CHAPTER 5

Innovative Microfinance: Potential for Serving Rural Markets Sustainably*

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Providing sustainable financial services for rural areas and agriculture in developing countries has proven immensely challenging. Billions have been spent to subsidize programs and policies designed to develop financial institutions to serve this neglected market segment. However many of the sector's decision makers and analysts continue to be dissatisfied with the progress. One fairly bright spot has been the increasing penetration of microfinance institutions (MFIs)[2] into rural areas with products and services designed to meet the needs of rural populations and especially the needs of seasonal agricultural production. MFIs face the same challenges of high costs and risks that all financial institutions confront in serving this market, but many innovations are being tested that may eventually yield solutions more attractive for market-oriented sustainable financial institutions.

This chapter summarizes how some MFIs supply finance to rural areas and agriculture. Emphasis is placed on lending even though major advances are occurring in microinsurance, savings mobilization, and payment and remittance services. There is no data base that reports MFI agricultural loans or financial activities in rural areas so this chapter focuses on selected MFIs for which data and studies are available. This chapter also discusses the adjustments MFIs must make as they move away from serving mostly urban and peri-urban clients. Observations about the role of donors and development finance institutions (DFIs) in overcoming barriers conclude the book chapter.

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2 The early innovators were frequently NGOs but now many banks and cooperatives offer microfinance services.

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1 Agricultural and Rural Microfinance

1.1 Definitions

The terminology generally follows that of the International Fund for Agricultural Development (IFAD, 2010). The *financial market* includes all financial services for all purposes from all sources in both urban and rural areas. *Rural* generally is defined as geographic areas (villages, towns, small cities) with fewer inhabitants and lower population densities than in larger cities and towns. *Agricultural finance* refers to financial services used throughout the agricultural sector for farming and farm-related activities including input supply, processing, wholesaling, and marketing. *Agricultural credit* is normally provided in cash but some in-kind loans are provided for seed, fertilizer, and other production inputs. *Microfinance* (MF) involves small-size transactions and products specifically designed for low-income households and small scale businesses, often concentrated in urban or densely populated rural areas, but increasingly penetrating more rural locations. *Agricultural microfinance,* therefore, refers to small-size transactions for poor farm households and farm-related businesses while *rural microfinance* encompasses both agricultural and non-agricultural firms and households in rural areas.

1.2 The Subsidized Agricultural Credit Paradigm

In the 1960s to 1980s, old-paradigm, subsidized, directed agricultural credit programs were common in top-down government and donor policies and programs. Unfortunately, attempts to resolve supposed market failure often ended up as government failure.[3] Thus a new financial systems paradigm emerged that contributed to the development of microfinance.[4]

Although there were important exceptions, the old paradigm as employed in many countries had several common features. At the national level, it was believed that economic growth would be accelerated by imposing lending targets on financial institutions and providing incentives for rural branching. At the farm level, the strategy was implemented without careful analysis of the real causes of the supposed credit market failures. Interventions were often considered necessary to induce commercial lenders to supply credit for farmers to adopt Green-Revolution production packages, and artificially low interest rates were justified to accelerate adoption. Credit was often targeted to meet food production targets,

[3] Market failure describes the condition where the allocation of goods and services by a free market is not efficient while government failure occurs when government intervention causes an inefficient allocation of goods and services.

[4] Some of the most comprehensive and accessible publications of the vast literature discussing this evolution include Von Pischke et al. (1983); Adams, et al. (1984); World Bank (1989); Yaron et al, (1997); Conning and Udry (2007). A recent study of the impacts of subsidized credit policies concerns China (Jia, Heidhues and Zeller, 2010).

specialized agricultural development banks and cooperatives were created to deliver loans, interest rates were usually subsidized, and one-size-fits-all credit models were commonly used for lending.

With some exceptions, this paradigm largely failed to meet expectations and there were many unexpected consequences. Increases in lending contributed to some short-term increases in food supplies, but did not lead to sustainable credit supplies. Low interest rates crowded out commercial banks,[5] stimulated excess demand for loans and induced credit rationing that tended to favor richer and politically powerful farmers.[6] High-borrower transaction costs coupled with long delays in credit delivery reduced the advantage of formal loans for farmers relative to informal sources. A combination of low operating margins and poor loan recovery undermined financial institutions; some failed while others required repeated recapitalizations. A bad debt culture developed among borrowers, especially when loans were perceived as coming from the government. Government failure occurred because directed credit failed to resolve the basic screening, incentive, and enforcement problems of rural lending (Hoff and Stiglitz, 1990).

1.3 The Financial Systems Approach

Most old-paradigm programs were discontinued by the 1980s and replaced by the financial systems approach.[7] The term "financial system" covers all: 1) financial institutions; 2) financial markets and instruments; 3) legal and regulatory environment; and 4) financial norms and behavior. Building the system requires developments at three levels: 1) micro: understanding the financial needs and behavior of different clientele, building financial institutions, creating financial products and services; 2) meso: creating infrastructure needed for financial intermediation services; and 3) macro: creating conducive national policies and strategies, complementary non-financial services, and a supportive enabling environment.

Key elements of this new paradigm include:

1. Broadening the view of rural finance to include farming and rural non-farm activities;
2. Recognizing the importance of savings mobilization;
3. Believing market discipline of both financial institutions and clients is reinforced through market interest rates for both savings and credit;

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5 See Vogel (2005) for a description of crowding out of commercial banks by the Banco Agrario del Peru.

6 Gonzalez (1984) explained this as a logical outcome of the Iron Law of Interest-Rate Restrictions.

7 This summary draws from FAO/GTZ (June 1998), Yaron, et al. (1997), and IFAD (2010). The new approach was incorporated into the policies of international agencies in the 1990s (World Bank, 2003).

4. Granting of loans in response to demand rather than supply targets;
5. Evaluating financial institutions for their viability rather than loans disbursed;
6. Recognizing successful finance depends upon favorable macroeconomic, agricultural, and financial sector policies, as well as an appropriate legal framework;
7. Accepting informal finance as complementary rather than usurious and harmful;
8. Believing financial sector reform is essential to improve performance and widen the outreach of financial institutions; and
9. Identifying useful roles for donors to assist in creating a favorable policy environment, improving legal and regulatory frameworks for rural financial markets, building institutional capacity, and supporting innovations to lower transaction costs and improve risk management.

The new paradigm reversed the objective of supplying cheap credit and focused instead on creating sustainable institutions, treating borrowers and savers as clients rather than beneficiaries, and pricing products and services to cover costs and risks. Long-term relationships with clients were encouraged by gradually increasing loan sizes consistent with repayment capacity. The use of credit lines was reduced by donors in favor of grants, loans, and technical assistance supporting product designs, institutions, and policies. The new paradigm contributed importantly to the successes of microfinance and its penetration into rural areas and agriculture.

2 Microfinance Serving Agriculture and Rural Areas

Microfinance is making inroads into serving agriculture and rural areas. This section explains why MFIs are entering this market segment, how they are adapting to it, and summarizes successful examples.

2.1 Reasons for MFIs Expanding into Rural Areas

Some MFIs began with a mission to serve farmers, while others developed by serving urban and peri-urban clients in areas with high population densities and slowly penetrating into rural areas to serve more agricultural and farm clients.[8]

[8] Surprisingly, Gonzalez (August, 2010) found that MFI loan officer productivity was actually higher in rural than in urban MFIs perhaps because client dispersion is not as great as expected.

Over concentration and the need to improve efficiency and sustainability by increasing the scale of operations contributed to expansion into this market segment.

Overconcentration in Some Markets

Overconcentration first emerged where MFIs grew rapidly and became large relative to the total financial market. Bolivia, Uganda, and Bangladesh were important examples (Rhyne, 2001; Wright and Rippey, 2003; Porteous, February 2006). Increased competition can induce positive effects by pressuring MFIs to reduce interest rates, increase loan sizes, introduce new products, and improve client service, but it can also lead to borrowing from two or more lenders simultaneously, excessive indebtedness, and rising loan delinquencies.[9] One solution is for MFIs to seek new markets by expanding into smaller towns, villages, and rural areas.[10]

Improve Efficiency and Sustainability

Since some financial institutions in developing countries realize economies of scale, it is logical to expect similar benefits if MFIs expand.[11] If true, this could produce a win-win situation in which MFIs benefit through lower costs, higher profits, and greater financial sustainability, and customers benefit through reduced interest rates, and greater opportunities for MFIs to serve poorer clients with smaller loans and rural clients located in distant locations. Therefore, increasing scale by horizontal expansion into new rural and agricultural markets could be highly desirable.[12]

Studies testing MFI economies of scale have produced mixed results. For example, Qayyum and Ahmad (no date) found some evidence of MFI economies of scale in Bangladesh, India, and Pakistan. Zacharias (2008) analyzed a sample of MFIs in the 2006 MIX Market data base and concluded that larger MFIs on average appear to be more efficient. Larger portfolios can be achieved by making larger loans but this may conflict with the MFIs' social mission. On the other hand, Gonzalez (2007) studied a larger sample in the 2006 MIX data base and found that scale plays an important role in explaining cost differences for MFIs smaller than 2,000 borrowers, but surprisingly not for larger ones. He also found that as loan sizes grew, there was a significant but decreasing effect on operating costs. There-

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9 Chen, Rasmussen, and Reille (2010) found excessive lending also contributed to rising delinquencies in Nicaragua, Morocco, Bosnia and Herzegovina, and Pakistan.

10 Using MIX data, Gonzalez (June, 2010) concluded there are better possibilities in concentrated markets for high-quality portfolio growth by funding new clients in new branches rather than in attracting new clients in existing locations.

11 Economies of scale refer to advantages that a business realizes through expansion so average production costs per unit fall as the scale of output increases.

12 Economies of scale were also given as a reason for NGOs to transform into formal regulated financial institutions (Ledgerwood and White, 2006).

fore, expansion into new rural markets could have a favorable impact on costs and efficiency, but larger loans in existing markets could produce similar results.

2.2 Required Adjustments in Methodology: Becoming Client Oriented

Most MFIs first achieved success by adopting a fairly standard group lending methodology with joint liability. It was recognized subsequently that lending needed to be more adaptable to client needs. Thus individual lending became more common, instead of or as a complement to group lending. It is better adapted to the heterogeneity of farm households and to the needs of seasonal agriculture. Essentially this change required MFIs to shift from what they can produce to products customers want, from serving the needs of institutions to serving the needs of customers (Woller, 2002). This section highlights changes that MFIs have implemented.

Product Design

The typical MF loan was designed as a one-size-fits-all product easily adopted by urban and rural households with periodic cash inflows, but less so for farmers with seasonal flows. The Grameen Bank inspired the granting of small, annual working capital loans disbursed simultaneously to all group members with each receiving the same or similar amounts. As borrowers establish their creditworthiness, subsequent loans were made in larger amounts (progressive or step loans). The loans were fully amortized, loan installments were collected frequently, often weekly or monthly, and included interest and principal. Interest rates were fixed regardless of loan purpose or size. Even borrowers who repaid early were not eligible for a new loan until all group members repaid. These rigidities facilitated record keeping for paper-based bookkeeping, and borrowers easily understood their obligations, but they also contributed to client exclusion, dropouts, delinquencies, and borrowing simultaneously from multiple MFIs (Meyer, 2002; Wright, 2000). Individual lending helped address these problems.

Individual Lending

Individual lending[13] involves a detailed assessment of the client's financial situation, character, repayment capacity, and his/her business and personal risks. This implies high costs for making the first loan, but costs are expected to decline over time as loan officers accumulate information about clients. Information obtained from applicants regarding their enterprises and expected cash flow determines if a

[13] Some microfinance technical service providers (e.g. IPC in Germany) always advocated individual lending, while other MFIs began with a group model and shifted toward individual lending due to competitive pressures (Churchill, 1999). For example, group lenders in Bolivia began to lose customers when individual lenders moved into the market offering larger loans more quickly for repeat customers (Navajas et al., 2003b).

loan will be granted, the size, duration, and disbursement and repayment schedule. Obtaining good estimates about a farmer's production, yields, and cash flow requires great skill and patience by loan officers.

The question arises about how to achieve good loan recovery without periodic group meetings and joint liability. Some MFIs discard joint liability but use group meetings for collection as paying installments in public pressures borrowers to pay on time. For example, ASA, operating in rural areas of densely populated Bangladesh, was one of the first in that country to reduce joint liability but continue group meetings for recovery (Armendariz and Morduch, 2005). MFIs are experimenting with allowing borrowers to use cell phones to make payments at any time but regular group meetings continue where loan officers collect unpaid installments.

Many MFIs encourage repayment by taking collateral in the form of a co-signer (guarantor) or physical collateral such as livestock, tools and machinery, land even without clear title, and other business and personal assets.[14] Documents such as tax receipts are taken as collateral if they are valuable to clients for other purposes. Thus the notional or use value to the borrower is critical, not the market value of pledged assets (Armendariz and Morduch, 2005). Postdated checks can also be useful in countries where the penalty for issuing checks without funds is severe and immediate compared to the lengthy legal process of seizing and disposing of pledged assets.

Access to future loans is an important incentive for prompt loan payment because repaying becomes more attractive than defaulting. Therefore, MFIs strive to build long-term client relationships, promote the image of long-term stability, quickly extend new loans to borrowers who repay promptly, increase loan sizes consistent with increased debt repayment capacity, and strive to maintain liquidity so clients are not denied loans due to a lack of funds. A limitation, however, is that most MFIs do not yet make term loans critical for larger farm investments (Höllinger, 2004).

Decentralization and Staffing

Individual lending implemented in branches located far from head offices requires decentralization of decision making. Branch managers, credit managers, and field officers require flexibility and authority to make decisions rapidly on loan applications and in amounts and terms to meet heterogeneous farmer demands. Two staffing options have been followed. One option is to conduct in-depth training programs for existing staff that are posted to serve the agricultural and rural market. The other is to hire specialized staff and assign them to exclusively serve this clientele. MIS and supervisory systems must be adapted so managers and loan offi-

[14] Warehouse receipts are used to collateralize stocks of farm commodities and are being introduced in several African countries for food crops where they previously existed for only selected export crops (Coulter, 2009).

cers have the flexibility and authority to respond to local market conditions and conduct oversight and control (Dellien et al., 2005).

MFIs implement different strategies regarding personnel assigned to serve agriculture. Some select their experienced credit officers and give them training in crop and livestock farming, while others hire persons knowledgeable about agriculture and teach them banking. Some prefer to hire staff from the local area with the expectation they will be satisfied to work locally for the long term while others prefer to assign new people who are not encumbered with local family and social obligations. Many MFIs use committees to make loan decisions so younger officers can learn from more experienced ones. Scheduling loan officer work activities must take account of agricultural seasonality, and performance incentives must be adjusted for differences in potential portfolio growth between rural and urban loan officers.[15]

Management Information Systems (MIS)

Many MFIs use paper-based record keeping systems to service thousands of clients in standardized group lending programs, but individual lending requires modern MIS systems for making quality credit decisions, monitoring loans, managing the loan portfolio, and tracking comprehensive data about clients and their businesses. For example, one constraint to the spread of flexible loan products for farmers in Bangladesh was that most MFIs preferred standardized loans that were easier to manage with manual bookkeeping.[16]

Information systems must also provide monitoring and verification reports for use at all levels of MFI operations (Dellien et al., 2005). Field officers need timely repayment reports to follow up immediately with delinquent borrowers. Managers must measure staff output to implement incentive systems, to monitor portfolio composition for desired levels of diversification, and to track loan recovery, rescheduled loans, new loans, and renewals. Dropouts must be identified and appropriate follow up undertaken.

2.3 Successful MFIs Rerving Rural Areas and Agriculture

In the absence of a comprehensive rural finance data base, insights about the magnitude of MFI activities and their performance have to be gleaned from selected

[15] Navajas and Gonzalez-Vega (2003a) present a detailed analysis of the individual lending methodology and incentives used by Financier Calpia in El Salvador (now ProCredit Bank El Salvador) so rural loan officers achieve productivity as high as urban officers.

[16] Some 25 to 30 million borrowers had access to microcredit in 2008 in Bangladesh, but only 1-1.5 million borrowed loans specifically designed for seasonal or investment lending in agriculture compared to a total of six to seven million people engaged in crop farming (Alamgir, 2009).

case studies.[17] This section highlights MFIs for which information concerning their rural operations is readily available. Undoubtedly there are other successful but less well publicized examples.

Three Acclaimed Pioneer Asian Institutions

Three Asian institutions are frequently suggested as models for successfully supplying loans and other financial services in rural areas: Bank for Agriculture and Agricultural Cooperatives (BAAC) in Thailand; village banks (Unit Desas) of Bank Rakyat Indonesia – BRI-UD; and Grameen Bank (GB) in Bangladesh. GB is the only one commonly known as a MFI, but all three reach millions of clients, many of whom are poor, and they serve agriculture directly or indirectly. Their success contributed to the change in the agricultural paradigm.[18]

Common features of the three that contributed to their success include:

- Operating in areas of high population density;
- Reasonably favorable economic, rural and agricultural policies;
- Fair to good rural infrastructure;
- High degree of management autonomy, including charging positive and often high loan interest rates;
- Staff policies that stress training and accountability;
- Innovative and low-cost operating systems;
- Appropriate loan terms and conditions;
- Close monitoring of loan performance;
- MIS adequate to facilitate planning, control, and monitoring;
- Strong savings mobilization to reduce or eliminate the need for external funds.

Several features are noteworthy. BAAC is a state-owned bank created in 1966 that was restricted to agricultural lending until recently. BRI was also state-owned with a network of village banks established as separate profit centers in 1984. GB was established in 1983 as a specialized financial institution with its own banking or-

[17] The annual reports of the 22 ProCredit banks (www.procredit-holding.com) show the agricultural share of their total loan portfolios ranged from less than 1percent to more than 26 percent. Unpublished data for investments made by the Rural Impulse Fund managed by Incofin Fund Management in 22 institutions showed a range of agricultural loans from 1 percent to 77 percent.

[18] There is a large literature about these three institutions by Yaron and other authors. Meyer and Nagarajan (2000) analyzed them in a study of Asian rural finance.

dinance. All three serve millions of clients but in different ways. Grameen pioneered joint liability five-person groups mostly comprised of women, a method subsequently copied widely around the world. BRI-UD uses individual lending while BAAC uses group lending for small loans and individual lending for large loans to reach 80 to 90 percent of farmers in the country, and also lends to cooperatives. GB revised its rigid loan and savings products after the 1998 flood and created the highly successful Grameen II.

BRI-UD has emphasized voluntary savings mobilization and its savings volumes have been double that of outstanding loans, demonstrating that more rural people will benefit from secure places to save than to borrow. BAAC initially relied on government funds and bank loans but savings mobilization slowly expanded. GB was slow to mobilize voluntary savings but under Grameen II introduced attractive savings and pension products. BRI-UD channeled substantial savings and profits to the home office. As a result it had a negative subsidy dependence index (SDI) (it could have lowered interest rates on loans and still covered any subsidies received).[19] The SDI was slightly positive for BAAC because of subsidies, while the SDI was highly positive for GB because of huge subsidies received in its early years.[20]

Surprisingly, the average depth of poverty of the clients served (measured by ratio of average outstanding loans to GDP per capita) was somewhat lower for BAAC and BRI-UD even though Grameen reportedly serves the poor. All three have achieved good loan recovery with relatively few write-offs in spite of financial crises, although GB experienced problems due to the 1998 flood. The three have controlled costs and losses so their interest rates are relatively low compared to MFIs elsewhere.

ProCredit Bank El Salvador (Formerly Financiera Calpia)

ProCredit Bank El Salvador, one of 22 banks of ProCredit Holding, evolved from an NGO in 1988 to become a *financiera* and finally a bank in 2004. It initially served urban micro entrepreneurs but modified its individual lending technology to fit the demands of rural clients beginning in 1992. The initial target area was based on three criteria: accessibility, proximity to a branch office, and secure water supply to minimize crop failure. Technical assistance for designing the technology was provided by the German consulting firm Internationale Projekt Consult (IPC), one of the founding shareholders.

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[19] Yaron (1992) created the SDI to calculate the overall financial cost of operating a financial institution. It is calculated by dividing the annual subsidy received by the annual average interest rate earned on the annual average loan portfolio. A negative SDI implies that the institution has achieved full self-sustainability, while a positive number indicates that interest rates need to be raised to cover the subsidies received.

[20] For the period 1985 to1996, it was estimated that GB would have needed to raise nominal rates on ordinary loans from 20 to 33 percent to become free of subsidies (Morduch, 1999).

Agricultural loans were made for an average of ten months and livestock loans for 15 to 18 months. Interest and partial principal payments were scheduled periodically for clients with the necessary cash flow; otherwise, a single-bullet payment was required at maturity. Annual nominal interest rates ranged between 12 and 27 percent charged on the unpaid loan principal. Disbursements and payments were made in branch offices to minimize potential fraud by loan officers. The bank preferred to hire loan officers around 30 years of age who were about to receive degrees from local universities, with little or no banking experience. Training and/or experience in agriculture was deemed necessary to effectively evaluate loan applicant management capacity, potential yields, and production risks.

Bonuses were an important part of loan officer compensation so efficient officers earned bonuses up to 100 percent of their base salary. The incentive formula consisted of portfolio size, number of borrowers, number of new borrowers, and loan arrears (Navajas and Gonzalez-Vega, 2003a). Incentives generated high productivity but also led to "burn out" of loan officers. IPC replaced the system in 2005 with improvements in benefits and insurance for all employees, rewards of up to two months of salary for exemplary conduct, and profit sharing for selected middle managers (Zeitinger, 2005).

Agricultural loans totaled over US$15 million in 2009, representing about 7.5 percent of the loan portfolio (Annual Report 2009).[21] The bank reported about 76,000 total loans and almost 290,000 deposit accounts. Profits fell compared to 2008 due to the economic downturn so return on equity fell to 2.7 percent. An analysis of rural and urban branches in 2006 revealed that rural loan officers averaged more clients (320 compared to 289) but lower average loan sizes (US$1,130 compared to US$1,686) due to many small agricultural loans. Operating costs were a bit higher (6.2 percent compared to 5.8 percent), but loan loss provisions were lower (1.3 percent compared to 2.9 percent). Rural branches generated an income margin similar to urban branches demonstrating that rural operations could be an attractive business. The bank successfully adapted to problems created by Hurricane Mitch in 1998 and an earthquake in 2001 that damaged homes and affected the living conditions of about 20 percent of the rural customers (Buchenau and Meyer, 2007).

Centenary Bank, Formerly Centenary Rural Development Bank Ltd. (CERUDEB), Uganda

Centenary was established by the Catholic Church of Uganda in 1983 as a trust fund to serve economically disadvantaged people especially in rural areas. It ex-

[21] As of November 2010, the average maturity of agricultural loans had risen to 30 months and livestock loans to 39 months. Total agricultural loans had fallen to just over US$7 million representing only about 4 percent of the total loan portfolio. This decline was due to refocusing the business by selling off all loans equal to or below US$1000, many of which were agricultural (personal correspondence with the bank).

perienced problems, undertook reforms, and was transformed into a commercial bank in 1993. The Catholic Church continues to hold a majority of shares. Individual microlending was developed, including agricultural loan products and procedures patterned after the ProCredit Bank El Salvador, and it became the pioneer bank in making individual loans to small farmers.

Cash flow analysis was used to evaluate borrower repayment capacity. Loans started small at roughly US$60 or less for three to six months, and borrowers could get repeat loans of increasing size and longer term. After three successful loan cycles, borrowers could graduate to "automatic" loans with substantially lower interest rates. Collateral requirements were flexible combining fixed assets and guarantors. Poor customers could provide guarantors, land without a secure title, movable items like livestock, household items including nondurables and business equipment. Software was introduced for computerized loan processing and monitoring, staff performance analysis, calculation of incentives, loan provisioning, and loan tracking (Seibel, 2003).

One branch began agricultural lending in 1998 in an area of small farmers with one to four acres who were raising coffee, maize, horticultural crops, cows, goats, and pigs.[22] Some engaged in processing and petty trade, and most had multiple sources of income. There are two production seasons per year and rainfall is fairly reliable. Loan officer projections of cash flows were used to estimate balance sheets and monthly cash flows. Loan collateral was often customary land titles, livestock, and household goods expected to value a minimum of 150 percent of the loan amount. The initial four loan officers were university graduates of agronomy or agricultural economics with little previous work experience.

In the first season, 388 loans were made averaging about US$200 for an average term of six months, usually with a three-month grace period followed by three equal monthly loan installments. Interest was charged at 1.8 percent per month on the declining balance, an application fee of about US$3 was charged along with a monthly inspection fee of 2 percent, reduced to 0.5 percent for the fourth loan if the borrower made on-time payments for previous loans. Loans were disbursed into saving accounts opened by the borrowers. A special current account was also opened so post-dated checks could be drawn for loan installments. This encouraged good repayment since it is a criminal offense to issue a check with insufficient funds. By the end of that first season, 92 percent of the borrowers repaid in full on time, but several faced difficulties because of low commodity prices, and a few were unwilling to pay. Over 1,000 loans were made in 1999, but arrears were higher because a large harvest depressed commodity prices.

Agricultural lending expanded in 2000 to eight branches with the additional incentive of a donor-funded guaranteed program. New loan officers were hired but much of the lending was done by existing loan officers with little agricultural experience. Many of the new clients were maize farmers recommended through do-

[22] This information about the evolution in agricultural lending is based on interviews undertaken in 2004 (Meyer, Roberts, and Mugume, 2004).

nor projects that also suggested loan sizes, and donor officials approved each loan guaranteed. Due to the guarantee, collateral requirements were reduced, loans were granted to many first-time borrowers, new loans were given to some farmers in default (contrary to the guarantee agreement), and loan sizes tended to be larger. With low maize prices in 2001, arrears shot up, and the bank sought to recover roughly 29 percent of the portfolio from the guarantee. This experience demonstrated how donors can induce financial institutions to over-expand into new markets without adequate experience and trained staff and systems for control and monitoring (Meyer, Roberts, and Mugume, 2004).

Centenary embarked on another reform in 2002 by adding larger loans for medium enterprises as well as corporate finance. The portfolio soon included several hundred commercial loans, enabling the bank to continue growing with many new borrowers. The higher profitability from larger loans was expected to enable the bank to further expand outreach to the poor (Seibel, 2003) but this has not been confirmed. Centenary began to pilot test two-year farm loans in 2008 for purchasing draft animals for cultivation (Roberts and Ocaya, 2009).

Centenary reported 43 billion Uganda shillings in agricultural loans in its 2009 annual report, representing about 12 percent of its total portfolio. Only 8.7 percent of its impaired loans were classified as agricultural, suggesting the earlier recovery problems had been resolved. The MIX Market data for 2009 reports a gross loan portfolio of US$187 million and 109,000 borrowers, deposits totaled more than US$236 million from 875,000 depositors, a 4 percent return on assets, and a 26.1 percent return on equity.

Opportunity International Bank of Malawi

Opportunity International operates regulated MFIs and NGOs in 27 countries, and it is actively testing innovations to expand rural financial access and reduce risk. It provides weather-based index insurance to producers, offers crop, loan, health, life and property insurance through a subsidiary, and is developing a model for m-banking (Berger, 2009).[23] Several innovations are being tested by Opportunity International Bank of Malawi (OIBM). It began operation as a commercial bank in 2003 to serve all market segments as a savings-led institution, although it targets economically active but underserved people in semi-urban and rural areas. Lending is frequently done through "trust groups" of ten to 30 entrepreneurs, usually women. Members undergo four to eight weeks of training before borrowing and provide a group guarantee for each other's loans. Individual loans are available for experienced business owners who provide collateral or a personal guarantor.

[23] Early in 2010, Opportunity announced a US$16 million program co-funded by the Bill & Melinda Gates Foundation and The MasterCard Foundation to provide over 1.4 million people in Sub-Saharan Africa with access to savings accounts and agricultural loans, including more than 90,000 smallholder farmers. Programs operating in Malawi and Ghana will be expanded to other countries.

OIBM expanded into rural areas in 2007. Loans are generally made through farmer groups that contract with crop buyers. The farmers' land and resources are evaluated to estimate profits for loan servicing. The buyers receive the crop, sell it, deduct the cost of inputs, and deposit the balance directly into the borrowers' accounts. Risk mitigating techniques include crop insurance and warehouse receipts. The 2009 Annual Report revealed a gross loan portfolio of US$30.4 million of which 10.5 percent was agricultural. Sixty percent of more than 45,000 borrowers were women. Total savers exceeded 252,000 with deposits of over US$31 million. It achieved operational self-sufficiency and positive profit margins in 2008, but both measures dipped in 2009 while its portfolio at risk > 30 days climbed to 7.25 percent (MIX Market).

Multiple delivery channels to expand financial access are being tested. In 2007, they included: 1) seven fixed outlets (mobile units, kiosks, satellite centers) and two mobile vans; 2) eleven large and ten small scale ATMs; 3) over 1,000 Point of Sale (POS) devices via the Malswitch network (through participating retail outlets, gas stations, agricultural supply shops, competitor banks); and 4) over 100,000 smart cards issued with biometric identification (Kalanda and Campbell, 2008).[24] Testing of electric bicycles (e-bikes) for loan officers began in 2010 (Opportunity Blog, 2010).

The mobile vans are equipped with electrical generators, computers for inputting and backing up data, biometric reading devices, a POS terminal to read smart cards, a webcam to take passbook photographs, and a fingerprint scanner. Security cameras and armed guards ensure safety and GPS tracks vehicle movements. The vans stop once or twice per week at fixed locations so clients can deposit and withdraw funds and make loan payments. They return to branch offices at day's end to upload data into the head office database. Vehicle start up and operating costs are high, but the first van reached 3,000 clients in three months compared to approximately 18 months for a satellite branch (Opuku and Foy, 2008).

Smart cards help solve the challenge of client identification. Most commercial banks require an official identification but there is no national ID card. Driver's licenses and passports cost about US$30 so OIBM and other institutions use Malswitch smart cards to store cardholder fingerprints and a photo to match cards to cardholders. The cards are used to store savings, disburse loans, and make money transfers. A drawback is the cost of about US$7 per card.

Intensive evaluations are being undertaking to improve understanding of how innovations affect access to and impact of financial services. For example, rural market women preferred savings passbooks so they can check balances without using biometric card readers, and some readers in banks do not always read the OIBM cards. The women also found weekly mobile bank visits too infrequent, prompting them to simultaneously maintain savings accounts with commercial

[24] The Bank of Malawi facilitated innovations by introducing a national switching and smart card payment system with biometric fingerprinting identification (Opuku and Foy, March 2008).

banks (Nagarajan, 2010). A baseline study was implemented for use in evaluating the mobile vans and related technology (McGuinness, 2008). Studies will test the value of bringing the bank to customers, offering one-stop-shopping for several financial products, diversifying risks by reaching both poor and non-poor clients, and providing better service. One study assessed the impact of marketing strategies on the uptake of products in areas served by a mobile bank. A marketing campaign using field-based promotion assistants significantly increased new client registrations compared to a mass media campaign (Nagarajan and Adelman, 2010).

An experiment with fingerprinting found that borrowers most likely to default (worst borrowers) raised their repayment rates dramatically, partly as a result of choosing lower loan sizes as well as devoting more agricultural inputs to paprika, the crop intended for the loan. A rough cost-benefit analysis produced favorable returns for the system (Giné et al., 2010). Preliminary analysis of an experiment with commitment savings accounts that allowed customers to restrict access to their funds led to larger amounts of savings and agricultural input use (Brune et al., April 2011).

3 Member-Owned MFIs in Agricultural and Rural Finance

Member-owned financial institutions (MOIs) are important in rural areas of developing countries. Rural people develop and operate a variety of cooperatives, credit unions, self-help groups, rotating saving and credit associations (ROSCAs), village-level savings groups or accumulating savings and credit associations (ASCAs), burial societies, and community funds serving a clientele usually poorer than bank clients. CGAP concluded that commercial banks provide the bulk of rural coverage, but on average only 26 percent of all bank branches are in rural areas compared with 45 percent for cooperatives, 38 percent for specialized state financial institutions, and 42 percent for microfinance institutions (CGAP, 2010).[25] However cooperatives and credit unions tend to be relatively small so their share of total savings and loan accounts also tends to be small (Christen et al., 2004).

Some MOIs achieve impressive outreach, serve rural markets, and reach more distant locations than other types of financial institution. They typically recover their costs and, although often limited in scope, their services respond better to client demand and are less costly for clients than alternatives. Their emphasis on mobilizing savings and lending at lower interest rates sets cooperatives and credit unions apart from other MFIs. They also build institutions that empower communities and create social capital, and have lower-cost, in-depth information about low-income local people that is difficult and costly for outside institutions to acquire. However, they are often highly localized, small scale, and susceptible to lo-

[25] CGAP notes these results likely underestimate the size of the nonbank branch network due to incomplete data.

cal co-variant risks. Frequent fraud and mismanagement limit their scale and continued existence (Hirschland et al., 2008; Zeller, 2006).

Financial cooperatives played important roles in developing agriculture in Western Europe, Canada, and the United States but have a bad reputation in many developing countries because of poor performance and heavy government interference. When properly managed, however, they can achieve success and compete with other financial institutions. This section summarizes examples where their performance in rural areas and in serving agriculture has been more positive.

3.1 Four Cooperative Networks[26]

The World Bank studied four financial cooperative (FC) networks to determine their role in rural finance: Sistema de Cooperativa de Credito (SICREDI) in southern Brazil; SANASA in Sri Lanka; Reseau des Caisses Populaires du Burkina (RCPB) in Burkina Faso; and Kenya Rural Savings and Credit Cooperative Society Union (KERUSSU) in Kenya. Information is not available on farmer membership, but SANASA and RCPB are the largest private providers of financial services in rural areas in their respective countries. Half a million SICREDI members are estimated to be in rural areas of Brazil,[27] and rural FCs serve over a million clients in Kenya. The four networks employ professional staff, serve rural and urban clients with mixed income levels, and reach different levels of outreach to the poor.

Little detailed information is available about individual cooperatives within these networks. Some are reported to be innovative and generate profits while others are slow moving and unprofitable with poor record keeping that puts member savings and share capital at risk. Clientele diversification has been instrumental in achieving rural outreach without sacrificing profitability. FCs within networks with a high degree of integration, such as SICREDI and RCPB, provide broader services with better operational systems and operate better in environments with prudential regulation and financial supervision. Donor assistance should not undermine incentives for members to save, should not support

[26] Two 2007 World Bank documents provide the information highlighted here (Nair and Kloeppinger-Todd, 2007, and World Bank, 2007) and case studies are available for the four networks analyzed.

[27] Huge federal and development banks in Brazil provide most agricultural loans, and the government plays a large role in setting credit policies and providing resources for lending. Financial cooperatives in 2003 accounted for only 6.2 percent of the total volume of rural lending but in some regions were the only financial institution available. SICREDI is the second largest cooperative network in the country, while a smaller network, CRESOL, with 66,000 members targets very small farmers. Loans are made to individuals and generally require similar guarantees as banks. Resources for lending come from the cooperative and the government, but a key success factor has been political independence in spite of government involvement (Brusky, 2007).

operating costs expected to be financed through interest and fees, and is best provided through networks that interact with and/or are members of international cooperative organizations.

3.2 Strengthening Rural Financial Cooperatives

Financial cooperatives often receive technical assistance to strengthen operations, increase rural outreach, and expand financial services to farm households. This section summarizes some examples.

An ambitious program is underway in Mexico where a complex structure of member-owned institutions is estimated to have more than four million members (Gomez Soto and Gonzalez-Vega, 2006). Many are small and perform poorly. The Mexican Secretaria de Agricultura y Ganaderia (SAGARPA) is implementing Proyecto Regional de Asistencia Tecnica al Microfinanciamiento Rural (PATMIR) to provide training and technical assistance. German, Canadian and U.S. cooperative organizations implement it in various locations. They choose among strategies to 1) create new financial institutions; 2) strengthen and consolidate existing institutions; and 3) assist existing institutions to expand into marginalized areas. Aggregate data report number of credit unions assisted, access points created, new members, savings mobilized and loans made, training in financial education and credit union management, and introduction of new technology and management practices. Little information is reported, however, about the performance of individual credit unions or their agricultural operations.

The most detailed information about the Mexican project was provided for WOCCU's Semilla Cooperativa*,* a model emphasizing savings mobilization to link rural members with credit unions. Field officers travel to remote villages to explain the approach and interested persons form groups of ten to 30 people and set a schedule of meetings. The elected president, treasurer, and a spokesperson verify loan application information and collect payments and savings deposits. Field officers issue small loans in the meetings while larger loans are reviewed by the credit union. The model reduces the risk of keeping savings at home and lowers costs and travel time for members who live long distances from credit unions located in larger communities. Participants have full credit union membership, hold the same shares as other members, and can access their accounts at any time. Individual credit unions determine their terms and conditions for loans and savings. The credit products are intended for microbusinesses, but also finance home repairs, emergencies, health care costs and school fees.

New technology, such as personal digital assistants (PDAs) and point-of-sale (POS) devices, is used to increase efficiency and reduce costs. Field officers use PDAs during village visits to enroll members and transmit account data through cell phones to the credit unions. POS devices located at local retailers permit members to access accounts and field officers to deposit cash collected from members. A travel route costing tool utilizing census and cost information (e.g.,

salaries, travel, maintenance) is used to identify cost-effective service routes for both members and credit unions (WOCCU, 2010).

A study found almost 80 percent of PATMIR clients live in towns of less than 10,000; 55 percent are female; 15 percent are illiterate; and they are some of the poorest rural households in the country (Paxton, 2007). Important tradeoffs were found among the different assistance strategies. For example, assisting existing credit unions may generate a rapid increase in membership (breadth of outreach) but the existing culture may not favor adopting new operating methods and increasing access by the poor (depth of outreach). Creating new institutions may resolve these problems but requires longer term subsidization to achieve self-sufficiency.

4 The Role of Donors and DFIs in Overcoming Barriers

MFIs are making inroads in serving rural areas and agricultural clients. The vast array of models and technologies being tested will undoubtedly reveal ways to reduce costs and mitigate risks. Microfinance has benefited immensely from support provided by donors and DFIs, and there are several ways they can usefully contribute to further developments and confront important threats facing the industry. This section identifies these actions**.**

4.1 Political Interventions and Interest Rate Ceilings

Political interventions were common under the subsided agricultural credit paradigm and recent events, such as the No Pago movement in Nicaragua, have begun to threaten microfinance. The liberalization of interest rates was an important reform in many countries following the end of the old paradigm. It provided an important incentive for the microfinance industry because it permitted charging interest rates high enough to cover costs and risks of making small loans to poor people. The highly profitable IPOs of Compartamos in Mexico and SKS Microfinance in India generated a huge debate, however, about the appropriate interest rates to charge poor borrowers. Incidents of suicides by indebted borrowers in Andra Pradesh, India, prompted government officials and politicians to urge borrowers to stop repaying their loans even though the link with microcredit is tenuous (Harper, 2011). Bangladesh announced interest rate caps for microloans at 27 percent, a sign of growing backlash against the industry once hailed as the magic bullet to cure poverty.[28]

International agencies should support efforts to educate and advocate on behalf of market-oriented interest rates. They need to disseminate examples of rates of return in agriculture higher than assumed so cheap interest rates are less critical to

[28] *Financial Times,* November 10, 2010.

borrowers than policy makers expect. Interest rate caps create serious impediments for financial institutions to expand financial services to the poorest, to those living in distant locations, and to farmers operating in risky environments (Campion et al., 2010).

4.2 Subsidize Institutions and Public Goods

Subsidies for institution building and financial infrastructure contributed to the success of microfinance, and are less distorting than interest rate subsidies granted directly to borrowers. The key to reducing interest rates for credit is increased MF efficiency and competition. Subsidies to MFIs for use in designing products and systems and for training and human capital formation contribute to that objective.

Subsidies to create public goods that benefit the entire financial sector may generate even higher returns than subsidies to specific institutions. Examples include improving property rights, collateral registries, credit bureaus, special courts for credit defaulters, and other support institutions. International agencies play a useful role by advocating a long-term approach to financial market development, by conducting analyses to identify gaps in support institutions, and by proposing measures to address them.

4.3 Supporting Networks

National and international microfinance networks are important public goods that facilitate information exchange and the transfer of innovations. Subsidizing tasks, such as designing and testing innovations, may produce larger payoffs when channeled through networks that disseminate innovations to their members. Networks, such as AccessHolding, ACCION, FINCA, Opportunity International, and ProCredit, operate in a hands-on and business-like manner in transferring and evaluating new methods and technologies to their affiliates. Support to CGAP and the MIX Market generates significant benefits because they compile information and make it readily available to the industry. By comparison, the networks for agricultural credit and rural finance to date have been less well developed and would benefit from similar investments and leadership.

4.4 Risk Mitigation

Although the examples discussed above demonstrate MFIs can successfully serve rural areas and agriculture, there are considerable risks involved. The primary way risks are managed by MFIs is by serving a diversified clientele and limiting the agricultural loans in their portfolios. Additional risk mitigating measures are needed. Microinsurance is expanding quickly, and the appropriate roles for the private and public sectors are being explored. Weather index-based crop and livestock insurance is promising but requires support to test and analyze alternative

designs. Major investments are also required to develop networks of weather stations and analyze the data collected. Subsidization may be justified when the lack of private sector initiatives is caused by first-mover problems in which private investors hesitate to invest because of the ease with which competitors can copy their products (Hazell et al., 2010).

4.5 Measure and Evaluate

A vast amount of experimentation is underway to test products, models, and delivery systems for rural and agricultural finance. As described above, Opportunity International in Malawi is but one example of how an institution contributes to expanding financial access by combining the testing of innovations with in-depth evaluation and information dissemination. Donors and DFIs nurture this process when they encourage and finance other institutions to emulate this approach.

Although MFIs conduct a great deal of monitoring and reporting, there is surprisingly little robust evaluation of financial services. Recent studies using random control trials have stimulated soul searching by suggesting that previous evaluations over-stated the contribution of microfinance to poverty reduction (Rosenberg, 2010). This methodological debate diverts attention from the fact that fundamental questions and assumptions about finance have not been adequately studied. For example, is the real value of microcredit the fact that it commits the borrower to a savings plan and helps avoid temptation spending? What non-financial services are critical for credit to produce the desired impacts? Why is the demand for loans often overestimated? Why is farmer uptake of insurance limited without huge subsidies? How well do formal financial services serve the poor compared to traditional informal mechanisms? These questions demand careful and often costly analysis. A larger fraction of the funds currently spent to improve access to financial services should be allocated to rigorous research of fundamental assumptions.

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