for households in occupations where the average investment size is high relative to net worth.

6.3. Implications for policy and practice

This review provides a detailed literature review on the importance of each of the five functions of the financial systems outlined in the introduction: (1) producing information and allocating capital; (2) investments; (3) facilitating risk management; (4) mobilizing and pooling savings; and (5) easing the exchange of goods and services. Understanding the relative importance of each of these functions could provide clear guidance to policy makers. Of course, most studies cannot be neatly allocated into any single category. Nevertheless, we were surprised both by the low number of high-quality studies addressing this question and by the lack of evidence on the role of the banking system in several of these important categories.

Given the costly reliance on cash transactions and the growth of mobile payment systems around the world, we expected to find substantial evidence on the impact of mobile banking on income generation. Instead, we find only preliminary evidence on mobile banking, and no rigorous evidence on other technologies like debit cards. It is important to assess the effectiveness of these technologies: while they may have initial fixed costs, they are based on proven technologies, and if they are in fact effective, could represent relatively ‘easy wins’ in development policy. Evidence is crucial in order to ensure the cost-effectiveness estimates are appropriate.

The case that financial services increase income would be considerably strengthened by evidence that there are high-return activities available to a broad range of poor individuals. There is certainly evidence that firms in developing countries achieve high marginal returns to capital, but much less evidence that the type of activity financed by a bank loan to an individual could yield such returns. However, this is particularly difficult because measuring individual returns to capital is challenging. Indeed, evidence from microfinance studies suggests very significant heterogeneity across individuals in terms of potential entrepreneurship.

Our review produced no evidence on the impact of financial literacy programs when combined with formal banking services. This may have different impacts than when combined with microfinance programs if people are more receptive and trusting of formal banks, or if formal banking services lead to different outcomes. Formal banking may also address a different category of the poor than microfinance, requiring different specialized financial literacy curricula.

This review presents suggestive evidence that access to banking can have spillovers through social networks. This is an important area for more research since it suggests that the benefits of many interventions may be substantially greater than what would be measured by simply calculating the benefits to targeted recipients.

Since most financial services are provided by the private sector, we suggest that greater attention is paid to determining what features limit private entry into this sector: regulation (e.g., inability to get banking licenses), limited ability to collect pledged collateral, etc.

Recognizing that access to finance is an important goal for many governments and since many public policies focus on improving access, we urge researchers to take advantage of policy rollouts as potential sources for identification and measuring the impacts of such policies.

With regard to policy recommendations, the review provides some grounds for cautious optimism about the positive effects of policies that expand formal financial access. Given the strong evidence that formal banking can increase income, the key question is whether these services can be provided in a cost-effective manner.

Especially promising are innovations in savings products and improvements in banking technology which address behavioral and physical impediments to access. Programs which provide new targeted financial products may be particularly effective because they can simultaneously increase supply while breaking down traditional barriers and reducing the costs of expanding services for banks. Successful products reduce the financial and psychological costs of banking for the poor. We believe that new financial service products specifically tailored for the poor offer a promising dual approach to help them overcome structural and behavioral constraints. We would cautiously encourage product and program development which addresses both constraints, while simultaneously encouraging more research. Our research experience suggests that experimental evaluations of product designs is both feasible and likely to yield high returns for implementing banks.

In terms of agriculture, we find that farmers' credit constraints are an important bottleneck in expanding agricultural output, preventing them from using optimal levels of inputs. Interventions that ease these constraints may be effective in reducing rural poverty and increasing agricultural production.

Spillovers are an important factor that must be considered when formulating policies about financial access. As we find that even a relative's or a neighbor's access to financial services such as bank accounts and banking technologies can impact on individuals, even targeted programs can lead to benefits for a larger population, perhaps giving policy makers reason to consider mandating interventions that would otherwise be considered too costly.

Taken together, these observations suggest that a key policy recommendation emerging from this review is the need for many more high-quality research studies on the economic impacts of financial access. We conclude by suggesting the need for two other avenues of broader research.

First, we need to know more about which products deliver financial access to the poor. Such evidence is a necessary prerequisite for policy recommendations on which kinds of financial access can increase the incomes of the poor. For instance, some studies show that significant state control of the formal banking sector in many low-income settings leads to electoral cycles in credit access for the poor. This suggests that the poor may not always get credit when they have high-return activities available.

Second, emerging evidence from the microfinance sector provides mixed evidence on the economic returns of lending to the poor. This raises the question of the relative returns from lending directly to the poor versus lending to, say, small and medium enterprises. Studies that provide credible evidence on the returns on capital for the poor can help us understand the likely economic impacts of lending to the poor.

To conclude on a more optimistic note, the last decade has seen a growing recognition among policy makers that financial access for the poor may be as important for their long-term well-being as access to education and health. In the case of education and health, we see a large and robust evaluation literature. We hope the next decade will see the emergence of a similar literature on issues of financial access.

7. References

7.1. Studies included in review

These are the studies for which we did a full-paper review. Studies that are included in the final synthesis are indicated with a [I] preceding the first author's name.

Anderson J (1990) Does regulation improve small farmers' access to Brazilian rural credit? *Journal of Development Economics* 33(1): 67-87.

[I] Ashraf N, Karlan D, Yin W (2006a) Household decision making and savings impacts: further evidence from a commitment savings product in the Philippines, http://www.econ.yale.edu/growth_pdf/cdp939.pdf (accessed 17 December 2012).

[I] Ashraf N, Karlan D, Yin W (2006b) Tying Odysseus to the mast: evidence from a commitment savings product in the Philippines, *Quarterly Journal of Economics* 121(2) 635-672.

[I] Ashraf N, Karlan D, Yin W (2006c) Deposit Collectors, *B.E. Journal of Economic Policy* 6(2): 5.

Bandiera O, Burgess R, Gulesci S, Rasul I, Munshi S (2010) *Can entrepreneurship programs transform the economic lives of the poor?*. http://www.theigc.org/sites/default/files/presentation_slides/stup_gw2010.pdf (accessed 16 January 2012).

Beegle K, Dehejia RH, Gatti R (2003) Child labour, income shocks, and access to credit, http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1761401 (accessed 17 December 2011).

Behrman J, Foster A, Rosenzweig MR (1997) Dynamic savings decisions in agricultural environments with incomplete markets. *Journal of Business and Economic Statistics*. 15(2): 282-292.

[I] Binswanger HP, Khandker SR (1995) The impact of formal finance on the rural economy of India, *Journal of Development Studies* 32(2): 234-262.

[I] Burgess R, Pande R (2003) Do rural banks matter? Evidence from the Indian social banking experiment, London: Suntory and Toyota International Centres for Economics and Related Disciplines.

[I] Carter MR (1989) The impact of credit on peasant productivity and differentiation in Nicaragua. *Journal of Development Economics* 31(1): 13-36.

Chloe H (2010) Kenya: M-Pesa miracle. *Euromoney*, May.

DFID (2004) *The Importance of financial sector development for growth and poverty reduction*, London: DFID.

Duncombe R, Boateng R (2009) Mobile phones and financial services in developing countries: a review of concepts, methods, issues, evidence and future research directions, *Third World Quarterly* 30(7): 1237-1258.

[I] Dupas P, Robinson J (2009) *Savings constraints and microenterprise development: evidence from a field experiment in Kenya*, http://www.nber.org/papers/w14693 (accessed 17 December 2011).

Eastwood R, Kohli R (1999) Directed credit and investment in small-scale industry in India: evidence from firm-level data 1965-78, *Journal of Development Studies* 35(4): 42-63.

Fletschner D (2008) Women's access to credit: does it matter for household efficiency? *American Journal of Agricultural Economics* 90(3): 669-683.

[I] Freeman HA, Ehui SK, Jabbar MA (1998) Credit constraints and smallholder dairy production in the East African highlands: application of a switching regression model, *Agricultural Economics* 19(1-2): 33-44.

Giné X (2004) *Literature review on access to finance for SME and low-income households*. Washington, DC: World Bank, Mimeo.

Gupta S, Pattillo CA, Wagh S (2009) Effect of remittances on poverty and financial development in Sub-Saharan Africa, *World Development* 37(1): 104-115.

[I] Jack W, Suri T (2010) *The adoption and impact of mobile money in Kenya: results from Kenya*. Mimeo.

Karlan D, Zinman J (2010) Expanding credit access: using randomized supply decisions to estimate the impacts, *Review of Financial Studies* 23(1): 433-464.

[I] Kinnan C, Townsend R (2010) Kinship and financial networks, formal financial access and risk reduction, www.cfsp.org/publications/working-paper/kinship-and-financial-networks-formal-financial-access-and-risk-reduction (accessed 12 December 2011).

Kochar A (1997a) An empirical investigation of rationing constraints in rural credit markets in India, *Journal of Development Economics* 53(2): 339-371.

Kochar A (1997b) Does lack of access to formal credit constrain agricultural production? Evidence from the land tenancy market in rural India, *American Journal of Agricultural Economics* 79(3): 754-763.

[I] Kochar A (2011) The distributive consequences of social banking: a microempirical analysis of the Indian experience, *Economic Development and Cultural Change* 59(2): 251-280.

Love I, Sanchez SM (2009) *Credit constraints and investment behavior in Mexico's rural economy*. http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1447207 (accessed 12 December 2011).

MkNelly B, Dunford C (1998) *Impact of credit with education on mothers and their young children's nutrition: Lower Pra Rural Bank credit with education program in Ghana*, Research Paper 4, Davis, CA: Freedom from Hunger.

Morawczynski O (2009) Exploring the usage and impact of 'transformational' mobile financial services: the case of M-PESA in Kenya, *Journal of Eastern African Studies* 2009(3): 509-525.

Morawczynski O, Pickens M (2009) *Poor people using mobile financial services: observations on customer usage and Impact from M-PESA*, C-Gap Brief, www.cgap.org/p/site/c/template.rc/1.9.36723 (accessed 17 December 2011).

[I] Nguyen C (2007) *Determinants of credit participation and its impact on household consumption: evidence from rural Vietnam*, Edinburgh: Centre for Economic Reform and Transformation, Heriot Watt University, http://ideas.repec.org/p/hwe/certdp/0703.html (accessed 17 December 2011).

Niño-Zarazúa MA (2007) *The impact of credit on income poverty in urban Mexico: an endogeneity-corrected estimation*. http://papers.ssrn.com/sol3/papers.cfm?abstract_id=977759 (accessed 17 December 2011).

Rosenzweig MR (2001) Savings behavior in low-income countries, *Oxford Review of Economic Policy* 17(1): 40-54.

Suwen P, Roderick MR, Xiurong H (2009) Does financial intermediation development increase per capita income in rural China? *China and World Economy* 17(4): 72-87.

Tiamiyu Mojisola F (1994) A bank for the 'poor': perceptions of the female clients of the People's Bank of Nigeria, *Community Development Journal* 29(1): 47-61.

[I] Winter-Nelson A, Temu A (2005) Liquidity constraints, access to credit and pro-poor growth in rural Tanzania, *Journal of International Development* 17(7): 867-882.

7.2. Other references used in the text of the technical report

Accion International (2007) *A comparison of housing finance programs for low-income people in Peru*, http://www.microfinancegateway.org/gm/document-1.9.45533/A%20comparision%20of%20housing%20microfinance.pdf (accessed 19 December 2011).

Acemoglu Daron, Johnson Simon, Robinson JA (2000) *The colonial origins of comparative development: an empirical investigation*, Working Paper 7771, Cambridge, MA: National Bureau of Economic Research.

Adams Dale, Graham, Douglas, Von Pischke JD (1984) *Undermining rural development with cheap credit*, Boulder, CO: Westview Press.

Aleem I (1990) Imperfect information, screening and the costs of informal lending: a study of a rural credit market in Pakistan, *World Bank Economic Review* 3: 329–349.

Alessie Rob, Lusardi Annamaria, van Rooji Maarten (2007) *Financial literacy and stock market participation*, MRRC Working Paper 2007-162, www.mrrc.isr.umich.edu/publications/Papers/pdf/wp162.pdf (accessed 18 December 2011).

Aportela Fernando (1999) *Effects of financial access on savings by low-income people*, MIT Department of Economics Dissertation, Chapter 1.

Ashraf Nava, Aycinena Diego, Martinez Claudia A, Yang Dean (2009) *Remittances and the problem of control: a field experiment among migrants from El Salvador*, mimeo, University of Michigan.

Attanasio Orazio, Meghir Costas, Santiago Ana (2005) *Education choices in Mexico: using a structural model and a randomized experiment to evaluate Progresa*, www.ifs.org.uk/publications/3360 (accessed 18 December 2011).

Banerjee A, Duflo E (2005) Growth theory through the lens of development economics, in Aghion P, Durlauf SN (eds) *Handbook of economic growth*, vol 1, Kidlington: Elsevier, pages 473-552.

Banerjee A, Mullainathan S (2010) *The shape of temptation: implications for the economic lives of the poor*, MIT Department of Economics Working Paper 10-9, http://ssrn.com/abstract=1598547 (accessed 18 December 2011).

Barr M, Kumar A, Litan R (2007) *Building inclusive financial systems*, Washington DC: Brookings Institution Press.

Beck Thorsten, Demirguc-Kunt Asli, Honohan Patrick (2008) *Finance for all? Policies and pitfalls in expanding access,* Policy Research Report, Washington DC: The World Bank.

Braverman Avishay, Guasch JL (1986) Rural credit markets and institutions in developing countries: lessons for policy analysis from practice and modern theory, *World Development* 14(10-11): 1253-67.

Burgess Robin, Pande Rohini, Wong Grace (2005) Banking for the poor: evidence from India, *Journal of the European Economic Association Papers and Proceedings* 3(2-3): 268-278.

Claessens S, Feijen E (2007) From credit to crops, finance and development, *Finance and* Development 44(1), www.imf.org/external/pubs/ft/fandd/2007/03/claessen.htm (accessed 18 December 2011).

Cole Shawn A (2009) Financial development, bank ownership, and growth: or, does quantity imply quality? *Review of Economics and Statistics* 91(1): 33-51.

Cole Shawn A, Sampson Thomas, Zia Bilal (2011) Prices or knowledge? What drives demand for financial services in emerging markets? *Journal of Finance* 66(6): 1933-1967.

Demetriades P (1997) *Financial markets and economic development*, Discussion Papers (1995-2001) 97/03, Keele: Department of Economics, Keele University.

Duvendack M, Palmer-Jones R, Copestake JG, Hooper L, Loke Y, Rao N (2011) What is the evidence of the impact of microfinance on the well-being of poor people? London: EPPI-Centre, Social Science Research Unit, Institute of Education, University of London.

Fernando NA (2007) *Low-income households' access to financial services international experience, measures for improvement, and the future*, EARD Special Studies, Asian Development Bank, www.adb.org/Documents/Books/Low-Income-Households/low-income-household.pdf (accessed 18 December 2011).

Freedom House (2011) *Freedom in the world comparative and historical data: country ratings and status, FIW 1973-2011*, www.freedomhouse.org/template.cfm?page=439 (accessed 18 December 2011).

Giné, Xavier (2007) Why does access matter? Impact on growth and poverty, in Barr MS, Litan R, Kumar A (eds) *Building inclusive financial systems: a framework for financial access,* Washington, DC: Brookings Institution, http://siteresources.worldbank.org/DEC/Resources/Why_Does_Access_Matter_Impact_on_Growth_and_Poverty.pdf (accessed 18 December 2011).

Greenhalgh Trisha, Kristjansson Elizabeth, Robinson Vivian (2007) Realist review to understand the efficacy of school feeding programmes, *British Medical Journal*, 335: 858-861.

Hogarth JM, O'Donnell KH (1999) Banking relationships of lower-income families and the governmental trend toward electronic payment, *Federal Reserve Bulletin* 86: 459-473.

Honohan Patrick (2004) Financial development, growth, and poverty: how close are the links, in Goodhart C (ed.) *Financial development and economic growth: explaining the links*, London: Palgrave, pages 1-37.

IFC Advisory Services (2010) *Access to finance annual report review*. Washington, DC: International Finance Corporation, www.ifc.org/ifcext/globalfm.nsf/Content/2010+A2F+Annual+Report (accessed 18 December 2011).

Jayachandran, Seema (2006) Selling labour low: wage responses to productivity shocks in developing countries, *Journal of Political Economy* 114(3): 538-575.

Kaboski Joseph, Townsend Robert (2009) *The impact of credit on village economies*, Working Paper, http://cier.uchicago.edu/papers/working/Impacts%20of%20Credit%20on%20Village%20Economies_Submitted.pdf (accessed 18 December 2011).

Karlan, Dean, Valdivia Martin (2011) Teaching entrepreneurship: impact of business training on microfinance clients and institutions, *Review of Economics and Statistics*, 93(2): 510-527.

King E, Samii C, Snilstveit B (2010), Interventions to promote social cohesion in sub-Saharan Africa, 3ie Systematic Review 002, *Journal of Development Effectiveness* 2(3): 336-370.

Levine Ross (2005) Finance and growth: theory and evidence, in Aghion P, Durlauf SN (eds) *Handbook of economic growth*, Kidlington: Elsevier,

Pawson Ray, Greenhalgh Trisha, Harvey Gill, Walshe Kieran (2004) *Realist synthesis: an introduction*, RMP Methods Paper 2/2004, Manchester: Research Methods Programme, University of Manchester.

Pulver C, Jack W, Suri T (2009) The performance and impact of M-PESA: preliminary evidence from a household survey. Unpublished paper, Nairobi: FSD Kenya Trust, http://technology.cgap.org/technologyblog/wp-content/uploads/2009/10/fsd_june2009_caroline_pulver.pdf (accessed 18 December 2011).

Steel WF (2006) Extending financial systems to the poor: what strategies for Ghana? Paper presented at the *Seventh ISSER-Merchant Bank Annual Economic Lectures*, University of Ghana, Legon.

Stewart R, van Rooyen C, de Wet T (2012) Do micro-credit, micro-savings and micro-leasing serve as effective financial inclusion interventions enabling poor people, and especially women, to engage in meaningful economic opportunities in LMICs.

Stewart R, van Rooyen C, Dickson K, Majoro M, de Wet T (2010) What is the impact of microfinance on poor people? A systematic review of evidence from sub-Saharan Africa. Technical report. London: EPPI-Centre, Social Science Research Unit, University of London.

Thomas J, Brunton J, Graziosi S (2010) *EPPI-Reviewer 4.0: software for research synthesis*, EPPI-Centre software, London: EPPI-Centre, Social Science Research Unit, Institute of Education, University of London.

Uganda Ministry of Finance, Planning and Economic Development (2000) *Poverty reduction strategy paper: Uganda's poverty eradication action plan: summary and main objectives*, www.imf.org/external/np/prsp/2000/uga/01/.

Uganda Ministry of Finance, Planning and Economic Development, (2004) *Poverty eradication action plan (2004/5-2007/8)*, www.imf.org/external/pubs/ft/scr/2005/cr05307.pdf (accessed 18 December 2011).

Van der Knaap Leontin, Leeuw Frans L, Bogaerts Stefan, Nijzzen Laura TJ (2008) Combining Campbell standards and the realist evaluation approach: the best of two worlds? *American Journal of Evaluation* 29: 48-57.

World Bank (2007) *Finance for all? Polices and pitfalls in expanding access*, http://go.worldbank.org/UHW6GI41L0 (accessed 18 December 2011).

Appendices

Appendix 1.1: Authorship of this report

Authors

Prof. Rohini Pande, Harvard Kennedy School

Prof. Shawn Cole, Harvard Business School

Anitha Sivasankaran, Dept. of Economics, Harvard University

Gautam Gustav Bastian, Harvard Business School

Katherine Durlacher, Harvard University

Review group

Prof. Rohini Pande, Harvard Kennedy School

Prof. Shawn Cole, Harvard Business School

Anitha Sivasankaran, Dept. of Economics, Harvard University

Gautam Gustav Bastian, Harvard Business School

Katherine Durlacher, Harvard University

Deanna Ford, Harvard Kennedy School

Carina Wendel, FSG Social Impact Consulting

Advisory group

Prof. Joseph Stiglitz (Columbia University)

Prof. Luigi Guiso (European University Institute)

Prof. Kul Luintel (Cardiff Business School)

Graham Douglas (Integrative Thinking)

Contact details

Prof. Rohini Pande

Mohammed Kamal, Professor of Public Policy

Harvard Kennedy School

John F. Kennedy School of Government
Mailbox 46
79 JFK Street
Cambridge, MA 02138

Phone: +1 (617) 384-5267

Email: Rohini_Pande@ksg.harvard.edu

Conflicts of interest (if any)

None of the team members has a financial interest in this project that would constitute a conflict of interest. The Lead Reviewers have been involved in the development of relevant interventions and primary research on this topic. However, all authors of the study, including the reviewers, have adhered to the highest standards of scientific research.

Acknowledgements

This review is made possible through a grant from the UK Department for International Development (DFID). We would also like to thank the EPPI-Centre and the International Initiative for Impact Evaluation for their help and guidance in the preparation of this systematic review. The authors would also like to sincerely thank Deanna Ford and Carina Wendel for their invaluable assistance in the preparation of this review.

Appendix 2.1: Inclusion and exclusion criteria

Countries included in study

The following list has been retrieved from the World Bank (http://data.worldbank.org/about/country-classifications).

Low-income economies ($995 or less)		**Lower-middle-income economies ($996 to $3,945)**	
Afghanistan	Lao PDR	Angola	Moldova
Bangladesh	Liberia	Armenia	Mongolia
Benin	Madagascar	Belize	Morocco
Burkina Faso	Malawi	Bhutan	Nicaragua
Burundi	Mali	Bolivia	Nigeria
Cambodia	Mauritania	Cameroon	Pakistan
Central African	Mozambique	Cape Verde	Papua New Guinea
Republic	Myanmar	China	Paraguay
Chad	Nepal	Congo, Rep.	Philippines
Comoros	Niger	Côte d'Ivoire	Samoa
Congo, Dem. Rep	Rwanda	Djibouti	São Tomé and
Eritrea	Sierra Leone	Ecuador	Principe
Ethiopia	Solomon Islands	Egypt, Arab Rep.	Senegal
Gambia, The	Somalia	El Salvador	Sri Lanka
Ghana	Tajikistan	Georgia	Sudan
Guinea	Tanzania	Guatemala	Swaziland
Guinea-Bissau	Togo	Guyana	Syrian Arab
Haiti	Uganda	Honduras	Republic
Kenya	Zambia	India	Thailand
Korea, Dem Rep.	Zimbabwe	Indonesia	Timor-Leste
Kyrgyz Republic		Iraq	Tonga
		Jordan	Tunisia
		Kiribati	Turkmenistan
		Kosovo	Tuvalu
		Lesotho	Ukraine
		Maldives	Uzbekistan
		Marshall Islands	Vanuatu
		Micronesia, Fed.	Vietnam
		States	West Bank and Gaza
			Yemen, Rep.

Upper-middle-income economies ($3,946 to $12,195)			
Albania	Chile	Lebanon	Romania
Algeria	Colombia	Libya	Russian Federation
American Samoa	Costa Rica	Lithuania	Serbia
Antigua and	Cuba	Macedonia, FYR	Seychelles
Barbuda	Dominica	Malaysia	South Africa
Argentina	Dominican	Mauritius	St. Kitts and Nevis
Azerbaijan	Republic	Mayotte	St. Lucia
Belarus	Fiji	Mexico	St. Vincent and the
Bosnia and	Gabon	Montenegro	Grenadines
Herzegovina	Grenada	Namibia	Suriname
Botswana	Iran, Islamic Rep.	Palau	Turkey
Brazil	Jamaica	Panama	Uruguay
Bulgaria	Kazakhstan	Peru	Venezuela, RB

Appendix 2.2: Template search phrase

(bank* OR finance* OR financial* OR credit OR saving* OR investment* OR asset* OR consumption* OR remittance*)

AND

(poor OR "low?income" OR africa OR asia OR afghanistan OR albania OR algeria OR "american samoa" OR angola OR "antigua and barbuda" OR argentina OR armenia OR azerbaijan OR bangladesh OR belarus OR belize OR benin OR bhutan OR bolivia OR bosnia OR "bosnia and Herzegovina" OR botswana OR brazil OR bulgaria OR "burkina faso" OR burundi OR Cambodia OR cameroon OR "cape verde" OR "central african republic" OR chad OR chile OR china OR colombia OR comoros OR congo OR "costa rica" OR "côte d"ivoire" OR cuba OR djibouti OR dominica OR "dominican republic" OR ecuador OR egypt OR "el salvador" OR eritrea OR ethiopia OR fiji OR gabon OR gambia OR georgia OR ghana OR grenada OR guatemala OR guinea OR guinea-bissau OR guyana OR haiti OR honduras OR india OR indonesia OR "iran islamic republic" OR iran OR iraq OR jamaica OR jordan OR kazakhstan OR kenya OR kiribati OR korea OR kosovo OR "kyrgyz republic" OR "lao pdr" OR laos OR lebanon OR lesotho OR liberia OR libya OR lithuania OR macedonia OR madagascar OR malawi OR malaysia OR maldives OR mali OR "marshall Islands" OR mauritania OR mauritius OR mayotte OR mexico OR micronesia OR moldova OR mongolia OR montenegro OR morocco OR mozambique OR myanmar OR namibia OR nepal OR nicaragua OR niger OR nigeria OR pakistan OR palau OR panama OR "papua new guinea" OR paraguay OR peru OR philippines OR romania OR "russian federation" or "russia" OR rwanda OR samoa OR "são tomé and principe" OR senegal OR serbia OR seychelles OR "sierra leone" OR "solomon islands" OR somalia OR "south Africa" OR "sri lanka" OR "st. kitts and nevis" OR "st. lucia" OR "st. vincent and the grenadines" OR sudan OR suriname OR swaziland OR syria OR "syrian arab republic" OR tajikistan OR tanzania OR thailand OR timor-Leste OR togo OR tonga OR tunisia OR turkey OR turkmenistan OR tuvalu OR uganda OR ukraine OR uruguay OR uzbekistan OR vanuatu OR venezuela OR vietnam OR "west bank and gaza" OR palestine OR yemen OR zambia OR zimbabwe)

AND

(evaluation OR assessment OR impact OR effect)

AND NOT

in title or abstract (microfinance OR microcredit OR "micro-finance" OR "micro-credit")

Appendix 2.3: List of sources and searches

Source	Search location	Browsed/ searched	Phrases and/or keywords searched or browsed	Comments
Electronic Databases				
AgEcon	Google Scholar	Searched	bank OR finance OR financial OR credit OR savings	
British Library for Development Studies	Source Website	Searched	“financial services” and poor	The site did not allow for long or complex search phrases, so multiple short phrases were searched
			bank and poor	
			finance and poor	
			credit and poor	
			saving* and poor	
			"financial services" and "low income"	
			finance and "low income"	
			credit and "low income"	
			saving* and "low income”	
Ebsco	Source Website	Searched	Abstract: bank or finance or financial or credit or saving or investment or asset or consumption or loan Abstract: poor or low income Abstract: evaluation or assessment or impact or effect And not abstract: microfinance or microcredit Subject: Economic development OR Banking OR Finance OR Financial services OR Loans OR Savings 1980-2010	Results were sorted by relevance and the first 500 were imported
			Abstract: bank or finance or financial or credit or saving or investment or asset or consumption or loan Abstract: village or rural or development Abstract: evaluation or assessment or impact or effect And not abstract: microfinance or microcredit Subject: Economic development OR Banking OR Finance OR Financial services OR Loans OR Savings 1980-2010	
Econlit	Source Website	Searched	Whole search string, see Appendix 2.2	
Econpapers	Source Website	Searched	(bank or finance) AND (credit or saving or investment or asset or consumption or loan) AND (poor or “low income”) AND (evaluation or assessment or impact or effect) AND (Economic development OR Banking OR “Financial services” OR Loans OR Savings) And NOT (microfinance or microcredit or U.S. or Europe or tax or industrialized or “real estate”)	
Google Scholar	Source Website	Searched	allintitle: ((bank) OR (finance) OR (“financial services”) OR (credit) OR (saving) OR (investment) OR (asset) OR (consumption)) ((poor) OR (“low income”)) ((evaluation) OR (assessment) OR (impact) OR (effect)) -microfinance -micro-finance	Results were sorted by relevance and

<table>
<tr><td rowspan="2"></td><td rowspan="2"></td><td rowspan="2"></td><td>allintitle: ((bank) OR (finance) OR (“financial services”) OR (credit) OR (saving) OR (investment) OR (asset) OR (consumption)) ((poor) OR (low income)) -microfinance -micro-finance</td><td rowspan="2">the first 500 were imported</td></tr>
<tr><td>allintitle: (bank OR finance OR financial OR “financial services” OR credit OR saving OR investment OR asset OR consumption) (rural OR village OR development) -microfinance -micro-finance</td></tr>
<tr><td>IDEAS (ideas.repec.org)</td><td>Source Website</td><td>Searched</td><td>(bank* | finance*) + (financial* | credit | saving* | investment* | asset* | consumption*) + (poor | "low income"|development | rural | village) + ~ (microfinance | microcredit | U.S. | Europe)</td><td>Results were sorted by relevance and the first 300 were imported</td></tr>
<tr><td>Jolis</td><td>Source Website</td><td>Searched</td><td>Keywords anywhere "((bank*) OR (finance*) OR (financial*) OR (credit) OR (saving*) OR (investment*) OR (asset*) OR (consumption*))" AND Keywords anywhere "((poor) OR (low?income))" AND Keywords anywhere "((evaluation) OR (assessment) OR (impact) OR (effect))" AND Subject "Economic development OR Banking OR Finance OR Financial services OR Loans OR Savings" NOT Keywords anywhere "microfinance OR microcredit" Pub >1980</td><td>Did not add 'rural, village, development' to keywords as it added several thousand irrelevant results</td></tr>
<tr><td rowspan="2">JSTOR</td><td rowspan="2">Source Website</td><td rowspan="2">Searched</td><td>((((bank OR finance OR financial OR credit OR saving OR investment OR asset OR consumption OR loan) AND (poor OR low income)) AND (evaluation OR assessment OR impact OR effect)) NOT (microfinance OR microcredit)) AND (year:[1980 TO 2010]) AND la:(eng) in Economics and Public Policy Journals</td><td rowspan="2">Results were sorted by relevance and the first 400 were imported</td></tr>
<tr><td>(((((bank OR finance OR financial OR credit OR saving OR investment OR asset OR consumption OR loan)) AND ((village OR rural OR development))) AND ((evaluation OR assessment OR impact OR effect))) NOT ((microfinance OR microcredit OR micro-finance OR micro-credit))) AND (year:[1980 TO 2010]) AND la:(eng) in economics and public policy journals</td></tr>
<tr><td rowspan="2">Oxford Scholarship Online</td><td rowspan="2">Source Website</td><td rowspan="2">Searched</td><td>KW=[(bank OR financ* OR credit OR saving? OR payment?)] and AB=[(bank OR financ* OR credit OR saving? OR payment?) AND (village OR rural OR developing)]</td><td rowspan="2">Searched for books and chapters</td></tr>
<tr><td>KW=[(bank OR financ* OR credit OR saving? OR payment?)] and AB=[(bank OR financ* OR credit OR saving? OR payment?) AND (evaluation or assess* or effect or impact)]</td></tr>
<tr><td>Proquest</td><td>Source Website</td><td>Searched</td><td>Citation and Abstract: ((bank*) OR (finance*) OR (financial*) OR (credit) OR (saving*) OR (investment*) OR (asset*) OR (consumption*)) AND ((poor) OR (low?income)) AND ((evaluation) OR (assessment) OR (impact) OR (effect))
AND NOT (microfinance OR microcredit OR micro-finance OR micro-credit OR microlending OR micro-lending)
Subject: Economic development OR Banking OR Finance OR Financial services OR Loans OR Savings
Date Range: After 1/1/1980</td><td></td></tr>
</table>

			Citation and Abstract: ((bank*) OR (finance*) OR (financial*) OR (credit) OR (saving*) OR (investment*) OR (asset*) OR (consumption*)) AND ((rural) OR (village)) AND ((evaluation) OR (assessment) OR (impact) OR (effect)) AND NOT (microfinance OR microcredit OR micro-finance OR micro-credit OR microlending OR micro-lending) Subject: Economic development OR Banking OR Finance OR Financial services OR Loans OR Savings Date Range: After 1/1/1980	
ScienceDirect (including Handbooks in Economics)	Source Website	Searched	Whole Search String, See Appendix 2,2	
SpringerLink	Source Website	Searched	ab:((bank or finance or credit or saving or loan) and (poor or low and income) and (evaluation or impact))'	
			ab:((bank or finance or credit or saving or loan) and (village or rural or development) and (evaluation or impact))'	Results were sorted by relevance, and the first 100 were imported
Social Science Research Network (SSRN)	Source Website	Searched	financial services' 'low income'	The search engine could not perform 'or' searches. The results were sorted by relevance on each study and added first 300 of each search were imported
			'financial services' 'poor'	
			savings 'low income' impact income	
			savings poor impact income	
			credit poor impact income	
			credit 'low income' impact income	
			‘financial services’ ‘rural’	
			‘financial services’ ‘village’	
			Savings rural	
			Savings village	
			credit rural	
			credit village	
Wiley Interscience	Source Website	Searched	((bank*) OR (finance*) OR (financial*) OR (credit) OR (saving*) OR (investment*) OR (asset*) OR (consumption*)) in Abstract AND ((poor) OR (low?income)) in Abstract AND ((evaluation) OR (assessment) OR (impact) OR (effect)) in All Fields NOT (microfinance OR microcredit OR micro-finance OR micro-credit OR microlending OR micro-lending) in Abstract AND Economic development OR Banking OR Finance OR Financial services OR Loans OR Savings in Keywords between years 1980 and 2010	

			((bank*) OR (finance*) OR (financial*) OR (credit) OR (saving*) OR (investment*) OR (asset*) OR (consumption*)) in Abstract AND ((development) OR (rural) OR (village)) in Abstract AND ((evaluation) OR (assessment) OR (impact) OR (effect)) in All Fields NOT (microfinance OR microcredit OR micro-finance OR micro-credit OR microlending OR micro-lending) in Abstract AND Economic development OR Banking OR Finance OR Financial services OR Loans OR Savings in Keywords between years 1980 and 2010	
World Bank eLibrary	Source Website	Searched	(Abstract contains 'bank OR finance OR credit OR saving') AND (Abstract contains 'poor OR low income OR village OR rural OR development') AND (Abstract contains 'evaluation OR assessment OR impact OR effect') NOT (Abstract contains 'microfinance OR microcredit OR micro-finance OR micro-credit') AND (Subject contains 'Finance and Financial Sector Development or Information and Communication Technologies or Infrastructure Economics and Finance or International Economics & Trade or Poverty Reduction or Private Sector Development or Public Sector Development or Rural Development or Science and Technology Development or Social Development or Urban Development') AND (Content Type contains 'Books or Journals or Working Papers') published between 1980 and 2010	
World Bank Library	Jolis	Searched	Searched in JOLIS, see Jolis Row Information	
Journals and Working Paper Collections				
Agricultural Economics	Science Direct (1986-2004) Wiley (2004 - 2010)	Searched	Science Direct: (bank OR finance OR financial OR credit OR saving OR payment) in abstract, title and keywords	
	Science Direct (1986-2004) Wiley (2004 - 2010)	Searched	Wiley: abstract: (bank OR finance OR financial OR credit OR saving OR payment) AND abstract: (poor OR low income OR low-income) AND abstract: (evaluation OR impact OR assessment OR effect) NOT title: (microfinance OR micro-finance OR microcredit OR micro-credit) AND (year:[1980 TO 2010])	
	Science Direct (1986-2004) Wiley (2004 - 2010)	Searched	Wiley: bank OR finance OR financial OR credit OR saving OR payment in Abstract AND village OR rural OR developing in Abstract AND evaluation OR impact OR assessment OR effect in Abstract AND Agricultural Economics in Publication Titles NOT microfinance OR micro-finance OR microcredit OR micro-credit in Article Titles between years 1980 and 2010	
Agricultural Finance Review	Emerald 2000-2010	Searched	bank finance financial credit saving payment (any words)	Pre-2000 was not searched as the research team did not have access to those journals.

American Economic Review	Jstor	Searched	((((bank OR finance OR financial OR credit OR saving OR payment) AND (poor OR low income OR low-income)) AND (evaluation OR impact OR assessment OR effect)) NOT ti:(microfinance OR micro-finance OR microcredit OR micro-credit)) AND (year:[1980 TO 2010]) AND la:(eng) AND jid:(j100802 OR j100889 OR j100057 OR j100972 OR j100009 OR j100859 OR j100221 OR j100984)	
			((((bank OR finance OR financial OR credit OR saving OR payment) AND (village OR rural OR developing)) AND (evaluation OR impact OR assessment OR effect)) NOT ti:(microfinance OR micro-finance OR microcredit OR micro-credit)) AND (year:[1980 TO 2010]) AND la:(eng) AND jid:(j100802 OR j100889 OR j100057 OR j100972 OR j100009 OR j100859 OR j100221 OR j100984)	
	American Economic Review website	Browsed	Hand searched/browed all articles 2007-2010	
American Journal of Agricultural Economics	Jstor	Searched	((((bank OR finance OR financial OR credit OR saving OR payment) AND (poor OR low income OR low-income)) AND (evaluation OR impact OR assessment OR effect)) NOT ti:(microfinance OR micro-finance OR microcredit OR micro-credit)) AND (year:[1980 TO 2010]) AND la:(eng) AND jid:(j100802 OR j100889 OR j100057 OR j100972 OR j100009 OR j100859 OR j100221 OR j100984)	
		Searched	((((bank OR finance OR financial OR credit OR saving OR payment) AND (village OR rural OR developing)) AND (evaluation OR impact OR assessment OR effect)) NOT ti:(microfinance OR micro-finance OR microcredit OR micro-credit)) AND (year:[1980 TO 2010]) AND la:(eng) AND jid:(j100802 OR j100889 OR j100057 OR j100972 OR j100009 OR j100859 OR j100221 OR j100984)	
	Oxford Journals: American Journal of Agricultural Economics	Searched	bank finance financial credit saving payment (any words) in title or abstract, from Jan 2005 through Dec 2010.	
Journal of Agricultural and Resource Economics	AgEcon Search	Searched	((bank OR finance OR financial OR credit OR saving OR payment) AND (poor OR low income OR low-income) AND (evaluation OR assessment OR impact OR effect))	
		Searched	((bank OR finance OR financial OR credit OR saving OR payment) AND (rural OR village OR developing) AND (evaluation OR assessment OR impact OR effect))	
Journal of Agricultural Economics	Wiley	Searched	abstract: (bank OR finance OR financial OR credit OR saving OR payment) AND abstract: (poor OR low income OR low-income) AND abstract: (evaluation OR impact OR assessment OR effect) NOT title: (microfinance OR micro-finance OR microcredit OR micro-credit) AND (year:[1980 TO 2010])	
		Searched	Wiley: bank OR finance OR financial OR credit OR saving OR payment in Abstract AND village OR rural OR developing in Abstract AND evaluation OR impact OR assessment OR effect in Abstract AND Journal of Agricultural Economics in Publication Titles NOT microfinance OR micro-finance OR microcredit OR micro-credit in Article Titles between years 1980 and 2010	

Journal of Development Economics	Elsevier ScienceDirect - library	Searched	abstract: (bank OR finance OR financial OR credit OR saving OR payment) AND search within results: (evaluation OR impact OR assessment OR effect) AND 1980-2010; Search within results: Topic Excluded: "exchange rate"	
Journal of Development Studies	EBSCOhost 1964 onwards, except most recent 1 year	Searched	(bank or finance or financial or credit or saving or payment) AND (poor or low income or low-income) AND (assessment OR evaluation or impact OR effect) - searched in abstract and author provided abstract	
		Searched	(bank or finance or financial or credit or saving or payment) AND (poor or low income or low-income) AND (assessment OR evaluation or impact OR effect) - searched in abstract and author provided abstract	
		Searched	(bank or finance or financial or credit or saving or payment) AND (village or rural or developing) AND (assessment OR evaluation or impact OR effect) - searched in abstract and author provided abstract	
		Searched	(bank or finance or financial or credit or saving or payment) - in abstract; AND (village or rural or developing) AND (assessment OR evaluation or impact OR effect) - in full text	
	Informaworld website, past 1 year	Browsed	Hand searched/browed all articles 2010	
Journal of Finance	Jstor 1946 - 2006 Jstor 2007-2009 links to external content	Searched	((((bank OR finance OR financial OR credit OR saving OR payment) AND (poor OR low income OR low-income)) AND (evaluation OR impact OR assessment OR effect)) NOT ti:(microfinance OR micro-finance OR microcredit OR micro-credit)) AND (year:[1980 TO 2010]) AND la:(eng) AND jid:(j100802 OR j100889 OR j100057 OR j100972 OR j100009 OR j100859 OR j100221 OR j100984)	
			((((bank OR finance OR financial OR credit OR saving OR payment) AND (village OR rural OR developing)) AND (evaluation OR impact OR assessment OR effect)) NOT ti:(microfinance OR micro-finance OR microcredit OR micro-credit)) AND (year:[1980 TO 2010]) AND la:(eng) AND jid:(j100802 OR j100889 OR j100057 OR j100972 OR j100009 OR j100859 OR j100221 OR j100984)	
NBER Working Papers	Ideas.repec.org	Searched	(bank | finance | financial | credit | saving | payment) + (poor | "low income" | "low-income") + (evaluation | assessment | effect | impact) + (National Bureau of Economic Research | NBER)	
			(bank | finance | financial | credit | saving | payment) + (village | rural | developing) + (evaluation | assessment | effect | impact) + (National Bureau of Economic Research | NBER)	
Oxford Review of Economic Policy	Source Website	Searched	bank finance financial credit saving payment (any words) in title or abstract and poor low income low-income (any words) in full text	
			bank finance financial credit saving payment (any words) in title or abstract and village rural developing (any words) in full text	
Review of Financial Studies	Jstor	Searched	((((bank OR finance OR financial OR credit OR saving OR payment) AND (poor OR low income OR low-income)) AND (evaluation OR impact OR assessment OR effect)) NOT ti:(microfinance OR micro-finance OR microcredit OR micro-credit)) AND (year:[1980 TO 2010]) AND la:(eng) AND jid:(j100802 OR j100889 OR j100057 OR j100972 OR j100009 OR j100859 OR j100221 OR j100984)	

			((((bank OR finance OR financial OR credit OR saving OR payment) AND (village OR rural OR developing)) AND (evaluation OR impact OR assessment OR effect)) NOT ti:(microfinance OR micro-finance OR microcredit OR micro-credit)) AND (year:[1980 TO 2010]) AND la:(eng) AND jid:(j100802 OR j100889 OR j100057 OR j100972 OR j100009 OR j100859 OR j100221 OR j100984)	
	Oxford Journals: Review of Financial Studies	Searched	poor "low income" "low-income" village rural developing (any words) in title or abstract, from Jan 2007 through Dec 2010	
World Bank Economic Review	Source Website	Searched	(ti:((bank OR finance OR financial OR credit OR saving OR savings OR payment OR payments) AND (village OR rural OR developing) AND (evaluation OR assessment OR effect OR impact)) OR ab:((bank OR finance OR financial OR credit OR saving OR savings OR payment OR payments) AND (village OR rural OR developing) AND (evaluation OR assessment OR effect OR impact))) AND jo:(World Bank Economic Review) in title and abstract	
			(ti:((bank OR finance OR financial OR credit OR saving OR savings OR payment OR payments) AND (poor OR low?income) AND (evaluation OR assessment OR effect OR impact)) OR ab:((bank OR finance OR financial OR credit OR saving OR savings OR payment OR payments) AND (poor OR low?income) AND (evaluation OR assessment OR effect OR impact))) AND jo:(World Bank Economic Review) in title and abstract	
National banks with relevant research branches				
Banco Central de Chile	Source Website	Browsed	Working papers	
Bangladesh Bank - Central Bank of Bangladesh	Source Website	Browsed	Policy papers and working papers	
Bank of Albania	Source Website	Browsed	Working papers 1999-2010	
Bank of Jamaica	Source Website	Browsed	Research papers	
Central Bank of Malaysia	Source Website	Browsed	Working papers and occasional papers	
Eastern Caribbean Central Bank	Source Website	Browsed	Articles, research papers and working papers	
National Bank of Georgia	Source Website	Browsed	Discussion papers and working papers	
Reserve Bank of Fiji	Source Website	Browsed	Working papers	
Reserve Bank of India	Source Website	Browsed	Publications all; special attention to quarterly - occasional papers exist from 1998 - 2010	The search function was unusable.
South African Reserve Bank	Source Website	Browsed	Working papers and occasional papers	
State Bank of	Source Website	Browsed	Working papers	

Pakistan				
International development organizations, research organizations and NGOs				
African Development Bank (AfDB)	Source Website	Browsed	Browsed Poverty Reduction and Economic and Financial Governance Topics	
Asian Development Bank (ADB)	Source Website	Browsed	Keyword(s): bank finance financial Topic(s): Agriculture and Rural Development / Economy / Finance / Infrastructure Subtopics: Rural Development / Technology and Innovations / Capital Markets / Financial Sector / Financial Stability / Energy / Information and Communication Technology Countries: Afghanistan / Armenia / Australia / Azerbaijan / Bangladesh / Bhutan / Brunei / Cambodia / China, People's Rep. Of / Cook Islands / Fiji Islands, The Rep of / Georgia / Hong Kong, China / India / Indonesia / Kazakhstan / Kiribati / Korea, Republic of / Kyrgyz Republic / Lao PDR / Malaysia / Marshall Islands / Micronesia / Mongolia / Myanmar / Nauru / Nepal / Pakistan / Palau / Papua New Guinea / Philippines / Samoa / Solomon Islands / Sri Lanka / Taipei, China / Tajikistan / Thailand / Timor-Leste / Tonga / Turkmenistan / Tuvalu / Uzbekistan / Vanuatu / Viet Nam Year(s): 2010 / 2009 / 2008 / 2007 / 2006 / 2005 / 2004 / 2003 / 2002 / 2001 / 2000 / 1999 / 1998 / 1997 / 1996 / 1995 / 1994 / 1993 / 1992	
Australian Agricultural and Resource Economics Society	Wiley Interscience	Searched	Publications searched in Wiley Interscience, see Wiley Interscience Row information	
Australian International Development Agency	Source website	Browsed	Browsed whole website	
Bill and Melinda Gates Foundation	Source website	Browsed	Browsed whole website	
Bureau for Research and Economic Analysis of Development (BREAD)	Source Website	Browsed	Browsed whole website	
Center of Evaluation for Global Action, University of California, Berkeley	Source Website	Browsed	Browsed all publications and working papers	
Commodity Risk Management Group at Consultative Group to Assist the Poor (CGAP)	Source Website	Browsed	Browsed whole website	

European Association of Agricultural Economists	AgEcon	Searched	Publications searched on AgEcon, see AgEcon Row Information						
Innovations for Poverty Action (IPA)	Source Website	Browsed	Browsed all publications and working papers						
Inter-American Development Bank (IADB)	Source Website	Browsed	Browsed all publications and working papers						
International Association of Agricultural Economists	Journal of Agricultural Economics	Searched	Publishes the Journal of Agricultural Economics, see Journal of Agricultural Economics Row Information						
International Food Policy Research Institute (IFPRI)	Source Website	Browsed	bank	finance	Financial	credit	saving	payment	
Jameel Poverty Action Lab (JPAL)	Source Website	Browsed	Browsed whole website						
Micro-Insurance Centre	Source Website	Browsed	bank	finance	Financial	credit	saving	payment	
National Insurance Academy, Pune, India	Source Website	Browsed	Browsed whole website						
Organization for Economic Cooperation and Development (OECD)	OECD I Library	Browsed	Title, Abstract, Authors, Keyword or ISSN/ISBN/DOI containing 'bank OR finance OR financial OR credit OR saving OR payment' AND Title, Abstract, Authors, Keyword or ISSN/ISBN/DOI containing 'poor OR "low income" OR village OR development OR rural' AND Title, Abstract, Authors, Keyword or ISSN/ISBN/DOI containing 'evaluation OR assessment OR effect OR impact' Restricted to Language(s) English Including Multilingual Summaries Published Between 1900 and 2010						Sorted by Relevance and browsed through first 200 results -- the search engine is still in developmental phases and returned thousands of irrelevant results
PAIS International and PAIS Archive	CSA Illumina	Searched	TI=(bank or financ* or credit or saving? or payment?) and TI=(poor or low?income) and TI=(evaluation or assessment or effect or impact)						1972-1991, available through Illumina on HOLLIS. Manually excluded items older than 1980. No filter for
			AB=(bank or financ* or credit or saving? or payment?) and AB=(poor or low?income) and AB=(evaluation or assessment or effect or impact)						
			TI=(bank or financ* or credit or saving? or payment?) and TI=(village or rural or developing) and TI=(evaluation or assessment or effect or impact)						
			AB=(bank or financ* or credit or saving? or payment?) and AB=(village or rural or developing) and AB=(evaluation or assessment or effect or impact)						

			KW=(bank or financ* or credit or saving? or payment?) and KW=(poor or low?income) and KW=(evaluation or assessment or effect or impact)						English in quick search, manually excluded identifiable Non-English entries.
			KW=(bank or financ* or credit or saving? or payment?) and KW=(village or rural or developing) and KW=(evaluation or assessment or effect or impact)						
UKAID – Department for International Development	Source Website	Browsed	bank	finance	Financial	credit	saving	payment	
United Nations Development Programme (UNDP)	Source Website	Browsed	Publications under Poverty reduction category - focus areas: development cooperation and finance, gender and poverty, inclusive development, poverty assessment and monitoring, private sector. Also browsed research and discussion papers under publications and resources						
USAID Microlinks	Source Website	Browsed	microlinks home > financial services resources > resources by type > impact assessments & evaluations						
			microlinks home > usaid microenterprise development programs > past research : AIMS, Gemini Publications						
World Bank Research Observer	Source Website	Browsed	Browsed whole website						

Appendix 2.4: Inclusion and exclusion coding tool

To mark studies for inclusion in the in-depth review, and to record the reasons for excluding other studies

A. Time or Place Exclusion
- A.1. Pre 1980 (*Study completed prior to 1980)*
- A.2. Upper Income Country (*Study not from a Low or Middle income country)*

B. Language Exclusion *(Study not in English)*

C. Program or Topic Exclusion
- C.1. Not a formal financial service study *(Study must examine a financial service from or a technology or policy affecting):*
  - *Formal private or public banking firms*
  - *Commercial banks*
  - *Development banks*
  - *Rural banks*
  - *Formal private non-banking financial services companies*
    - *Post Bank*
    - *Savings and Loan Company*
- C.2. A Non-banking Financial Service study (*Discusses non-banking financial service like insurance)*
- C.3. A Microfinance study

D. Outcome Not Applicable
  - *Outcome not among list below:*
    - *Labor and household income*
    - *Small and micro-business income*
    - *Household and business assets*
    - *Household consumption*
    - *Small and micro-business investment*
    - *Small, micro-business or agricultural output*
    - *Measures of poverty, global or local*
    - *Quantitative measures of welfare*

E. Intervention/Natural Experiment Specific Exclusions
- E.1. No impact discussion
- E.2. Program change outside scope
  - Study does NOT examine:
    - Expansion of credit and/or savings
    - Provision of technological innovations
    - Introduction or expansion of financial education, or other program to increase financial literacy or awareness

F. Other Quantitative Design Exclusions
- F.1. No impact discussion
- F.2. Macro study

G. Poor Quality Study
- G.1. Unclear methods or design in study description
- G.2. Improper or irrelevant sample
- G.3. Improper data collection methodology
- G.4. Improper analysis
- G.5. Major error in the program
- G.6. Major error in the data
- G.7. Irreconcilable systematic differences between treatment and control groups

- **H. Qualitative Study Exclusion Criteria**
  - H.1. Outcomes not income or directly related to income
  - H.2. Poor quality
    - H.2.1. No clear description
    - H.2.2. Poor data collection
    - H.2.3. Improper analysis
  - H.3. Theoretical paper
  - H.4. Does not examine a ‘formal financial services’
  - H.5. No impact discussion – descriptive study
- **I. Include**

Added Codes for the Inclusion and Exclusion Coding for Full Paper Review

- **A. Library Availability**
  - A.1. Harvard – Main Campus
    - A.1.1. Requested
  - A.2. Harvard – Baker
  - A.3. ILL
  - A.4. Emailed Author
  - A.5. Received and Reviewed
- **B. Include Round 2 - post 12/1**
  - *Mainly for late papers received from authors that should be included*
- **C. Study Not Available**
- **D. Unsure - discuss with team, describe concerns:____**

Appendix 2.5: Coding tool

Characterization Coding Tool

For coding the characteristics and outcomes of initially included studies
To be used in conjunction with the external outcomes spreadsheet

A. **Details of the study document and researchers**
  - A.1. Is this document closely related to any other included documents or studies?
    - A.1.1. No
    - A.1.2. Yes, List related studies: ___*
  - A.2. What are the backgrounds and affiliations of the evaluation team?
    - A.2.1. Academic, List authors and affiliations: ___
    - A.2.2. NGO, List authors and affiliations: ___
    - A.2.3. Academic/NGO partnership, List authors and affiliations: ___
    - A.2.4. Specialized research organization (e.g.: JPAL, IPA), List authors and affiliations: ___
    - A.2.5. Government Institution or National Bank, List authors and affiliations: ___
    - A.2.6. World Bank, IMF or other large global bank institution, List authors and affiliations: ___
    - A.2.7. Other, List authors and affiliations: ____

B. **Details of the program or Policy studied**
  - B.1. What type of financial service program does this study examine?
    - B.1.1. Lending or Credit
    - B.1.2. Savings
    - B.1.3. Payment services
    - B.1.4. Other, List type of service: ____
  - B.2. What type of access or usage variable is considered?
    - B.2.1. Introduction or expansion of financial service(s)
    - B.2.2. Changes or updates to technologies for financial service(s)
    - B.2.3. Introduction or expansion of financial literacy or awareness program(s)
  - B.3. Logistics and details of the program or policy
    - B.3.1. List the steps (if any) preceding the actual program intervention or policy change: _____
    - B.3.2. List Steps and details of the program or policy: ____
    - B.3.3. List the actors, including the financial service provider, and their roles in the program or policy: ___
  - B.4. Program changes during implementation (for example: a location or timing change)
    - B.4.1. List steps in the program that changed: ____
    - B.4.2. List actions of the actors that changed: ____
    - B.4.3. List the rationale and consequences of the changes (unintentional changes to programs should be noted as such): ____
  - B.5. Detail any program cost or financial information included in the document: ____

C. **Context and Environment of the Program/intervention**
  - C.1. Country of the program or policy: ____
  - C.2. What region classification is this country?
    - C.2.1. OECD
    - C.2.2. Mexico, Central and South America
    - C.2.3. Eastern Europe

- C.2.4. The Middle East and North Africa
- C.2.5. Sub-Saharan Africa
- C.2.6. Indian subcontinent
- C.2.7. Southeast Asia
- C.2.8. East Asia
- C.2.9. South Asia
- C.2.10. Pacific Islands

C.3. World Bank income classification for the country at the time of the study

- C.3.1. Lower Income
- C.3.2. Lower Middle Income
- C.3.3. Upper Middle Income

C.4. Target Group

- C.4.1. Describe the target group: ____
- C.4.2. Describe any specifically excluded groups: ____

C.5. Social characteristics of program's target group

- C.5.1. Gender
  - C.5.1.1. Summary Statistics: ____
  - C.5.1.2. Not reported
- C.5.2. Marital status
  - C.5.2.1. Summary Statistics: ____
  - C.5.2.2. Not reported
- C.5.3. Religion
  - C.5.3.1. Summary Statistics: ____
  - C.5.3.2. Not reported
- C.5.4. Education
  - C.5.4.1. Description of education level(s) of target group:
  - C.5.4.2. Summary Statistics: _____
  - C.5.4.3. Not Reported

C.6. Economic characteristics of program target group(s)

- C.6.1. Employment
  - C.6.1.1. Summary Statistics: _____
  - C.6.1.2. Not reported
- C.6.2. Income (Average monthly)
  - C.6.2.1. Summary Statistics: _____
  - C.6.2.2. Not reported
- C.6.3. Urban/Rural
  - C.6.3.1. Mostly urban
  - C.6.3.2. Mostly rural
  - C.6.3.3. Mix
  - C.6.3.4. Summary Statistics: _____
  - C.6.3.5. Not reported
- C.6.4. Agriculture
  - C.6.4.1. Mostly farming population
  - C.6.4.2. Mostly non-farming population
  - C.6.4.3. Summary statistics: ____
  - C.6.4.4. Not reported
- C.6.5. Prior access to financial services
  - C.6.5.1. Describe previous access and usage: _____
  - C.6.5.2. Had access to formal financial services before
  - C.6.5.3. Used formal financial services before
  - C.6.5.4. Had access to MFIs before
  - C.6.5.5. Had access to informal financial services before

C.6.5.6. Summary statistics: ____
C.6.5.7. Not reported

C.7. Social environment of region where study was conducted
- C.7.1. Restrictive
- C.7.2. Restrictive towards women
- C.7.3. Conservative
- C.7.4. Moderate
- C.7.5. Liberal
- C.7.6. Not able to be ascertained through study context or through external research
- C.7.7. Reason for on coder’s choice above: ____

C.8. Economic environment of region where study was conducted
- C.8.1. Poor: low employment, low incomes
- C.8.2. Moderate
- C.8.3. Good, high employment, high incomes
- C.8.4. Mixed
- C.8.5. Restrictive – entrepreneurship is hard
- C.8.6. Free –entrepreneurship is easy
- C.8.7. Not able to be ascertained through study context or through external research
- C.8.8. Reasons for coder’s choices above: _____

C.9. Political environment of region where study was conducted
- C.9.1. Repressive
- C.9.2. Moderate
- C.9.3. Free
- C.9.4. Not able to be ascertained through study context or through external research
- C.9.5. Reasons for coder’s choices above: _____

C.10. Social systems and structures of program target group(s)
- C.10.1. Describe the social systems and structures: _____
- C.10.2. Not able to be ascertained through study context or through external research

D. Theory of change of the study (2)**

D.1. How was the program or policy expected to change the income of the poor?
- D.1.1. This program tried to increase
  - D.1.1.1. The supply and the availability of financial services by…
    - D.1.1.1.1. …expansion of public sector banking services
    - D.1.1.1.2. ….expansion of private sector led banking services
    - D.1.1.1.3. …technological improvements in banking services
  - D.1.1.2. The demand for and the usage of financial services by…
    - D.1.1.2.1. …increasing financial literacy
    - D.1.1.2.2. …structural determinants of demand
    - D.1.1.2.3. …increasing awareness of financial services
  - D.1.1.3. Mechanism not made clear in the study
- D.1.2. Pathway through which increase of financial services was intended to raise income (note: still only examining study with actual income outcomes this coding is just to help determine the mechanisms of change)
  - D.1.2.1. Increase Credit→reduce credit constraints→increase investment→business creation or expansion, entrepreneurship consumption smoothing→intermediate outcomes (education, health, employment)
  - D.1.2.2. Increase savings→secure savings and inflation

protection→consumption smoothing→intermediate outcomes (education, health, employment)

D.1.2.3. Increase/Ease payment services → facilitates remittances and transfers → intermediate outcomes (education, health, employment)

D.2. Actual mechanisms of change

D.2.1. Was the proposed theory of change correct?

D.2.1.1. Yes

D.2.1.2. No

D.2.1.3. Reason for response: ____

D.2.2. Are there better alternative theories of change?

D.2.2.1. Yes, they are: ___

D.2.2.2. No

E. Study methods and methodological quality (2)

E.1. Methodology

E.1.1. What type of research method is utilized?

E.1.1.1. Randomization/RCT

E.1.1.2. Quasi-Experimental

E.1.1.3. Observational/Econometric

E.1.1.4. Qualitative Study

E.1.1.5. Descriptive study (to inform the context of the review)

E.2. Randomized Studies or Randomized Controlled Trials

E.2.1. Data

E.2.1.1. Origin of the data: _____

E.2.2. At what level was randomization conducted?

E.2.2.1. Individual

E.2.2.2. Village

E.2.2.3. Self Help Group (SHG)

E.2.2.4. Other

E.2.2.5. N/A

E.2.3. Describe the process of randomization: ______

E.2.4. Control Group

E.2.4.1. Describe the control or comparison group: _____

E.2.4.2. Describe the rationale for choosing the comparison group: _____

E.2.4.3. Control or comparison condition:

E.2.4.3.1. No treatment

E.2.4.3.2. Treatment as usual

E.2.4.3.3. Lesser but innovative treatment

E.2.4.3.4. Describe the control/comparison condition: _____

E.2.5. Baseline Variables

E.2.5.1. Were baseline outcomes for treatment and control groups similar?

E.2.5.1.1. Yes

E.2.5.1.2. No

E.2.5.1.3. Unclear

E.2.5.2. Were baseline characteristics, other than the outcome variables, similar?

E.2.5.2.1. Yes

E.2.5.2.2. No

E.2.5.2.3. Unclear

E.2.6. Any randomization problems noted?

E.2.6.1. No

E.2.6.2. Yes, Describe problems: ____

- E.2.6.3. If yes, authors' responses to problems ______
- E.2.7. Sample and group sizes
  - E.2.7.1. Note the total sample size: _____
  - E.2.7.2. Note the sizes of the control and treatment groups: ___
  - E.2.7.3. Note sample problems: ___
- E.2.8. Describe any methodological problems: ___

E.3. Quasi-experimental Studies

- E.3.1. Which quasi-experimental method was used to equate groups?
  - E.3.1.1. Regression Discontinuity
  - E.3.1.2. Propensity Score Matching
  - E.3.1.3. Interrupted Time Series
  - E.3.1.4. Instrumental Variables
  - E.3.1.5. Other, Describe: ___
- E.3.2. Data
  - E.3.2.1. Describe the origin of the data: ___
- E.3.3. Comparison Groups
  - E.3.3.1. Describe the process and criteria for selecting the comparison group: _______
  - E.3.3.2. At what level was non-random assignment made?
    - E.3.3.2.1. Individual
    - E.3.3.2.2. Village
    - E.3.3.2.3. SHG
    - E.3.3.2.4. Other: _____
  - E.3.3.3. Describe the comparison group: ___
  - E.3.3.4. Describe the rationale for choosing the comparison group: ___
  - E.3.3.5. Control or comparison condition
    - E.3.3.5.1. Describe the control or comparison condition: ___
    - E.3.3.5.2. No Treatment Group
    - E.3.3.5.3. Treatment as Usual Group
    - E.3.3.5.4. Lesser but Innovative Treatment
- E.3.4. Baseline
  - E.3.4.1. Were baseline outcome measurements between control and treatment similar?
    - E.3.4.1.1. Yes
    - E.3.4.1.2. No
    - E.3.4.1.3. Unclear
  - E.3.4.2. Were baseline characteristics between control and treatment similar?
    - E.3.4.2.1. Yes
    - E.3.4.2.2. No
    - E.3.4.2.3. Unclear
  - E.3.4.3. Were any substantive differences in pre-tests of group equivalence noted by authors?
    - E.3.4.3.1. Yes, they were: _____
    - E.3.4.3.2. No
    - E.3.4.3.3. No pre-tests done
  - E.3.4.4. Were any substantive differences in pre-tests of group equivalence noted by reviewer?
    - E.3.4.4.1. Yes, they were: _____
    - E.3.4.4.2. No
    - E.3.4.4.3. No pre-tests done
- E.3.5. Problems with methodology

E.3.5.1. Were there any problems with the method or the sample?
E.3.5.1.1. Yes, they were: ______
E.3.5.1.1.1. Authors' responses to the problems ______
E.3.5.1.2. No
E.3.6. Sample
E.3.6.1. Note the total sample size: ___
E.3.6.2. Note the sample sizes of each group: ___
E.3.6.3. Note any sample problems: ___
E.4. Random and Quasi-experimental Studies
E.4.1. Were statistical power calculations reported?
E.4.1.1. Yes, They were: ___
E.4.1.2. No
E.4.2. Were intra-cluster correlation coefficients noted? If yes, record the details.
E.4.2.1. Yes
E.4.2.2. No
E.4.3. Attrition
E.4.3.1. Were any attrition problems noted?
E.4.3.1.1. Yes, they were: _____
E.4.3.1.1.1. Describe how were attrition problems dealt with by the investigators: ___
E.4.3.1.2. No
E.4.3.2. Was differential attrition rate noted? (Especially the magnitude of attrition, both from original sample and differentially between treatment and control groups)
E.4.3.2.1. Yes, it was: _____
E.4.3.2.2. No
E.5. Observational/Econometric Studies
E.5.1. Data
E.5.1.1. Describe the origin of the data: ___
E.5.2. Which Observational/Econometric method was used to equate groups?
E.5.2.1. Cross-section
E.5.2.2. Panel
E.5.2.3. Time-Series
E.5.2.4. Difference in Difference
E.5.2.5. Other: ___
E.5.3. Describe the identification strategy of the study: _____
E.5.4. Sample
E.5.4.1. Describe the sample: ___
E.5.4.2. Note the sample size and sizes of groups or subsections: ___
E.5.4.3. Describe how the sample was chosen: ___
E.5.4.4. Describe any sample problems: ___
E.5.5. Methodological Problems
E.5.5.1. Describe any problems noted by the reviewer or author: ___
E.6. Qualitative Studies
E.6.1. Data
E.6.1.1. Describe the origin of the data: ___
E.6.2. What type of new evidence was presented:
E.6.2.1. Interviews with participating households
E.6.2.2. Interviews with on-the ground staff
E.6.2.3. Interviews with policy-makers

E.6.2.4. Observations of study participants
E.6.2.5. Other: ____
E.6.3. Were participants chosen randomly?
E.6.3.1. Yes
E.6.3.2. No
E.6.3.3. Unclear
E.6.4. Were any selection problems noted by author?
E.6.4.1. Yes
E.6.4.2. No
E.6.5. Were any selection problems noted by reviewer?
E.6.5.1. Yes
E.6.5.2. No
E.6.6. What was the sample size, if applicable? ____
E.6.6.1. Describe any sample problems: ____
E.6.7. Describe any methodological problems: ____

F. Section F: Outcomes (2)

F.1. Outcomes Measured
F.1.1. Labor and household income
F.1.1.1. Variable(s) used to measure: ____
F.1.2. Small and micro-business income
F.1.2.1. Variable(s) used to measure: ____
F.1.3. Household and business assets
F.1.3.1. Variable(s) used to measure: ____
F.1.4. Household consumption
F.1.4.1. Variable(s) used to measure: ____
F.1.5. Small and micro-business investment
F.1.5.1. Variable(s) used to measure: ____
F.1.6. Measures of poverty
F.1.6.1. Variable(s) used to measure: ____
F.1.7. Quantitative measures of welfare
F.1.7.1. Variable(s) used to measure: ____
F.1.8. Small or micro-business output
F.1.8.1. Variable(s) used to measure: ____
F.1.9. Another outcome variable which seems relevant which we are not considering: ____
F.1.9.1. Variable(s) used to measure: ____

F.2. Are the outcomes in the external outcome spreadsheet?
F.2.1. Yes
F.2.2. No
F.2.3. Other: ___

G. Further Comments: _____ (2)

H. Technical Paper Inclusion (2)

H.1. Should this paper be included in the technical systematic analysis?
H.1.1. Yes
H.1.2. No, Describe the reason: ___
H.1.2.1. Use for background or supporting documentation
H.1.3. Unsure – Discuss with team

Notes: **Any code followed by ': ___', requires textual information added to the code*

***Any Section Title followed by '(2)' is double coded*

Appendix 2.6: Studies excluded in the final round and reasons for exclusion

Title	Reason for Exclusion
Anderson (1990)	**Outcome Not Applicable.** *This paper looks at access as an outcome, which is not the focus of this review.*
Bandiera (2010)	**Microfinance Study.** *BRAC is an NGO/MFI, and the intervention is a financial/entrepreneurial education program for people who don't have MFI access. If they end up borrowing, they are more likely to go to MFIs rather than banks.*
Beegle (2003)	**Outcome Not Applicable.** *Although this study falls within one of our proposed channels of change, it has no clear follow through into how bank access is affected. Instead, it examines the impact of access to credit on child labor participation without any clear distinction on the type of credit involved.*
Behrman (1997)	**Outcome Not Applicable/Poor Quality.** *The relevant outcomes are only a part of the paper; the main focus is studying sequential decisions in agriculture. Since this paper is focused on a different topic, it does not produce the strongest evidence for the impact of formal financial services on income as it merely creates two separate regressions for the groups close to banks, and not close to banks allowing merely a visual comparison of the different coefficients instead of a statistical analysis of their differences.*
Chloe (2010)	**Descriptive Study.** *This is merely an overview of the programming which can inform the other more rigorous studies on M-Pesa.*
DFID (2004)	**Qualitative Study.** *This paper is an overview of research, most of which is not relevant. Any of the relevant studies were included in this review.*
Duncombe (2009)	**Qualitative Study.** *This is a systematic review of the literature on M-Finance. Any of the relevant studies were included in this review.*
Eastwood (1999)	**Poor Quality.** *This study does not detail data collection methods nor properly analyze the data. There is a lack of controls and poor sampling. Omitted variable bias is thus of too great a concern to include this paper.*
Fletschner (2008)	**Outcome Not Applicable.** *This study is about household efficiency - unitary versus non-unitary model of household; it does not evaluate the impact of financial services on income. Further, no program is evaluated; the paper looks at the effect of credit constraints on household efficiency.*
Giné (2004)	**Other.** *This paper could not be obtained.*
Gupta (2009)	**Macroeconomic Study.** *This macro study falls outside the scope of our review.*
Jack (2010)	**Descriptive Study.** *This M-Pesa study does not look at impacts but can inform the other M-Pesa studies which we have examined.*
Karlan (2010)	**Microfinance Study.** *This is a paper about an MFI, therefore outside our scope. However, this is an important finance study, which can shed light, perhaps, on the impacts of formal finance as well. This study is mentioned in the introduction/background.*
Kochar (1997a)	**Outcome Not Applicable.** *The outcomes of this study are access and credit constraint, not income.*
Kochar (1997b)	**Microfinance Study.** *This paper is about a micro-lender which does not accept deposits and is an informal financial service.*
Love (2009)	**Poor Quality.** *The regressions on investment suffer from endogeneity, as the authors note, because their measures of financial services are the take-up of loans and/or savings.*
MkNelly (1998)	**Microfinance Study/Poor Quality.** *This study deals with microfinance organizations; additionally, there is no way to parse out the individual effects of the microfinance loans and the education programs on income. Moreover, there is improper assignment to control and treatment and no rigorous quantitative analysis.*
Morawczynski (2009)	**Descriptive Study.** *Merely a summary of the results of the other Morawczynski paper.*
Morawczynski, Pickens (2009)	**Qualitative Study.** *While this is an interesting overview of M-Pesa, this review specifically excludes qualitative studies for the technical review.*
Niño-Zarazúa (2007)	**Microfinance Study.** *This study deals with microfinance.*

Rosenzweig (2001)	**Descriptive Study.** *This is a summary of recent literature (as per 2001) on savings in low-income countries. Summaries of literature cannot be included in our in-depth analysis. All relevant papers from this paper were already captured by our search.*
Suwen (2009)	**Poor Quality Study.** *This paper suffers from severe problems with endogeneity. Additionally, it only presents suspicious quantile regressions.*
Tiamiyu (1994)	**Microfinance Study.** *People's Bank of Nigeria is a microfinance institution, and hence outside the scope of the review.*

Appendix 3.1: Details of studies included in the review

Title	Location Country Region Income class --- **Years** *Of program, policy or data*	Financial service(s) examined	Type of program or policy *Introduction, expansion or saturation*	Study design --- **Study quality** *3-Acceptable to 5-Excellent*	Target group(s)	Prior access to financial services	Urban/ rural --- **Farming/ non-farming**	Political status Overall Political rights Civil liberties *1-Free to 7-Not free*
Ashraf (2006a)	The Philippines Southeast Asia Lower-middle income --- 2004	Savings Financial awareness	Introduction or expansion of financial services *The program introduced a deposit collection savings product*	Randomized controlled trial --- 5	Clients of Green Bank *Non-clients were not excluded*	Previous access to and usage of financial services *6 months prior to the study, a commitment savings product had been offered to the same population*	Mostly urban --- Mostly non-farming	Free 2 3
Ashraf (2006b/c)	The Philippines Southeast Asia Lower-middle income	Savings	Introduction or expansion of financial services *The program introduced a commitment savings product*	Randomized controlled trial	Clients of Green Bank	Previous access to and usage of financial services *The target population were already clients of Green Bank.*	Mostly urban	Free 2 3

	2004			5			Mostly non-farming	
Binswanger (1995)	India, Indian subcontinent, Lower income 1972-1981	Lending or credit	Introduction or expansion of financial services *The study examined a policy for nationalization of banks and for rural bank expansion*	Quasi-experimental 4	Poor rural farmers	Previous access to informal financial services *Most of the targeted groups did not have access to formal financial services previously, but did have access to informal lenders like money lenders*	Mostly rural Mostly farming	Partly free - free 2-4 3-4 *covers a range of policy and data years
Burgess (2003)	India Indian subcontinent Lower income 1961-2000	Lending or credit Savings	Introduction or expansion of financial services *This study examined a policy for nationalization of banks and for expansion of banks to rural unbanked locations*	Quasi-experimental 4	Rural unbanked villages	Previous access to informal financial services *Most of the targeted groups did not have access to formal financial services previously, but did have access to informal lenders like money lenders*	Mix Mix	Partly free - free 2-4 3-4 *covers a range of policy and data years

Carter (1989)	Nicaragua Mexico, Central, South America Lower-middle income 1981	Lending or credit	Bank saturation study	Econometric 3	Small farmers	The financial service access did not change	Mostly rural Mostly farming	Partly free 5 5
Dupas (2009)	Kenya Sub-Saharan Africa Low-income country 2006-2008	Savings	Introduction or expansion of financial services *This program offered an interest-free savings account*	Randomized controlled trial 5	Micro-entrepreneurs at rural market center	Previous access to and usage of informal financial services *Participants had existing access to Rotating Savings and Credit Association (ROSCAs) and also saved in the form of animals*	Rural non-farming	Partly free 3 3
Freeman (1998)	Kenya and Ethiopia Sub-Saharan Africa Lower-income 1993-1995	Lending or credit	Bank saturation study	Econometric 3	Dairy farmers	The financial service access did not change	Mostly rural Mostly farming	Not free 6 5

Jack (2010)	Kenya Sub-Saharan Africa Lower-income 2008-2010	Payment services Savings	Changes or updates to technologies for financial services *The study examined the introduction of M-Pesa, mobile money*	Econometric 3	Mobile phone users all over the country and remittance receivers and senders	Mix *Many of the urban men had other forms of bank or savings accounts. The rural women (and men) did not.* *There were few, and costly, opportunities for formal transfers previously*	Mix *The technology is broadly used to send and receive remittances between urban and rural* Mix	Partly free 3 3
Kinnan (2010)	Thailand Southeast Asia Lower-middle income 1995-2005	Lending or credit	Bank saturations Social network study	Econometric 3	Villagers	The financial service access did not change	Mostly rural Mostly farming 59% farming employment	Partly free 5 4
Kochar (2011)	India South Asia Lower-income	Lending or credit Savings	Introduction or expansion of financial services	Quasi-experimental	Unbanked rural households	Previous access to informal financial services *There was previous very limited access*	Mostly rural	Partly free - free 2-4

	1983-1993			4		*to formal financial services*	Not clear	3-4 *covers a range of policy and data years
Nguyen (2007)	Vietnam Southeast Asia Lower Income	Lending or credit	Bank saturation study	Econometric	Rural and minor-urban populations	The financial service access did not change	Mostly rural *Rural and minor-urban areas included in study*	Not free 7 7
	1992/93-1997/98			3			Mostly farming	
Winter-Nelson (2005)	Tanzania Sub-Saharan Africa Lower-income	Lending or credit	Bank saturation study	Econometric	Rural farmers	The financial service access did not change	Mostly rural	Partly free 4 3
	2001			3			Mostly Farming	

Appendix 3.2: Study method characteristics

Author Background	Freq.
Academic	10
Specialized Research Organization	1
World Bank, IMF, or other global banking institution	1

Methodology	Freq.
Randomized controlled trial	3
Quasi-experimental Study	4
Econometric/ observational study	5

MSMS Quality Rating *5-excellent, 1-poor*	Freq.
5 - Excellent	3
4 - Good	3
3 - Acceptable	6

Outcome*	Freq.
Labor and/or household income	5
Household and/or business assets	5
Household consumption	3
Small and/or micro-business investment	3
Small and/or micro-business income	1
Measures of poverty	1
Small or micro-business output	6
Other	4

*Studies often report more than one relevant outcome variable

Appendix 3.3: Income/asset profile of the samples covered by the included studies

Study	Measure type	Measure	Mean (standard deviation)	Conversion factor
Ashraf (2006a)	Income	Annual HH income (hundred thousand Philippine Pesos)	1.353 (0.069)	52 Philippine Pesos = 1 USD
Ashraf (2006b/c)	Income	Median HH Daily Income (Philippine Pesos)	350	50 Philippine Pesos = 1 USD
Binswanger (1995)	Income	Agricultural Real Wages (Indian Rs./Manday)	5.294 (2.165)	N/A
Burgess (2003)	Income	Daily Agricultural Wages (in Indian Rs.)	5.42 (2.0)	N/A
Carter (1989)	Income	Avg. Net Revenue per cultivable Manzana (Nicaraguan Córdobas 1981)	639 (828) [Without Credit] 793 (969) [With Credit]	1 manzana = 0.68 hectares
	Asset	Mean Farm Size (Manzanas)	7.49 (9.46) [Without Credit] 6.73 (8.81) [With Credit]	
Dupas (2009)	Income	Total Income in week prior to Survey (in Kenyan Shillings)	636 (597) [Men (Treatment)] 564 (464) [Men (Control)] 1297 (1594) [Women (Treatment)] 1116 (1285) [Women (Control)]	N/A
Freeman (1998)	Asset	Herd Size (Numbers)	35.051 (14.524) [Ethiopia] 6.273 (3.693) [Kenya]	N/A
		Farm Size (Hectares)	N/A [Ethiopia] 2.814 (2.195) [Kenya]	N/A
Jack (2010)	Consumption	Annual Household Expenditure (Kenyan Shillings 2008)	255,211 (377,428)	N/A
	Assets	Assets (Kenyan Shillings 2008)	147,579 (460, 483)	N/A
Kinnan (2010)	Income	Average monthly per capita income (Thai Baht 2002)	8,981 (N/A)	42 Thai Baht 2002 = 1 USD 2002
Kochar (2011)	Consumption	Per capita Expenditure (Indian Rs. Per month)	116.80 (178.98) [in 1983] 170.75 (152.84) [in 1987] 311.10 (232.48) [in 1993]	N/A

Nguyen (2007)	Asset	Land Holdings in Square Metres	508 (1836.7) [VLSS 1992/93] 3594.9 (5884.3) [VLSS 1997/98]	N/A
Winter-Nelson (2005)	Income	Total Household Income (Tanzanian Shillings 2000)	210,025 (310,888)	N/A
	Asset	Average Landholding (Hectares)	1.2 (0.98)	N/A

Appendix 4.1: Textual details and study summaries

A. Interventions and policies

A.1 Savings products

1. **Ashraf (2006a):** This study examines a randomized controlled trial of the introduction of a deposit-collecting service for savings. The study is conducted in the Philippines with the Green Bank of Caraga. The authors use an intent-to-treat design. The treatment group is offered the service by the marketers while the control group is not specifically offered the collection service. The authors find that the deposit-collecting service leads to higher savings account balances.
2. **Ashraf (2006b/c):** These two studies, *c* being a follow-up to *b,* examine the immediate and long-term impact of offering a commitment savings product using a randomized field experiment. The study examines the differential impact of being offered the commitment savings product along with savings marketing, first versus just being offered savings marketing and second, versus a base group with no program or treatment offering. Since this program was offered to previous bank clients, it examines the impact of the additional savings programs. The authors find that the subjects in the treatment groups have a positive change in their total savings with the bank, which suggests that both the marketing and the commitment savings product positively affect household assets and income. However, in the long run the impact is dissipated. The authors also provide evidence to show that the increase in savings consisted of new savings rather than substitution from savings held outside the participating bank. The studies consider other outcomes, such as household decision making and self-perception of savings behavior, but these are not relevant to this review. Similarly, the study looks at how hypothetical time discounting preferences affect one's take-up of the product, but these results are also not considered here.
3. **Dupas (2009):** Using an intention to treat randomized controlled trial, micro-entrepreneurs in Bumala town in Western Kenya were offered an interest-free savings account in cooperation with a local village bank. Because of withdrawal fees imposed by the bank, the accounts effectively yielded negative interest rates even before accounting for inflation. However, strong take-up and usage was observed, especially among women participants. Further, positive effects were found on savings and business investment; among market women, within six months, higher income levels (proxied by expenditures) were also recorded. The small sample, and the higher and unbalanced attrition of male participants, means that the results for women are not necessarily gender differences.

A.2 Technology

4. **Jack (2010)** is a preliminary working paper with available set of slides, which examines the impact of M-Pesa. M-Pesa is a new technology for cell phones which allows for e-money transactions. Users can make payments with their mobiles through this technology, send transfers and even use it as a savings mechanism. The service works through M-Pesa vendors who are spread throughout Kenya in both urban and rural environments, who convert real money to e-money, which then may be sent as a payment or remittance, or just kept as e-money. Users may retrieve their e-money, or e-money payment or remittance, by going to the vendor and paying a small fee. Jack uses a multi-

year panel data set to examine various impacts of M-Pesa; however, all of the analysis is in preliminary stages. The most developed analysis uses a difference-in-difference approach to determine the effect on consumption smoothing and shows that M-Pesa users can weather shocks better. There is very preliminary evidence suggesting that M-Pesa usage not only increases the share of one's savings in mobile money but also in total.

A.3 Policy

5. **Burgess (2003):** In this paper the authors examine whether having access to formal financial services by a state-led expansion of banking services can reduce rural poverty. In order to circumvent the problem of endogeneity in the availability of banking services, they employ an instrumental variables approach and use the policy rules underlying a large state-led bank branch expansion program in India. The program requires that banks open four rural branches in previously unbanked areas for each new branch they propose to open in an already banked area. They find that branch expansion into rural unbanked locations in India significantly reduces rural poverty, and leaves urban poverty outcomes unaffected. They also show that the effect on rural poverty is at least partially mediated through increased deposit mobilization and credit disbursement by banks in rural areas.
6. **Binswanger (1995):** This study examines the impact of reducing credit constraints on agricultural output and investment. It exploits policies set in place in the 1970s by the Indian government. During nationalization, there was an expansion of rural bank branches and cooperative banking societies (including Primary Agricultural Credit Societies (PACs) and Land Development Banks). The authors use different methodological approaches to capture the effects of credit constraints, including a first stage that uses the number of branches of financial institutions and other variables to predict the likelihood of having access to rural and cooperative banking. The authors find that regardless of how credit constraints are measured, lowering credit constraints increases the demand for fertilizer and the purchase of other farm investments (such as milk and non-milk animals). The findings suggest that having access to formal finance increases rural farmer's income.
7. **Kochar (2011):** This paper uses household-level data from India's national sample surveys to focus on the effects of social banking policy interventions on household expenditure. A carefully designed identification strategy is used to ensure that confounding influences from poverty alleviation programs can be factored out, and the effect of bank expansion intended to increase household expenditures can be isolated. Using an instrument variable specification with fixed effects on pooled data from 1983-1993 this paper finds that although there is an overall positive impact on expenditure, the effects are heterogeneous, with non-poor households experiencing a positive and significant improvement while poor households see no significant effect. Socially backward groups i.e. scheduled castes and tribes, however, do experience statistically significant improvement in household expenditures.

B. Bank saturation

B.1 Agriculture

8. **Freeman (1998):** This study examines the effect of being credit constrained on agricultural dairy production, and specifically on milk output, using a two-stage switching regressions model. The first stage creates a predictor of credit constraints. The authors are able to compare the effects of various additional

inputs on milk output for credit-constrained and non-credit-constrained groups. They find that credit-constrained groups have higher marginal effects for additional inputs, suggesting that credit constraints force them to have sub-optimal inputs. Most of the increase in input for the non-credit-constrained group is sourced from a specific type of crossbred milking cow which they are able to purchase more regularly as a result of having access to credit.

9. **Winter-Nelson (2005):** This study examines the effects of credit and liquidity constraints on agricultural output, specifically coffee production, using a switching-regressions model. The study takes place in Tanzania and looks specifically at rural farmers. The authors find that credit-constrained farmers obtain more marginal benefit from additional coffee plants than non-credit-constrained farmers do. This suggests that credit-constraints are forcing farmers to make non-optimal input decisions and that freeing farmers from credit constraints would increase agricultural output and income.
10. **Carter (1989):** The study uses data from a survey of small farmers in Nicaragua to estimate the impact of credit on peasant productivity, particularly corn and bean production. The author uses an endogenous switching regression framework to resolve the identification problem. The results suggest that credit had a positive impact on small farm food production. The study compares 'self-selected' to 'randomly selected' credit recipients: a 'randomly selected' credit recipient would use 46% more inputs, while a self-selected credit recipient would boost input use by another 43%. In total, credit is estimated (although imprecisely) to yield an 89% increase in intermediate input use by credit recipients compared to what these same self-selected individuals would counterfactually use without credit.

B.2 Household consumption

11. **Kinnan (2010):** The authors examine the impact of having a direct connection to banks (measured by whether the household has a loan), or indirect connections through networks (measured by whether the household is connected to someone with a loan). Using a household-level panel dataset in Thailand, the authors study the impact of these direct and indirect connections to banks on consumption and investment smoothing. Looking at the changes in consumption rather than its level, the authors minimize the endogeneity problem associated with financial access and financial outcomes. In other analyses looking at levels of consumption and investment, they use fixed effects and controls to address the endogeneity problem. The authors find that having any access to commercial banks, either directly or indirectly through peers, smoothes consumption but not necessarily income. Income appears to be better smoothed through kin networks and kin monies rather than bank monies.
12. **Nguyen (2007):** Using a national-level household survey of Vietnam, this study examines the characteristics of credit markets and the factors which lead to participation in credit markets in rural Vietnam. The author looks at both formal and informal financial services, where formal financial services include banks as well as government programs that provide loan services to participants. Using household survey data, they determine that not all formal financial service providers require collateral and that there are several factors which influence loan take-up for both formal and informal institutions. In determining the impact of credit participation, the author tries to address the problem of endogeneity associated with using propensity score matching. Using a very basic first stage probit equation, the author matches non-loan-takers to loan-takers using their predicted propensity to take up a loan. This creates a quasi-experiment with a control and treatment group. The study finds that

comparing individuals matched using observables, the take-up of formal financial services increases consumption.

Appendix 4.2: Savings studies mechanisms tables

Title	How were the programs or policies expected to change income of poor?	A priori pathways through which increase of financial services was intended to raise income	Did the study provide support for the validity of the a priori pathways?	Evidence and narrative for a priori pathways	Did the study provide support for other mechanisms of change?	What are the other possible pathways through which the programs or policies raise the poor's income?	Evidence and narrative for alternative pathways
Ashraf (2006a)	This program tried to increase the supply and availability of financial services by expansion of the private sector led banking services.	Increase the availability of savings to secure and grow savings.	Yes	Deposit collectors increase the availability of savings through reducing transactions costs and this is associated with increase in savings.	Yes	Deposit collectors' help people commit to savings and overcome time-inconsistent preferences; raising incomes by forcing them to save 'now', which ultimately they would want to have done in the 'future'.	Face-to-face contact with the deposit collector increases the commitment to save; this is associated with an increase in savings.

Ashraf (2006b/c)	This program tried to increase the supply and availability of financial services by expansion of the private sector led banking services. It also tried to increase the demand for and usage of financial services through structural determinants of demand and by increasing awareness of financial services.	Increase the availability and usage of savings to secure and grow savings.	Yes	A new commitment savings product increased the supply of savings and was correlated with an increase in savings in the short term, but effects dissipated in the long term.	Yes	Commitment savings products help people to commit to savings and overcome time-inconsistent preferences; raising incomes by forcing them to save 'now' which ultimately they would want to have done in the 'future'.	The offering of commitment savings products is associated with an increase in savings.
Dupas (2009)	This program tried to increase the supply and availability of financial services by expansion of the private sector led banking services.	Micro-entrepreneurs were offered an effectively negative interest rate savings account. It was hoped that incomes would increase through increased savings and increased business investment.	Yes	An effective negative interest rate savings product was offered with strong take-up and usage. Access to the account had a substantial, positive impact on productive investments and income (proxied by expenditures).	No	N/A	N/A

Appendix 4.3: Technology studies mechanisms table

Study	How were the programs or policies expected to change income of poor?	A priori pathways through which increase of financial services were intended to raise income	Did the study provide support for the validity of the a priori pathways?	Evidence and narrative for a priori pathways	Did the study provide support for other mechanisms of change?	What are the other possible pathways through which the programs or policies raise the poor's income?	Evidence and narrative for alternative pathways
Jack (2010)	This program tried to increase the supply and availability of financial services through technological improvements related to financial services.	Increase/ease payment services to facilitate remittances and transfers, which helps smooth consumption and raise incomes of the receivers directly.	Yes	Study shows a correlation between M-Pesa usage and smoother consumption.	Yes	Provides secure savings facility.	Early evidence, not reported in outcomes, showing an increase in savings for M-Pesa users.

Appendix 4.4: Policy studies mechanisms table

Title	How were the programs or policies expected to change income of poor?	A priori pathways through which increase of financial services were intended to raise income	Did the study provide support for the validity of the a priori pathways?	Evidence and narrative for a priori pathways	Did the study provide support for other mechanisms of change?
Binswanger (1995)	This program tried to increase the supply and availability of financial services by expansion of public and private-led banking services.	Credit to reduce credit constraints.	Yes	Increase in non-farm employment and rural wages observed as an impact. Not much effect on farm employment and output.	No
Burgess (2003)	This program tried to increase the supply and availability of financial services by expansion of public and private-led banking services.	Credit to reduce credit constraints. Increase savings to secure savings.	Yes	Decrease in rural and aggregate headcount ratios of poverty. Increase in agricultural wage.	No
Kochar (2011)	This program tried to increase the supply and availability of financial services by expansion of public and private-led banking services.	Increased credit leads to increases in household expenditure for economically and socially backward groups.	Yes	Improved household expenditure outcomes observed for socially backward groups, but not for economically backward groups as a whole.	No

Appendix 4.5: Household consumption studies mechanisms table

Title	A priori pathways through which access to formal credit was intended to raise income	Did the study provide support for the validity of the a priori pathways?	Evidence and narrative for a priori pathways	Did the study provide support for other mechanisms of change?	Are there other possible pathways through which the programs or policies raise the poor's income?	Evidence and narrative for alternative pathways
Kinnan (2010)	Reduce credit constraints to increase investments, expanding business and improving intermediate outcomes, thus increasing income. Reduce credit constraints to smooth consumption, improving intermediate outcomes and increasing income.	No Yes	Being directly or indirectly linked to bank does not correlate with investment smoothing. Being directly or indirectly linked to a bank does correlate with consumption smoothing.	No	Yes	Indirect linkages to banks and having access to credit appear also to help smooth consumption through transfers and borrowing among social connections.
Nguyen (2007)	Reduce credit constraints to increase investments, expanding business and improving intermediate outcomes, thus increasing income Reduce credit constraints to smooth consumption, improving intermediate outcomes and increasing income.	Yes	Higher propensities for credit are correlated with higher household consumption.	No	No	No

Appendix 4.6: Agriculture studies mechanisms table

Title	A priori pathways through which access to credit was intended to raise income	Did the study provide support for the validity of the a priori pathways?	Evidence and narrative for a priori pathways	Did the study provide support for other mechanisms of change?
Carter (1989)	Reduce credit constraints and allow the purchase of better inputs for higher outputs and income.	Yes	The effects of credit on production are insignificant but do suggest that credit is correlated with higher outputs.	No
Freeman (1998)	Reduce credit constraints and allow the purchase of better inputs for higher outputs and income.	Yes	It seems that having access to credit predicted a clear difference in the types of dairy animals purchased and the marginal effects of new inputs. Indeed, constrained households saw higher marginal effects of new inputs, suggesting that they were being held back by credit constraints and were not able to reach optimal levels of inputs.	No
Winter-Nelson (2005)	Reduce credit constraints and allow the purchase of better inputs for higher outputs and income.	Yes	Those with greater liquidity and fewer credit constraints saw less marginal benefit from new inputs than those with more credit constraints, suggesting that lack of credit keeps people from optimal inputs and higher outputs and incomes as they are not reaching the optimal input levels signaled by lowered marginal benefits.	No

The authors of this report were supported by the Evidence for Policy and Practice Information and Co-ordinating Centre (EPPI-Centre) and the International Initiative for Impact Evaluation (3ie).

The Evidence for Policy and Practice Information and Co-ordinating Centre (EPPI-Centre) is part of the Social Science Research Unit (SSRU), Institute of Education, University of London.

Since 1993, we have been at the forefront of carrying out systematic reviews and developing review methods in social science and public policy. We are dedicated to making reliable research findings accessible to the people who need them, whether they are making policy, practice or personal decisions. We engage health and education policy makers, practitioners and service users in discussions about how researchers can make their work more relevant and how to use research findings.

Founded in 1990, the Social Science Research Unit (SSRU) is based at the Institute of Education, University of London. Our mission is to engage in and otherwise promote rigorous, ethical and participative social research as well as to support evidence-informed public policy and practice across a range of domains including education, health and welfare, guided by a concern for human rights, social justice and the development of human potential.

This material has been funded by the Department for International Development. However the views expressed do not necessarily reflect the department's official policies. The report was first published in 2012 by:

Evidence for Policy and Practice Information and Co-ordinating Centre (EPPI-Centre)
Social Science Research Unit
Institute of Education, University of London
18 Woburn Square
London WC1H 0NR

Tel: +44 (0)20 7612 6397
http://eppi.ioe.ac.uk
http://www.ioe.ac.uk/ssru

ISBN: 978-1-907345-26-5
Cover image ©IFAD Fulvio Zanettini

The International Initiative for Impact Evaluation (3ie) works to improve the lives of people in the developing world by supporting the production and use of evidence on what works, when, why and for how much. 3ie is a new initiative that responds to demands for better evidence, and will enhance development effectiveness by promoting better informed policies. 3ie finances high-quality impact evaluations and campaigns to inform better program and policy design in developing countries. 3ie Systematic Reviews examine the range of available evidence regarding a particular intervention.

International Initiative for Impact Evaluations (3ie)
Tel: + 44(0)20 7958 8351/8350
http://www.3ieimpact.org