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THE WORLD BANK, BMZ, FAO, GIZ, IFAD, AND UNCDF

# SUBSIDIES AS AN INSTRUMENT IN AGRICULTURE FINANCE: A REVIEW

RICHARD L. MEYER





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The World Bank



**giz**



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## ABBREVIATIONS AND ACRONYMS

ADB	Asian Development Bank
AgDB	Agricultural development bank
AGRA	Alliance for a Green Revolution in Africa
BAAC	Thai Bank for Agriculture and Agricultural Cooperatives
BMZ	German Federal Ministry of Economic Cooperation and Development
CABFIN	Improving Capacity Building in Rural Finance
CECAM	Caisses d'Épargne et de Crédit Agricole Mutuels de Madagascar
CGAP	Consultative Group to Assist the Poor
CVECA	Community-managed village savings and credit organization
DCA	Development Credit Authority
FAO	Food and Agriculture Organization of the United Nations
FJMC	José Maria Covelo Foundation in Honduras
GCV	Grenier commun villageois
GIZ	Germany Agency for International Cooperation
IFAD	International Fund for Agricultural Development
KACOFA	Kapchorwa Commercial Farmers Association (Uganda)
MF	Microfinance
MFI	Microfinance institution
MIS	Management information systems
MIV	Microfinance investment vehicle
MSMEs	Micro, small, and medium enterprises
NBC	National Bank of Commerce (Tanzania)
NGO	Nongovernmental organization
NMB	National Microfinance Bank (Tanzania)
Rural SPEED	Rural Savings Promotion and Enhancement of Enterprise Development
SEAF	Small Enterprise Assistance Funds
SFI	Special financial institution
SMEs	Small and medium enterprises
UNCDF	United Nations Capital Development Fund
USAID	U.S. Agency for International Development
WFP	World Food Programme

All dollar amounts are U.S. dollars unless otherwise indicated.

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# EXECUTIVE SUMMARY

## **SUBSIDIES AS AN INSTRUMENT IN AGRICULTURE FINANCE: A REVIEW<sup>1</sup>**

Providing sustainable financial services for rural areas and agriculture in developing countries has proven to be difficult in spite of recent reforms and billions of dollars spent in subsidizing programs to develop financial institutions. This paper presents a literature review of the lessons learned in the use of subsidies and investments as instruments of agricultural development finance. The emphasis is largely on agricultural credit, primarily for small farmers. Because of time limitations, this paper does not include the rapidly expanding literature on value chain finance. The paper is intended for decision makers in developing countries as well as staff in international agencies, nongovernmental organizations, and other organizations interested in supplying financial services for poor farm and nonfarm households in rural areas.

## **DEVELOPING AGRICULTURAL AND RURAL CREDIT MARKETS**

Credit markets diverge from an idealized market because information is imperfect and loan contracts are difficult to enforce. Market failure is said to occur when the market fails to allocate resources efficiently. The complicated environmental, material, and production features of agriculture inhibit the demand for and supply of credit and insurance, making it especially difficult to create sustainable financial institutions to serve the sector. Not surprisingly, therefore, efforts to increase formal credit supplies have had a spotty record, and quick fixes have not worked. Most successes have been the result of careful long-term institutional development.

In the period 1960–80, 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 resulted in government failure. In the 1980s, a new financial systems paradigm emerged that shifted the emphasis from dispersing cheap credit to creating sustainable institutions, treating borrowers and savers as clients rather than beneficiaries, developing products that clients demand, and pricing products and services to cover costs and risks. Donor agencies reduced the use of credit lines in favor of grants, loans, and technical assistance to help in the design of appropriate products, institutions, and policies. Microfinance also thrived by following this market-oriented approach. Microfinance institutions (MFIs) have made inroads into agriculture and rural areas, but more efforts are needed to design products and methodologies to fit the seasonal cash flow patterns of farm households. Managing the costs and risks of agricultural lending has been challenging.

There is a need to better understand the demand for and use of agricultural credit to develop effective products, institutions, projects, and policies. The rapid growth of microfinance suggests that there may be large unmet demand for agricultural loans, but two issues need consideration. First, there may be a tendency to overestimate demand, as has occurred with microfinance. Second, an empirical question concerns borrower sensitivity to interest rates relative to other factors affecting demand. Farmers' demand for loans may be limited if the interest rates charged are as high as MFIs require to provide small microenterprise loans sustainably.

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<sup>1</sup> This is a publication of the joint donor CABFIN initiative. CABFIN stands for "Improving Capacity Building in Rural Finance." Current core members of CABFIN are the German Federal Ministry of Economic Cooperation and Development (BMZ), Food and Agriculture Organization of the United Nations (FAO), International Fund for Agricultural Development (IFAD), Germany Agency for International Cooperation (GIZ), The World Bank, and United Nations Capital Development Fund (UNCDF). The document was prepared by Prof. Emeritus Richard L. Meyer, Ph.D., of the Ohio State University Department of Agricultural, Environmental, and Developmental Economics. Rauno Zander, Ph.D., did the technical editing.

## **USE OF SUBSIDIES**

Analysis of the use of subsidies in donor programs has led to guidelines for “smart” or “market-friendly” subsidies. These guidelines include the following: subsidize the institution but not the borrowers to reduce distortions; avoid subsidies to institutions that undermine competition; subsidize the creation of public goods that benefit the entire financial sector; subsidize individual financial institutions where there is natural spillover to nonsubsidized institutions; identify quantitative performance measures so subsidies to financial institutions do not dull incentives for high performance; conduct comparative cost-benefit studies to identify subsidies that generate the greatest payoff; require grant recipients to demonstrate commitment through matching contributions; and design grants to financial institutions so recipients clearly understand the difference between grants and loans.

## **FIVE MAJOR INTERVENTIONS**

This paper also evaluated five major interventions involving subsidies used to kick-start private sector activity in support of financial services.

### **Microinsurance and weather-index-based insurance**

Many experiments are being conducted with micro- and weather-index-based insurance products to mitigate risks both for households and for lenders supplying financial services to the poor and to farmers engaged in crop and livestock enterprises. Weather-index insurance offers the promise of reducing the administrative, adverse selection, and moral hazard problems of traditional insurance. Bundling insurance with loans and savings is emerging as a logical step to reduce costs and speed adoption, but additional experiments in diverse environments are needed to develop best practices. Donors can play a useful role in conducting or financing careful evaluations to improve understanding about basic insurance questions. Robust evaluations are needed to assess whether insurance investments actually produce the desired effects and to determine the role for public subsidies in private insurance markets and catastrophe insurance. A logical role for governments and donors is to focus on long-term public goods investments, such as in weather-reporting stations and basic data collection and analysis, which are needed to create the conditions and infrastructure for robust insurance markets. Complementary investments are also needed in basic methods of mitigating risk through low-cost irrigation, drought-resistant seed varieties, improved sanitation, and preventive health care.

### **Credit guarantee funds**

Donors and governments expect credit guarantee funds to reduce default risks and induce lenders to serve specific target groups or institutions. It is believed that guarantee subsidies accelerate learning so lenders will improve credit analysis and lend their liquid funds rather than investing them in government securities or lending only to highly collateralized borrowers. However, the methodology used in evaluating guarantees has been weak, so questions about additionality and sustainability remain. Guarantees may provide additional comfort for financial institutions interested in testing the feasibility of lending to a new clientele, but a guarantee alone is unlikely to induce additional lending if lenders lack such interest. International agencies can perform a valuable service by conducting evaluations to determine if and under what conditions guarantees produce the expected results and how the details of guarantee designs affect performance. It is also critical to evaluate whether they distort markets and discourage private credit market development. It may be that the training and technical assistance components of guarantee schemes are more important than the guarantees themselves to stimulate lending to a new clientele. This situation would suggest that “guarantee plus” programs are critical and that guarantees may be the frosting on the cake, not the cake itself.

### **Warehouse receipts**

The basic rationale for warehouse receipts is that they reduce lenders’ risk by serving as a collateralized commodity that can be liquidated in the event of loan default. Commodities are stored in licensed and bonded warehouses that issue receipts certifying the amount and quality stored. The owners of the commodity (such as farmers and traders) provide the receipts to

lenders in exchange for loans. Except in the case of double or triple cropping, credit obtained after harvest does not directly solve the seasonal need for working capital to plant a new crop. There are too few careful analyses to conclude when and where warehouse receipts systems contribute to improved access to agricultural credit, especially for small farmers. They may improve commodity storage and marketing functions in value chains with trickle-down benefits through prices paid to farmers. The expenses of creating, operating, and monitoring these systems imply that scale is a serious challenge, so simple, small-scale village-level systems may be most appropriate for small farmers. Moreover, the critical need for small farmers may be production loans to meet seasonal cash outflows at the beginning of planting rather than marketing loans after harvest. More detailed analyses of farm-level commodity prices are needed to determine which crops normally experience seasonal price variations large enough to compensate for storage and borrowing costs. The fact that warehousing is common for export crops suggests that economic barriers may constrain expansion into grains and other commodities produced primarily for local markets. Several long-term public goods investments have been identified to make warehouse receipts financing work, and many may be appropriate for donor funding.

### **Specialized agricultural development banks**

The subsidized, directed-credit paradigm led to the creation of many state-owned agricultural development banks (AgDBs). These banks have generally performed poorly, and there are debates about what to do with the failing institutions. Successful reforms are possible only if governments make fundamental changes in ownership, governance, products, and perhaps even the clientele served. Some reformed banks have successfully adapted microfinance procedures for agriculture. Sophisticated risk management techniques are needed, however, for financial institutions that expect to make large loans to farmers and nonfarm businesses. Donors face the challenge of formulating a response when local leaders create new AgDBs, given the generally negative performance of such projects. To be successful, start-ups must have an institutional design that solves governance and management problems, a successful firewall against political interference, and a commitment to charging full cost recovery interest rates. One way to help avoid political capture may be to make small loans using microfinance technologies and slowly graduate to larger loans as institutional capacity grows and access to commercial funding sources is achieved.

### **Agricultural investment funds**

Agricultural investment funds are a form of financial mutual fund for pooling investor capital and investing it for investor profits. They offer opportunities to pool risk through diversified investments and employ professional fund managers to conduct risk assessments of investment opportunities and administer the investment portfolio. The estimates of huge requirements for agricultural investment in developing countries provide a logical argument for more external investing. Analysis is needed to determine if these funds induce more local lending by financial institutions. It is likely that investments will tend to benefit more affluent and entrepreneurial farmers and agribusinesses, so wealth and income distribution implications may be important. Benefits in the form of better access to inputs, markets, and jobs may trickle down to small farmers and the poor, but high information, transaction, and contract enforcement costs mean that special measures are required to integrate poor farmers into value chains that benefit from these investments. Moreover, unless these funds invest in financial institutions that serve agriculture, they will not contribute to broadening the supply of financial services important to farmers and rural people. Intensive monitoring and analyses of fund activities is an appropriate and productive role for international agencies. Subsidies for the technical assistance components of investments may help strengthen local capacity, make investments productive, mitigate risks, and cover some of the costs of helping small farmers participate in value chains in which investments are made. The funds may contribute to broadening the supply of rural financial services if technical assistance facilitates investment in financial institutions.

## **CONCLUSION**

Overall, this review concludes that there are no simple solutions for creating sustainable agricultural credit systems. With some noteworthy exceptions, the old-paradigm approach did not generally lead to sustainable agricultural credit institutions. More recently, careful development of products, policies, institutions, and supportive infrastructure has led to greater success. Renewed interest in development economics has raised fundamental questions about financial services.

Researchers' new, more rigorous methods hold promise for deepening our understanding of human behavior and how it influences credit market operations. This research, plus lessons learned from many innovations being tested around the world, needs to be broadly disseminated to benefit the entire financial industry. Supporting and learning from research and innovations will provide international agencies with many opportunities to assist in pushing out the frontier of agricultural credit in developing countries and to use selective subsidies and investments for the greatest impact.

## Chapter 1: INTRODUCTION

Providing sustainable financial services for rural areas and agriculture in developing countries has proven to be difficult. Billions of dollars have been spent subsidizing programs and policies to develop financial institutions to serve this neglected market. In most countries, decision makers, ministers of food and agriculture, and farmers are dissatisfied with the results. Critics of the market-oriented financial reforms implemented following the collapse of the directed-credit paradigm claim these reforms have failed, given that agriculture continues to receive only a small share of total formal credit and that most farmers must rely on savings or informal credit supplies to finance their operating costs and long-term investments. These critics argue for a return to more active government intervention, including the creation of state-owned agricultural development banks.

The urgency of the problem has increased in recent years because of the triple shocks—food, fuel, and financial—that hit developing countries especially hard. A desire to “do something quickly” pushed governments and donors to provide resources and subsidies in response to shortages and rising prices. These pressures logically raised questions about the role of financial institutions in helping resolve short-term problems as well as in supporting long-term agricultural growth and development. Additional questions were raised about international agencies’ appropriate role in aiding governments that faced demands to adopt suboptimal policies to calm social tensions.

This paper presents a literature review of issues related to recent subsidies and investments in the financial sector that have been designed to address the immediate effects of the crises and to develop the financial institutions necessary to modernize agriculture. The literature consulted reflects a combination of academic sources and reports from the agencies and organizations involved in supplying financial services in developing countries. Against this background, this paper presents a review of subsidies as an instrument of agricultural development finance. This review is one of the major recent initiatives of the CABFIN partnership (see note

1 for members of the CABFIN partnership). This review also clearly defines the different types of subsidies currently used in agricultural development and proposes “smart”—that is, appropriate—use of subsidies to support viable agricultural development.

The emphasis here is largely on agricultural credit, with less attention given to other financial services. This paper focuses on credit primarily for small farmers rather than for large farmers and agribusinesses, which normally have better access to commercial credit sources. It does not delve into the rapidly expanding literature on agricultural value chain finance, which offers a viable alternative for reducing risk and costs in some types of agricultural finance while increasing access to funding for some smallholders who may otherwise not be reached unless there are subsidies or directives for financing them.

The paper is intended for decision makers in developing countries as well as staff in international agencies, financial institutions, nongovernmental organizations (NGOs), and other organizations who make decisions about programs and policies affecting financial services, especially credit, for poor farm and nonfarm households in rural areas. It is expected to serve as an input into the preparation of an official policy statement of the CABFIN donor consortium on the role and status of subsidies in agricultural finance worldwide.

### 1.1. ORGANIZATION OF THE PAPER

Section 1.2 introduces the basic terminology used in the paper. Section 2 of the paper discusses the impact of recent food, fuel, and financial crises on developing countries and the emergency actions taken by countries and international agencies to reduce the suffering inflicted on poor people. It also discusses the challenge of finding a balance between pragmatic immediate responses and longer-term objectives.

The third section discusses the role of finance in agricultural development and poverty alleviation. Section 4 deals with the challenge of creating credit markets in developing countries.

It covers the economic concept of market failure, information asymmetries and contract enforcement problems in credit markets, and the special challenges of serving rural areas and farmers.

The fifth section covers shifts in the paradigm used to intervene in credit markets and summarizes the main features of the old directed-credit and the new financial systems paradigms. This is followed by a sixth section that summarizes highlights in the development of the microfinance industry. It covers guidelines created for developing microfinance, microfinance penetration into rural areas and agriculture, innovations and prospects for future agricultural lending, and insights gained about the impact of finance on poor households.

The seventh section addresses topics related to the demand for credit, including rates of return earned in agriculture and in microenterprises, and research results analyzing sensitivity of loan demand to interest rates.

Section 8 describes major interventions by international agencies and points the way forward for agricultural credit. It reviews the debates about the use of grants and

subsidies—especially in the food, fertilizer, and credit markets—and the rationale for smart subsidies. It then describes experiences in five major areas of international agency activities: microinsurance and weather-index-based insurance, credit guarantee funds, warehouse receipts, specialized agricultural development banks, and agricultural investment funds.

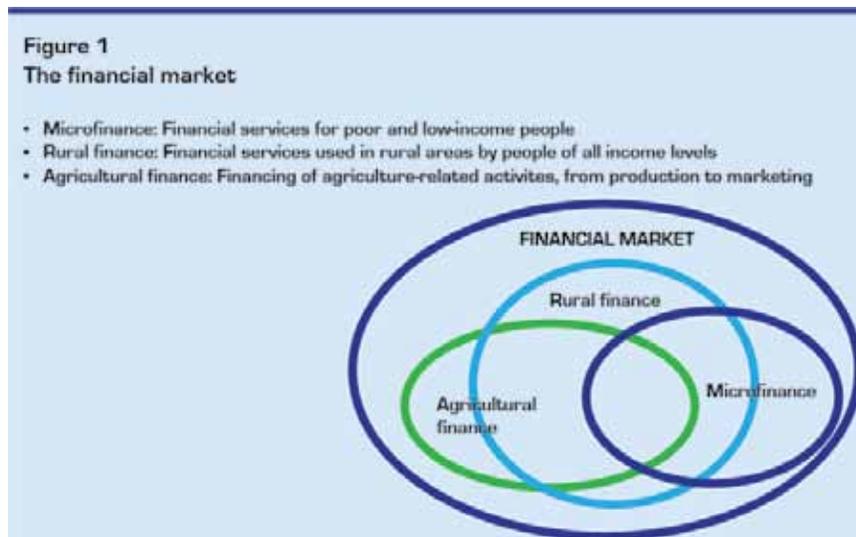
Section 9 summarizes the main conclusions based on literature consulted for this review. It identifies major lessons learned with suggestions for priorities that CABFIN members might consider supporting in their projects and programs.

## 1.2. TERMINOLOGY

The terminology used in the paper follows the diagram in Figure 1.<sup>2</sup> The terminology covers the economic sector, geographic location, and size of financial transactions. The *financial market* refers to all financial services for all purposes from all sources used in both urban and rural areas, including credit, savings, insurance, remittances, and money transfers. The providers encompass all types of formal and semiformal

2 This figure and a glossary of basic terms are found in IFAD 2010.

**FIGURE 1**



Source: IFAD 2010, 12.

institutions, including banks, credit unions, NGOs, and micro-finance institutions (MFIs).

The terms *rural* and *urban* refer to location. In most countries, rural refers to nonurban geographic areas (villages, towns, and small cities) with fewer inhabitants than found in larger cities and urban areas. *Agricultural finance* refers to financial services used by the agricultural sector, meaning farming and farm-related activities including input supply, processing, wholesaling, and marketing. Most of these activities are conducted in rural areas, but large processing facilities and agribusinesses are also located in urban areas. *Agricultural credit* is normally provided in cash, but some programs provide in-kind loans for seed, fertilizer, and other farm production inputs.

*Rural finance* is a broader category including all financial services used by farm and nonfarm firms and households located in rural areas. Many nonfarm enterprises in rural areas are directly related to agriculture, such as input supply or processing firms, but restaurants, hotels, retail shops, and other rural businesses also require financial services. Financial institutions that provide credit to farmers are often encouraged to serve nonfarm customers as a way to diversify risks and expand their operations.

*Microfinance* (MF) refers to financial services usually involving small transactions and products specifically designed for low-income households and small-scale businesses in both rural and urban areas. In many countries MF has concentrated in urban and peri-urban areas or in densely populated

rural areas but is now moving into more rural locations to serve farm and nonfarm firms and households. *Agricultural microfinance* refers to small-size transactions for poor farm households and farm-related businesses. Rural microfinance covers small-size financial transactions for both agricultural and nonagricultural firms and households in rural areas.

*Agricultural value chain finance* refers to financial products and services that flow into or through an agricultural value or supply chain. Providing credit into or through a value chain for an agricultural commodity is viewed as a complementary approach to the financial systems approach that is the primary focus of this paper.

*Subsidy* refers to *pecuniary aid* usually furnished by a government to a private business, a charity, or an organization in the form of a cash grant, in-kind goods or services, or exemption from some requirement, such as a tariff or tax, that is normally assessed on similar businesses or organizations.

A *grant* is a gift of money or goods provided to a private business, charity, organization, or government to be used for some specified purpose; in contrast to a loan, a grant is not expected to be repaid.

An *investment* normally refers to an outlay of money or capital designed to gain profitable returns in the form of interest, income, or appreciation in value. International donor agencies often use the term to mean funds spent in a project to accomplish some development objective in the country where invested but not with the expectation of a direct financial return to be earned by the agency.

## Chapter 2: FINANCIAL SERVICES AND THE THREE “F” CRISES

The beginning of the 21st century was promising for developing countries, but the food, fuel, and financial crises in 2007–08 severely disrupted per capita income growth and interrupted private capital flows. Commodity-importing countries faced deteriorating external balances, rising prices, and weaker income and household spending because of the high prices. The impact was most severe on the poor, who often spend 50 percent or more of their total budgets on food and fuel (World Bank 2009b). One study projected that the financial crisis would add 53 million people to the number of people living on less than \$1.25 a day and 64 million to the number of people living on less than \$2 a day (Chen and Ravallion 2009). The crises threatened to reverse progress toward improving financial access because of their effects on financial institutions. If borrowers in rural and microfinance institutions were not able to repay their loans, MFIs might be unable to refinance their loans when due or obtain additional financing to continue their rapid growth in lending.<sup>3</sup>

The crises revealed disturbing long-term trends in developing countries that aggravated short-term problems. First, investments in agriculture had lagged as both foreign assistance and national government investments in agriculture declined. As a result, the growth rate of agricultural productivity dropped from about 3.5 percent in the 1980s to 1.5 percent today. Second, the negative effects of climate change will likely raise food prices and may put an extra 49 million people at risk of hunger by 2030 (IFAD 2009b). Third, natural resource degradation over the next 25 years is projected to reduce global food production by as much as 12 percent, pushing world food prices as much as 30 percent higher (IFPRI/Terrafrica/GTZ 2009).

As the crises spread, governments rushed to enact monetary and fiscal stimulus measures, and international agencies expanded their programs to alleviate short-term problems



*Food crisis in the Horn of Africa (Photo: Alex Wynter/IFRC)*

as well as address longer-term issues.<sup>4</sup> The short-term emergency components of these programs logically focused on safety nets to ensure household food security and reduce poverty and vulnerability among the poorest groups. Interagency assessments also identified medium-term measures that stressed the provision of inputs, market development, price stabilization, and investments in transport, storage, processing, marketing facilities, market information, and capacity building (FAO 2009a). Most programs did not focus specifically on financial systems, but many country assessments identified the need to develop credit and financial services, emphasizing finance and microcredit for small farmers. Several placed emphasis on scaling up microcredit and, increasingly, microinsurance programs aimed at small farmers and vulnerable groups and on strengthening existing rural financial institutions, such as farmers' associations and credit unions. Warehouse receipt systems and voucher schemes were recommended in projects to deliver credit to the poorest farmers through NGOs and MFIs (FAO 2009a).

<sup>3</sup> Llanto and Badiola (n.d.) analyzed these issues for Asia, and CGAP (2010b) developed a large spreadsheet with information that evaluated MFI problems by region.

<sup>4</sup> The World Bank (2008) summarized these initiatives for the UN agencies, multilateral banks, and major bilateral development agencies.

A framework explaining the pathways through which credit and savings contribute to food security was used to guide several field studies in the 1990s that demonstrated these relationships (Zeller et al. 1997). A more recent framework for enhanced food security proposed a graduation model in which the poorest households are initially aided through asset transfers (that is, grants and food aid), village savings groups, and skills training. As their capacity increases, participants eventually become creditworthy and receive market-oriented small loans (USAID 2010). This type of conceptualization may provide guidelines for future strategies to link short-term emergency assistance with long-term financial services.<sup>5</sup>

Responses to the crises revealed the practical need to balance pragmatic immediate solutions with longer-term objectives.<sup>6</sup> In times of crisis, governments face overwhelming pressures to adopt suboptimal policies to maintain social stability, but such policies may have negative long-term consequences. International agencies can help ensure that such policies are temporary, contribute to the design of clear exit strategies, and promote transparent administrative mechanisms, while emphasizing more sustainable and better-targeted mechanisms over the medium and long term. By adopting some flexibility, international agencies hope they will be welcome partners in moving from short-term policies to address sociopolitical unrest toward more sustainable long-term policies (World Bank 2008).

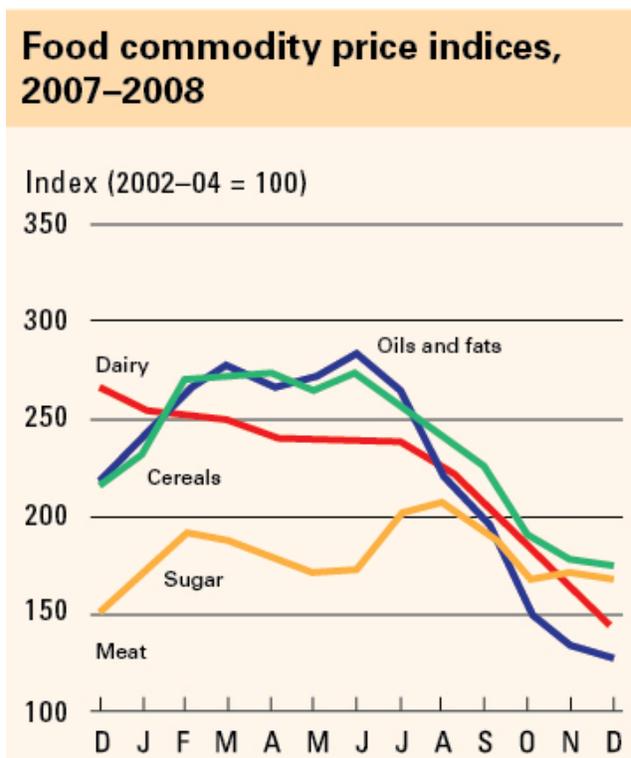
A limitation of pragmatism, however, is that it may force decision makers to choose short-term activities that undermine long-term development. For example, will supplying free or subsidized food provide relief to the urban poor but drive down food prices and discourage production by small farmers? Will government-subsidized fertilizer stymie the development of private fertilizer markets? Will debt repayment moratoriums or loan forgiveness programs thwart the development of sustainable financial institutions? While political necessities force local decision makers to focus on immediate needs, international agencies cannot lose sight of long-term development objectives.

<sup>5</sup> This graduation approach is referred to in section 8.1.1.4.

<sup>6</sup> Principle 3 of the Declaration of the World Summit on Food Security recognizes the need for a mixed approach: "Strive for a comprehensive twin-track approach to food security that consists of: (1) direct action to immediately tackle hunger for the most vulnerable and (2) medium and long-term sustainable agricultural, food security, nutrition and rural development programs to eliminate the root causes of hunger and poverty, including through the progressive realization of the right to adequate food" (FAO 2009b).

Fortunately, the spike in international food prices quickly passed, as shown in Figure 2, but prices continue to be higher than 2002–04 levels, and the recent closing of wheat exports from Russia will once again cause price increases. These price changes and continuing food security problems pose serious challenges. It is important, therefore, to consider how developing sustainable rural and agricultural credit systems contributes to long-term agricultural development and poverty alleviation.

**FIGURE 2**



Source: FAO 2009c, 14.

Recent crises have showed that different types of subsidies—whether direct interest rate subsidies or other indirect subsidies—are still very much part of the quick-fix toolbox of governments under pressure. These pragmatic and short-term responses must be accompanied by a clear path to sustainable agricultural finance in particular and to sustainable agricultural development in general. Donor agencies should maintain this focus in their policy dialogues and identify subsidies that are not fiscally sustainable or have detrimental effects on overall resource allocation within the agricultural sector.

## Chapter 3: THE ROLE OF FINANCE IN AGRICULTURAL DEVELOPMENT AND RURAL POVERTY ALLEVIATION

Historically, economists have held strikingly different views about the importance of the financial system for economic growth (Levine 1997). Some believed the financial sector merely responds to economic development, adjusting to changing demands from the real sector. Others believed that financial systems play a crucial role in alleviating market frictions and hence influence savings rates, investment decisions, technological innovation, and long-run growth rates. Recent research has concluded that finance matters, and an important contribution of finance is the provision of credit to the most promising firms (Demirguc-Kunt, Beck, and Honohan 2008). However, research has not provided a simple strategy or single road map for developing the financial sector.

### *What about credit and agricultural and rural development?*

Advocates of the old supply-leading agricultural credit viewed credit as an integral component of input packages designed for Green Revolution crop varieties. Actually establishing a causal link between credit and agricultural development, however, has proven difficult. For example, one comprehensive study looked at the investment decisions of government, financial institutions, and farmers and the effects on agricultural investments and output in India (Binswanger, Khandker, and Rosenzweig 1993). The study covered the 1960s and 1970s, a period when India aggressively expanded its financial system into rural areas. The authors concluded that the availability of credit was more important than subsidized interest rates, and the expansion of banking had a larger impact on output through expanding fertilizer use than through increased investments. Bank expansion was greatly aided by government road investments and reduced transaction costs for banks and farmers.

The authors of the *World Development Report 2008* (World Bank 2007) argued that financial constraints are more pervasive in agriculture than in other sectors. Providing broader access to financial services—credit, savings, insurance, and transfer services for remittances—and reducing exposure to uninsured risks requires financial instruments that improve

the productivity, profitability, and sustainability of smallholders. The report recognized the challenges and argued for financial innovations that put smallholders on a ladder of ascending financial market access flowing up from MFIs to commercial lenders.

Financial constraints would be expected to be most constraining in regions trying to achieve rapid agricultural growth. The agricultural potential of the African Guinea Savannah was compared to similar areas in Brazil and Thailand that developed rapidly (World Bank 2009a). These regions share medium to high agricultural potential but also face significant constraints in the form of infertile soils and variable rainfall. The study concluded that making the African region's agriculture competitive depends on getting policies right, strengthening institutions, and increasing and improving investments in the sector. Among other things, the region requires macroeconomic policy reforms, land policy reforms that enable smallholders to obtain access to land, scaled-up public investments in agriculture, greater private investment through public-private partnerships, and institutional reforms to make markets work better and create self-sustaining rural financial systems.

This long list of recommendations demonstrates the complexity of implementing agricultural development. Modern agriculture requires large amounts of purchased inputs and investments in on-farm and off-farm storage, refrigeration, processing, and transportation. Financial services are only one condition for success, and the successful provision of finance requires supportive policies and infrastructure. As discovered in the old agricultural credit paradigm, cheap loans cannot substitute for appropriate technology, input supplies, and access to remunerative markets.

*Implications.* Clearly the mechanisms that contribute to employment growth and increased production and income, and the role that finance plays in these changes, require greater understanding. Financial services to help the poor to manage their money may produce considerable benefits. The demand for operating credit is likely to be much greater for larger,

more commercially oriented farms that use large amounts of purchased inputs than it is for small subsistence farmers using fewer inputs and little hired labor. Therefore, large farms' access to credit may be most important for aggregate food production. Larger farms are normally considered more creditworthy and have more ready access to credit from commercial and development banks. Subsistence farmers, on the other hand, are more likely to face difficulty in obtaining formal credit and, therefore, may realize relatively large benefits from small loans, provided they can get access to land, inputs, and markets.

A logical hypothesis, therefore, is that improved access to large loans with attractive terms and conditions will be more important for commercial food production than for livelihoods and poverty alleviation. The experience of microfinance suggests that microloans are highly useful to smooth household consumption, improve food security, and meet household emergencies and education expenses. The challenge is to develop sustainable financial systems that help the poor manage their money as well as provide larger loans to finance value chains that produce greater impacts on output, employment, and income, as discussed in the next section.

## Chapter 4: **THE CHALLENGE OF DEVELOPING CREDIT MARKETS**

Allegations of market failure are often used to justify interventions in and subsidization of credit markets. Decision makers in low-income countries also advocate credit subsidies to offset subsidies provided to farmers in advanced nations. Advocates for the poor propose credit subsidies to improve income distribution. It is important to understand the standard market failure rationale in order to evaluate if public subsidies and investments for developing agricultural credit markets are economically justified.

### **4.1. PRIVATE MARKETS AND MARKET FAILURE**

Economic theory demonstrates that when marginal private costs are equated to marginal private benefits in the marketplace, marginal benefits and costs for all of society will also be equated. Market failure is said to occur when the market fails to allocate resources efficiently. When the individual's pursuit of pure self-interest leads to results that are inefficient, improvements are theoretically possible from the societal point of view.

*How does market failure arise?* Economic theory recognizes several categories of market failure, including imperfect competition, imperfect or asymmetric information, public goods, and externalities (see, for example, Arnold 2005). Imperfect competition occurs in monopolies or oligopolies when there are only a few sellers with price-setting ability. Lack of competition in financial markets could be an example. Imperfect information occurs when consumers, producers, or both do not know the true costs and benefits associated with a good or activity. Asymmetric information exists when one party to a transaction (such as a lender) has less information than the other party (the borrower).

Investment in agricultural research has long been justified as a public good because a single farmer or group of farmers cannot finance a socially optimum amount of research. Even if they had the resources, they could not control the free-rider problem in which other farmers benefit, say, from using a new technology without paying for its development.

Externalities refer to the spillover costs or benefits, unintended consequences, or unintended side effects associated with market transactions. An example occurs when mining pollutes water supplies, making it unusable for human consumption or irrigating crops.

Governments can intervene in many ways once they determine that market failure actually exists. For example, they can use moral suasion or rules and regulations to influence producers and consumers to act in socially desirable ways. Financial incentives can be used to induce desired behavior, such as adoption of new technology. Through financial support, governments encourage activities, such as research and extension, that farmers cannot finance themselves. Finally, governments intervene more directly in markets when they replace or directly compete with private producers in the production and distribution of goods and services. State-owned development banks, savings banks, and insurance companies are common examples in financial markets.

### **4.2. INFORMATION ASYMMETRIES AND CONTRACT ENFORCEMENT PROBLEMS IN CREDIT MARKETS**

In an ideal credit market, loans are traded competitively and interest rates are determined by supply and demand. Theoretically, the best investment opportunities will be financed because individuals with the best investment opportunities are willing to pay the highest interest rates. In practice, however, credit markets diverge from an ideal market because information is imperfect and loan contracts are difficult to enforce (Besley 1994).

A lender's willingness to lend depends on having sufficient information to evaluate the borrower's reliability, capacity to repay, and intention to use borrowed funds wisely. A borrower may claim to be unable to repay (owing to crop failures, livestock losses, or low prices) when in fact he or she is unwilling to repay (if there are insufficient sanctions against default). The farmer-borrower may promise to work diligently

to repay, but if default occurs, it is difficult for the lender to determine if it was due to bad luck, farmer mismanagement, or unwillingness. Faced with insufficient information and uncertainties about repayment, lenders may simply choose to deny loans. Lenders may try to overcome contracting problems by requiring substantial loan collateral, finding effective collateral substitutes, charging higher interest rates, lending only to borrowers with proven track records of repayment, or lending only to borrowers with diversified and reliable cash flows. But such strategies pose limitations and usually exclude the poorest farmers who are the frequent concern of policy makers.

Analysts have used these conceptual arguments to understand bank reluctance to lend in the face of large unmet demand for loans. One analysis found the ratio of liquid assets to total bank deposits averaged 19 percent for 5 developed countries compared with 45 percent for 35 developing countries, a difference that indicated ample opportunities for additional lending. The primary reasons for reluctance to lend were identified as higher reserve requirements for banks due to greater macroeconomic risk and volatility; a legal and regulatory environment in which it is difficult to enforce loan contracts and foreclose on collateral; widespread availability of low-risk, high-yielding government bonds; substantial asymmetric information so lenders know little about prospective borrowers; and inadequate banking skills for assessing risk and managing loans. Implementing reforms is daunting and time-consuming.

Lack of financial access is most serious in Africa, but financial sector development programs there have produced disappointing results. Low levels of financial intermediation, relatively high interest rates, wide intermediation spreads, and substantial bank profitability persist. The causes were identified as currency and macroeconomic uncertainties; high government demand for loan funds; lack of competition; relatively small bank sizes; and contractual problems including weak creditor rights, compromised courts, a deficient insolvency framework, and a general disrespect for contracts (Honohan and Beck 2007). In these environments, many governments consider interest rate and other subsidies the instrument of choice.

#### **4.3 SPECIAL CHALLENGES FOR CREDIT MARKETS TO SERVE RURAL AREAS AND FARMERS**

In addition to the general problems discussed, special challenges exist for financial systems serving rural areas and

farmers. The complicated environmental, material, and production features of agriculture that inhibit demand for and supply of credit and insurance are well known and are summarized here (Binswanger and Rosenzweig 1986).

Agriculture has important spatial and risk characteristics. Land is immobile; production is dispersed; and transport, communication, and travel costs are high. Variations in temperature, rainfall, and sunshine lead to seasonality of production, which creates a demand for seasonal credit to bridge the gaps between receipts and expenditures. Parcels of adjacent pieces of land have similar weather conditions, leading to covariate yields. Several kinds of risks and uncertainties exist: (1) yield risks due to weather, diseases, and insects; (2) market price risks due to local and global weather and market variations; (3) timing uncertainties due to farm-specific weather variations; (4) uncertainties in the timing of repairs and reinvestments; and (5) illness, accidents, and other life-cycle risks.

These characteristics have important implications for credit markets. Seasonality and synchronic timing imply that borrowers prefer to borrow at the same time at planting and repay at the same time at harvest, thereby creating liquidity management problems for financial institutions. Covariance of yields implies covariance of default risks, and lenders must carry large cash reserves to meet depositor withdrawals at times when borrowers may be slow in repaying or unable to repay. High communication costs make it difficult to manage the large banking network needed to reduce covariate risks. When information costs are high, in the absence of insurance, only small loans will be made without collateral. The most valuable forms of collateral are assets that (1) are easiest to appropriate in the case of default, (2) do not easily lose their value, and (3) have high use value to the borrowers so they will not want to easily part with them. Where there is an active land market, land facilitates access to formal loans, as it tends to have the highest value as collateral. Collateral substitutes become important for lenders when borrowers possess few high-quality assets to pledge as loan collateral.

The characteristics of agriculture also have important implications for insurance markets. Expected and actual yields differ enormously by field and farm, and average plot sizes are small, implying high costs for loss assessments. Insurance may induce moral hazard problems associated with poor animal and plant husbandry. Yield risk introduces covariance risk, and large insurance payouts require holding large financial reserves against losses. Typhoons, hurricanes, droughts, and other catastrophic events are important sources of

weather risk in many countries. The smaller the country, the more difficult it is to diversify risks across a large area to overcome covariance problems.<sup>7</sup> In the absence of insurance, individuals employ insurance substitutes such as cash reserves, traditional technologies, conservative input levels, and social ties that provide aid in the event of emergencies.

Implications. The complex environmental, material, and production features of agriculture inhibit the demand for and supply of credit and insurance. Not surprisingly, efforts to increase formal credit supplies have had a spotty record and quick fixes have not worked. Most successes have occurred when careful long-term institutional development has been at the heart of the strategy. Lessons learned from microfinance provide insights into success factors and are discussed below.

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<sup>7</sup> This assumes that insurers and reinsurers operate only within that country and cannot diversify their risks internationally.

## Chapter 5: THE PARADIGM SHIFT IN DEVELOPING CREDIT MARKETS

There is a long tradition of viewing cheap agricultural credit as a development tool. From the 1960s to the 1980s, subsidized, directed agricultural credit programs were common in top-down government and donor policies and programs. Unfortunately, attempts to resolve conditions viewed as market failure often ended up as government failure. The key features of these failures are summarized here to contrast with the new financial systems paradigm that emerged in late 1980s and guided the microfinance revolution.<sup>8</sup>

### 5.1. THE OLD-PARADIGM APPROACH

The old-paradigm, directed agricultural credit approach employed in many countries had several typical features. At the farm level, the approach was often implemented without careful analysis of the nature and causes of the supposed credit market failures. Interventions were considered necessary to overcome the risk aversion of conservative lenders who failed to provide credit that farmers needed to purchase inputs for adopting Green Revolution production packages. Moreover, loans at artificially low interest rates were justified to accelerate farmer adoption of these packages. Cheap formal credit was viewed as a way to introduce competition for usurious moneylenders and reduce farmer dependency on informal sources.

At the national level, it was believed that supply-leading finance could accelerate the economy and that credit could be force-fed by imposing lending targets on financial institutions and providing incentives for extending bank branches into rural areas. Specialized agricultural development banks and cooperatives were created to supplement commercial banks that resisted serving rural areas. Interest rates were reduced by subsidizing wholesale loans made to first-tier institutions

and controlling interest rates on retail loans to priority groups and sectors. One-size-fits-all credit models were created for farm lending rather than relying upon local institutions and credit officers to design products for individual borrowers.

Generally, the results from this paradigm failed to meet expectations. Increased lending may have contributed to some short-term increases in food supplies but did not lead to sustainable credit supplies. Low interest rates created an excess demand for credit, and rationing logically tended to favor richer and more politically powerful farmers.<sup>9</sup> High transaction costs for loans coupled with long delays reduced the advantage of formal loans relative to informal sources. Low interest rate margins and poor loan recovery undermined the financial sustainability of institutions. Many institutions failed, and others required bailouts and repeated recapitalizations. A culture of nonrepayment developed among borrowers, especially when loans were viewed as coming from the government. Most old-paradigm approaches ended by the 1980s. Government failure replaced market failure because the directed credit programs generally failed to resolve the screening, incentive, and enforcement problems in rural lending (Hoff and Stiglitz 1990).

In reality, the picture can be complex, as the example of the Thai Bank for Agriculture and Agricultural Cooperatives (BAAC) shows. The bank was established in 1966 and is still licensed as a special financial institution (SFI) and not a full-service commercial bank. Today it is one of the country's 10 largest financial institutions and serves most farmers in the country directly through group and individual loans or through loans to farmer associations and cooperatives. It has participated in government credit programs and been subject to controlled interest rates but has operated with relatively modest subsidies. It has maintained a fairly successful firewall against the most distortionary governmental initiatives, but for some time it has been affected by government debt relief and flood assistance programs. This

8 Some of the most comprehensive and accessible publications of the vast literature that analyzed the debates and presented the evolution in thinking about agricultural credit include Donald (1976); Von Pischke, Donald, and Adams (1983); Adams, Graham, and Von Pischke (1984); World Bank (1989); Yaron, Benjamin, and Piprek (1997); and Conning and Udry (2007).

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



Village market in Rangpur, northwest Bangladesh (Photo: Michael Hamp)



Rice paddy in India (Photo: Mark Wenner)

situation is reflected in a 20 percent provision against bad debts, as evidenced by a 2009 IFAD-Asian Pacific Rural and Agricultural Credit Association supervision mission (see also Siamwalla et al. 1990; Yaron, Benjamin, and Piprek 1997; and Meyer and Nagarajan 2000).<sup>10</sup> The Bank Pertanian Malaysia, Banrural S.A. in Guatemala, the Unit Desas of Bank Rakyat in Indonesia, and the Agricultural Bank of Mongolia are additional examples of state-owned rural financial institutions that successfully reformed by switching from subsidized to more market-driven organizations.

Although this paradigm has been largely replaced, important remnants remain. In 2004, nearly 40 countries reported having some form of interest rate ceilings, and several had recently introduced interest rate restrictions (Helms and Reille 2004). Interest rate ceilings can discourage lenders from making small loans with high operating costs. India liberalized many aspects of its financial system but still has a quota requiring that 18 percent of bank lending must go to agricultural services, and it only recently lifted interest rate ceilings for small loans. Poorly performing agricultural finance institutions still exist, and several are located in North Africa and the Near East. Although MFIs and most commercial banks in the region recover almost all of their loans, agricultural banks collect only 40–70 percent of their loans (Mustafaet al. 2010).

## 5.2. EMERGENCE OF A NEW PARADIGM

By the late 1980s, the accumulated criticisms of the old paradigm combined with the emerging success of microfinance led to a rejection of the directed credit approach and the emergence of a new financial systems paradigm.<sup>11</sup> The term “financial system” covers all financial institutions, financial markets and instruments, the legal and regulatory environment, and financial norms and behavior. Building the system requires efforts at three levels:

- micro—understanding the financial needs and behaviors of different clientele, building financial institutions, and creating financial products and services;
- meso—creating the infrastructure needed for financial intermediation services; and
- macro—creating conducive national policies and strategies, complementary nonfinancial services, and a supportive enabling environment.

Key elements of the new paradigm include the following:

- a broadened view of rural finance that includes financing of farming and rural nonfarm activities;

<sup>10</sup> See reports in the country’s leading English-language newspaper, The Bangkok Post, in May and June 2010.

<sup>11</sup> The ideas summarized here are drawn largely from Yaron, Benjamin, and Piprek (1997); FAO/GTZ (1998); World Bank (2003); and IFAD (2010). This new approach was formally incorporated in the policies of the international agencies in the 1990s. A World Bank report briefly summarized the specific documents within the CABFIN institutions that demonstrate adoption of the new paradigm (World Bank 2003).

- recognition of the importance of local savings mobilization;
- belief that market interest rates for both savings and credit reinforce market discipline of both financial institutions and clients;
- the granting of loans in response to demand rather than supply targets;
- the evaluation of financial institutions on the basis of viability rather than simply loans disbursed;
- recognition that successful finance is dependent on favorable macroeconomic, agricultural sector, and financial sector policies as well as an appropriate legal framework for private sector development;
- a perception of informal finance as complementary rather than usurious and harmful;
- an understanding that financial sector reform is essential for improved performance and wider outreach of financial institutions; and
- a role for donors in helping create a favorable policy environment, improving the legal and regulatory framework for rural financial markets, building institutional capacity, and supporting innovations to lower transaction costs and improve risk management.

*Implications:* The new paradigm reversed the strong focus on dispersing cheap credit and focused attention instead on creating sustainable institutions, treating borrowers and savers as clients rather than beneficiaries, developing products that clients demand, and pricing products and services to cover costs and risks. Long-term relationships with clients were encouraged through stepped loans that are small initially and are gradually increased with subsequent loans. Donor agencies reduced the use of credit lines in favor of grants, loans, and technical assistance to assist with the design of appropriate products, institutions, and policies. The new paradigm contributed to the success of the emerging microfinance industry.

## Chapter 6: THE MICROFINANCE INDUSTRY: SUCCESSFUL APPLICATION OF THE NEW PARADIGM

Asian microcredit experiments began in the mid-1970s, expanded in the 1980s, and exploded thereafter. The history of microfinance, however, starts long before the 1970s with the creation of the first pawn shops in Italy in the 15th century and the large expansion of cooperative movements in the 19th century in Europe and Canada (see Helms 2006, 3). Thousands of microfinance programs exist today, millions of clients are being served, financial services are evolving beyond just loans, and social and commercial sources now surpass donors and governments in funding the most successful programs. Many clients are as poor or poorer than those targeted in the old-paradigm agricultural credit programs. This section presents a highly simplified overview of the microfinance revolution and its role in agricultural credit.<sup>12</sup>

Many MF programs started as bottom-up attempts by nongovernmental organizations to assist the poor in sharp contrast to the earlier top-down efforts to expand agricultural credit. An important factor in MF success has been the creation of innovative lending technologies and institutional designs (Gonzalez-Vega 2003). Joint liability group lending proved to be a major breakthrough to resolve the lack of collateral by the poor. Groups have incentives to undertake good borrower selection, monitoring, and contract enforcement. Peer pressure encourages prompt loan repayment because the entire group is denied future loans if any member defaults. Small loans reduce risks for both lenders and borrowers. Frequent loan payments reduce risks and help lenders efficiently monitor clients. High interest rates are charged to cover operating costs and potentially high loan losses.

<sup>12</sup> There is a vast MF literature. Sources that describe important aspects of the industry's evolution and key features of institutions, products, clients, and policies include Otero and Rhyne (1994), Hulme and Mosley (1996), Ledgerwood (1998), Morduch (1999a), Robinson (2001 and 2002), Zeller and Meyer (2002), Armendariz and Morduch (2005), Hartarska and Holtman (2006), Meyer and Nagarajan (2006), and Zeller (2006).

Many institutional models and financial delivery systems for microfinance have emerged (Zeller 2006). Credit unions, cooperatives, village banks, specialized microbanks, NGOs, and commercial and development banks all provide microfinance services. Many are new start-ups, but existing institutions also began offering microcredit when profitability was demonstrated. Where widespread banking networks exist, as in India, informal self-help groups are created and linked with financial institutions (Nair 2005).

### 6.1. GUIDELINES FOR DEVELOPING MICROFINANCE

The Consultative Group to Assist the Poor (CGAP) was created in June 1995 to increase the resources for microfinance and deepen the success of the pioneer institutions. Donor members endorsed Key Principles of Microfinance to guide their support for the industry. CGAP created guidelines at the micro, meso, and macro levels to address the appropriate use of external support and subsidies without undermining the growth of the private sector (CGAP 2006).

The guidelines include recommendations such as the following:

- Verify that credit is actually needed (the main constraints may lie elsewhere, such as in weak infrastructure, poor production technology, limited market access).
- Avoid using microcredit merely as a resource transfer mechanism for high-risk groups when other methods may be more efficient (such as safety net programs for vulnerable groups).
- Provide flexible grant funding to cover research, product refinement and development, and technical assistance for capacity building.
- Support financial service providers in progressively intermediating commercial funds and deposits.
- Allow financial service providers to set their own pricing policies, encourage them to be transparent,

and avoid compelling them to charge below-market interest rates on loans or rates lower than necessary to cover costs in the medium term.

- Price loans to financial institutions at commercial or near-commercial rates to avoid undermining incentives to mobilize deposits or tap other local sources of capital.
- Phase out grants and subsidized loans gradually as local and international commercial capital markets and domestic savers become viable sources of capital.
- Promote transparency and accountability through regular financial reporting and third-party performance assessments and ratings.
- Support research and development on the use of technology for, for example, points of service, transfer and payment mechanisms, and credit bureaus.
- Support interest rate liberalization through education and advocacy.
- Avoid direct provision of credit services by a government, government-mandated portfolio quotas, directed credit, borrower loan guarantees, or operational subsidies. Exceptions may be appropriate for well-run programs that serve hard-to-reach populations.
- Encourage adaptation of policy and legal frameworks that increase competition and improve the quality of services available for poor people.
- Build the capacity of key government staff in ministries of finance and central banks.

*Financing of the industry.* Huge amounts of funds have been spent to develop the industry. During the 2000s, donors spent close to \$1 billion a year in MF programs (CGAP 2006). The



Women and microfinance (Photo: Lotte!)

magnitude of the many direct and indirect subsidies granted to the Grameen Bank in Bangladesh has been carefully calculated. For the period 1985–96, it was estimated that the bank would have needed to raise nominal rates on ordinary loans from 20 to 33 percent to become free of subsidies (Morduch 1999b). But like many MFIs, Grameen worked toward self-sufficiency, eventually implemented massive savings mobilization, and tapped commercial sources. Likewise, estimates have been made of the large amount of subsidies granted to BASIX, one of the early MFIs that stimulated development of the industry in India (Sinha 2008).

The microfinance industry has become increasingly commercialized, and the large profits earned by the most successful MFIs have attracted huge investments by private and social investors. CGAP reported that 61 donors and investors had committed \$14.8 billion to microfinance as of December 2008, of which \$3.9 billion were new 2008 commitments. At least \$3 billion was disbursed in 2008, two-thirds of it by investors. Eighty-four percent of the total committed funding went to finance the portfolios of retail institutions. Total funding for capacity building at the retail level amounted to \$1 billion (CGAP 2009b).

## 6.2. MICROFINANCE PENETRATION INTO RURAL AREAS AND AGRICULTURE

Until recently, microfinance mostly involved microcredit. The high cost of making and recovering small loans required high volumes per loan officer, so operations tended to involve group lending in urban and peri-urban areas or rural areas with high population densities. Frequent loan payments, often collected in weekly or monthly group meetings, were considered essential to maintaining financial discipline in the absence of physical collateral. This approach, and the use of manual bookkeeping, led to highly standardized one-size-fits-all loans. Borrowers with frequent sources of cash inflows, often engaged in retail or petty trading, were naturally attracted to the product, so penetration into rural areas and to farmers with seasonal cash flows was limited.

This situation is particularly clear in Bangladesh, a leading MF country. It has excelled in highly standardized loans but has lagged behind other countries in serving farm households. In 2008, some 25–30 million borrowers had access to microcredit and 6–7 million of these people were engaged in crop farming, but only 1–1.5 million borrowed loans specifically designed for seasonal or investment lending in agriculture (Alamgir 2009). The MFIs reportedly financed the growth of poultry and livestock and dairy production, but loans were

not tailored for seasonal agriculture. Several problems explain the slow development of products for farmers. Most MFIs work largely with female clients whereas crop farming tends to be done by men; most still use manual bookkeeping so standardized annual loans are easier to manage; loans with periodic rather than lump-sum payments make it easier to monitor clients efficiently; agriculture is perceived as risky so most programs prefer clients less affected by weather; and considerable training and decentralization of decision making would be required to develop flexible loans geared to farmers' cash flows. Most NGO-MFIs have neither the commitment nor capacity to enter into this market segment (BWTP Network 2009). The International Fund for Agricultural Development (IFAD) and the Asian Development Bank (ADB), however, have sponsored projects that support the second-tier funding institution (PKSF - Palli Karma-Sahayak Foundation) to encourage more experimentation with loans designed for seasonal agriculture.

Although there are no comprehensive data, there are many examples demonstrating that MFIs have found methods to deal with the costs and risks of agricultural lending (CGAP/IFAD 2005). As of the end of 2006, 20 MFIs in Nicaragua reported that 47 percent of their portfolios were in agriculture and forestry.<sup>13</sup> In 2007, 37 MFIs in Uganda reported that 38 percent of their total portfolios were in agricultural loans.<sup>14</sup> The Economic Credit Institution in Bosnia and Herzegovina, the Banco del Estado de Chile, Small Farmer Cooperatives, Ltd. in Nepal, the Cresol and SICREDI systems of savings and loan cooperatives in Brazil, Confianza in Peru, and several community-managed village savings and credit organizations (CVECAs) in parts of West Africa developed innovations to serve agriculture.

One of the leading promoters of individualized lending, IPC – Internationale Projekt Consult, a German consulting firm, is credited with initiating agricultural lending by Caja Los Andes in Bolivia, Uganda's Centenary Rural Development Bank, and Calpia in El Salvador (CGAP/IFAD 2005). A comparative analysis of Calpia's rural and urban portfolios showed that credit officer efficiencies, operating costs, and portfolio quality were similar. These data demonstrated that with careful client selection and appropriate lending technologies the rural portfolio could perform as well as the urban (Buchenau and Meyer 2007).

The MFI successes in agricultural lending involved a combination of practices such as treating the borrower as a firm household, basing loan size and repayment schedules on the cyclical cash flow of the entire household, and delinking loan payments from loan use. MFIs reduce lending risks by lending to borrowers with diversified cash flows, diversifying portfolio risks by lending to farmers in different regions with different crop and livestock enterprises, linking credit with area-based index insurance, and insulating themselves from political interference (CGAP/IFAD 2005).

MFIs also have to deal with negative political events. For example, some of the Nicaraguan MFIs mentioned increased their share of lending for livestock but encountered repayment problems when meat prices fell during the food and fuel crises. The No Pago movement in that country is pushing for a debt moratorium that will damage MFIs (Campion, Ekka, and Wenner 2010). Political problems have also affected Bolivian MFIs. For example, the Agrocapital Foundation, founded in 1992, was unique in that its clients had registered land titles, and it was the first NGO in Bolivia to grant loans to farm and nonfarm businesses using individual lending (Alvarado and Galarza 2003). In 2007, the government implemented controversial changes in land laws that prohibited owners with less than 50 hectares of land from using it as loan collateral. Agrocapital added a village banking model to reach smaller-scale borrowers and substitute for loan collateral. These legal changes, along with public unrest in rural areas over land reform and other issues, contributed to a decline in Agrocapital's agricultural lending. By the end of 2008, the agricultural share of the loan portfolio had fallen to about 30 percent (Fitch Ratings 2009).

### 6.3 INNOVATIONS AND PROSPECTS FOR FUTURE AGRICULTURAL LENDING

Many innovations are taking place, so prospects are good for further reductions in agricultural lending costs and risks. Successful innovations will be especially important for dealing with the small transactions and high communication costs that impede financial development. MFIs are updating their management information systems (MISs), reducing the constraints imposed by manual bookkeeping systems. Technological innovations to speed transactions and reduce transaction costs involve using the vast emerging mobile phone networks in emerging economies for deposit and credit transactions. Earlier experiments involved debit, credit, and smart cards; electronic passbooks; remote transaction systems; and point-of-sale devices (Nagarajan and Meyer 2005). The high cost of opening bank

13 REDCAMIF, "Microfinanzas en Centroamerica," Bulletin No. 6, April 2007.

14 Bank of Uganda, unpublished survey data, 2007.



Mobile banking, Mozambique (Photo: Renate Kloepfinger)



Sign for mobile banking, Uganda (Photo: Renate Kloepfinger)

branches may be reduced by mobile banking, and Brazil is the leader in implementing a massive bank agent system, including about 150,000 “banking correspondents,” many of whom specialize in credit. More than 50,000 are authorized to open accounts and handle deposits (CGAP 2010a). Cell phone banking is exploding, especially in Africa where land lines are especially sparse. M-PESA in Kenya is leading the way by facilitating the transfer of funds through cell phones. Demand has far exceeded expectations, and an important constraint has been the creation of a network of certified agents (Eijkman, Kendall, and Mas 2010; Lonie 2010). In May 2010, Safaricom (the mobile operator behind M-PESA) and Equity Bank launched M-KESHO, a co-branded suite of financial products that will open the door to more cell phone

integration with formal financial institutions.<sup>15</sup> The first product launched was savings accounts. Data suggest that cell phones may already have important community-level effects on money transfers, bill paying, and business expansion (Plyer, Haas, and Nagarajan 2010).

Opportunity Bank in Malawi used several technologies to expand rural outreach but has faced problems in trying to develop mobile banking when an appropriate cell phone partner does not exist.<sup>16</sup> CGAP summarized alternative ap-

15 “M-KESHO in Kenya: A new step for M-PESA and mobile banking,” posted by Ignacio Mas, May 27, 2010, on the FAI Blog <http://financialaccess.org/blog> downloaded on July 9, 2010.

16 For information about the several efforts of Opportunity Bank to extend rural outreach, see McKay (2009) and Opportunity International (2008, 2009).



Cambodia (Photo: Renate Kloepfinger)



Kenya (Photo: Calvin Miller)

proaches for integrating microfinance services with mobile phone banking in circumstances when cell phone partners do and do not exist. Improved customer service, reduced costs of offering savings accounts, a potential to increase the number of savings customers, and possible cost reductions large enough to warrant interest rate reductions, but not a large expansion in new credit customers, seem to be the logical outcomes of these integrations so far (Kumar, McKay, and Rotman 2010).

Community and member-based institutions, including savings and credit cooperatives and credit unions, may be the most logical institutions to provide cost-effective financial services in remote areas. In these organizations, members have the responsibility for owning, managing, and operating the financial institutions in addition to being the main or only customers. Often they are built on the principles of informal rotating savings and credit associations and accumulating savings and credit associations that are found in many countries. CVECAs are being formed at minimum cost as savings-first institutions in many African countries.<sup>17</sup> Member-owned institutions often suffer from poor governance and have operations limited to small geographic areas that are subject to covariate risks. External assistance is often provided to start and strengthen these organizations, but credit lines from external funds for on-lending have often damaged their self-help discipline and induced rent-seeking behavior (Hirschland et al. 2008).

MFIs are also actively seeking ways to participate in agricultural value chain financing, which may open new possibilities for strengthening financial operations by linking with nonfinancial groups and institutions (Miller and Jones 2010). In India, BASIX is famous for learning that microcredit alone, which it started in 1996, failed to produce a major impact on the lives of the rural poor. In 2002, therefore, it broadened its approach to include enterprise and institutional development services. It also, however, reduced its seasonal crop lending from more than 21 percent of its overall portfolio in 2001/02 to less than 2 percent in 2006/07, while the allied agriculture (mostly animal husbandry) category rose from 22 to 33.5 percent. The share of nonfarm microenterprise loans also increased to 53.4 percent compared to 45.3 percent in 2001/02 (Sinha 2008).

#### **6.4. INSIGHTS GAINED FROM MICROFINANCE ABOUT THE IMPACT OF FINANCE**

The current debate about the impact of microfinance raises questions about the role of credit in poor households and businesses. The common narrative has been that microloans help poor households create employment and start or expand businesses that lift them out of poverty. Early impact studies tended to support those results, but the frequently cited gold standard evaluations (such as Khandker 1998) have been challenged recently, and more robust impact evaluation techniques are advocated (Duflo, Glennerster, and Kremer 2008).

Microcredit seemed to produce some effects on business outcomes and the composition of household expenditures among randomly selected households in the slums of Hyderabad, India, where an MFI opened branches (Banerjee et al. 2009). Existing business owners appeared to use microcredit to expand their businesses, and business profits increased. Households with a high predicted propensity to start a business reduced nondurable spending, presumably to finance an even bigger initial investment than could be financed with just the loan.

The issue of impact of microfinance is far from settled, but the results of new studies suggest a need to reexamine the traditional view of how expanding credit supplies will benefit the poor. Similar caution is needed when advocating the expansion of credit for rural areas and for agriculture. Enthusiasm for expanding credit supplies has surpassed our understanding of how target groups actually use finance and what this implies for the design of products and programs. Comparatively high interest rates of MFIs reduce the positive impact of loans at the borrower level and can also influence the composition of economic activity in a given catchment area toward retail and other trading activities. But this is not a call for reducing or subsidizing interest rates. Rather, the institutional inefficiencies of MFIs should not be passed on to borrowers.

*Implications.* Microfinance thrived by following a market-oriented approach that was in sharp contrast to the subsidized directed agricultural credit paradigm. As a result millions of poor people have obtained access to microloans, and the industry is beginning to supply other financial services. Some MFIs have made significant inroads into agriculture and rural areas, but generally the industry has been slow to design products and methodologies to fit the seasonal cash flow patterns of farm households. Managing the costs and risks of agricultural lending has been challenging. Major

<sup>17</sup> Data for more than 20,000 savings groups show a range of cost between \$15 and \$85 per member assisted with an average of \$31.80 (personal correspondence with Hugh Allen, July 29, 2010). See [www.savingsgroups.com](http://www.savingsgroups.com) for comparative data.

developments in the application of technology to reduce the cost of small financial transactions, the use of banking correspondents, and greater linkages with nonfinancial groups and institutions offer possibilities for greater MFI penetration into agriculture. The integration of financial services and mobile phones offers interesting possibilities where the appropriate conditions exist. The current debate about the impact of microfinance demonstrates the need for better understanding of how target groups use additional credit and the impact to be expected from improved access to loans.

## Chapter 7: CREDIT DEMAND, RATES OF RETURN, AND INTEREST RATE SENSITIVITY

Improved understanding about the demand for and use of agricultural credit is important in developing effective products, institutions, projects, and policies. The rapid growth of microfinance suggests there may be a large unmet demand for agricultural loans, but three issues need to be anticipated. First, there may be a tendency to overestimate demand, as has occurred with microfinance. Second, farmer demand for loans may be limited if the interest rates charged are as high as MFIs need for sustainability in making small micro-enterprise loans. This issue raises the question of the rates of return in farming relative to the cost of borrowing. Third, there is the question of how sensitive borrowers are to interest rates relative to other factors affecting demand. This section provides a summary of research, often drawing from microfinance, on these three issues.<sup>18</sup>

### 7.1 DEMAND FOR CREDIT

A recent CGAP publication described how demand for microloans is often overestimated (Anand and Rosenberg 2008). Estimates derived from population estimates or number of enterprises, the usual starting point for credit demand estimates, need to be reduced for three reasons: (1) many people simply do not want microloans; (2) some who might want loans are not considered creditworthy; and (3) people who want and qualify for loans do not necessarily borrow continuously. For example, the 17,000 microenterprises in the Ecuador study mentioned reported that 85 percent of both men and women respondents had not applied for a loan during the preceding 12 months. The greater the wealth of the respondents, the higher the application rates, with the richest 10 percent (decile) applying at a 24 percent rate compared to 9 percent for the poorest decile. The overall success rate for applicants actually receiving loans was a surprisingly high 97 percent so the rejection rate should not have discouraged applicants. Two thirds of the applicants were located within two kilometers of the lender so familiarity and low

transaction costs may have affected their decision to apply (Magill and Meyer 2005).

Some MFIs have experienced high dropout rates—as high as 13 to 60 percent a year in East Africa. Some dropouts occur because of success—that is, the borrowers make progress and are able to self-finance their financial requirements or graduate from an NGO to a commercial bank or credit union. Some dropouts simply want to take a break before borrowing the next loan. Others fail when they have difficulty repaying and refuse to borrow a second time or their group members do not want them to borrow again. Some learn that standardized loans with frequent meetings and payments are too time consuming and inflexible to meet their needs (CGAP 2000). Evidence from Bangladesh supported the view that most dropouts occur because MFIs do not meet the needs of the market (Wright 2001).

### 7.2 RATES OF RETURN IN AGRICULTURE

Borrowers use credit for many purposes—working capital, investment, consumption smoothing, education, and health expenditures—so it is difficult to determine the impact of interest rates on demand. Moreover, credit demand is influenced by other factors, such as transaction costs and attitudes toward the risk of borrowing. Borrowers obtain cash from a variety of sources to make loan payments, but the rate of return earned from enterprises is of special concern because it can affect both supply and demand. Higher profits improve debt repayment capacity, so lenders are usually more willing to lend to farmers with more profitable enterprises. Farmers may also be inclined to take risks and demand more credit when they expect to earn higher rates of return in their enterprises.

Analysts of the directed-credit paradigm (the old-paradigm approach detailed in section 5.1) often concluded that farmers were more concerned about obtaining loans on time and in the correct amount than with low interest rates. This finding was a logical reaction to the high transaction costs

<sup>18</sup> Several ideas presented in this section are discussed in more detail by Karlan and Morduch (2010).

and credit rationing attributed to low interest rates (Adams and Von Pischke 1992). Borrowing transaction costs were high as a natural result of credit rationing and inefficiencies in directed credit delivery systems (Meyer and Cuevas 1992).<sup>19</sup> MFI interest rates today are low relative to moneylender rates but tend to be high relative to the rates for larger loans from commercial banks because of higher operating costs. In 2006, the median interest income for sustainable MFIs in the MIX Market, weighted by gross loan portfolio, was 26.4 percent of loans outstanding. The majority of MFI interest income goes to pay operating costs (salaries and other administrative costs), which are about 60 percent of total MFI costs (Rosenberg, Gonzalez, and Narain 2009).

MFIs argue that they must charge relatively high interest rates because of these high operating costs. They report, however, that many clients thrive and expand their businesses while paying interest rates of 20 or 30 percent a year, or even higher. The high interest rates charged in informal credit markets are evidence that borrowers already pay high rates and thus value access to formal loans more than low interest rates (Rosenberg 2002). This argument is consistent with the view espoused by Nobel Prize winner Muhammad Yunus, that returns to access to credit are bound to be large because the poor are starved for capital.<sup>20</sup> But credit obtained for business loans may be diverted because returns could be equally high for, say, investing in education.<sup>21</sup>

*Do rates of return in agriculture justify paying the levels of interest rates that millions of microentrepreneurs pay?* Comparatively little analysis has been conducted in recent years on rates of return earned in farming relative to interest rates for agricultural loans. Logic suggests that returns to capital should be high for farmers without access to credit. For example, the returns from applying a small amount of insecticide should be high if it prevents insects from

destroying a crop. A little medicine may save a sick cow, and a small amount of fertilizer may increase crop yields in depleted soils.

Empirical studies of the productivity of credit use in agriculture, however, have yielded mixed results. For example, one study suggested that many Chinese farmers were credit constrained, but the use of additional credit was estimated to yield a low return, implying that much production credit might actually be diverted to consumption purposes (Feder et al. 1990). A study of small farmers in northern Peru producing rice, cotton, and corn concluded that relaxing credit constraints would raise the value of output per hectare by 26 percent, a rate that should encourage borrowing (Guirkinger and Boucher 2007). A study in southern Ghana estimated returns to capital for small farmers producing maize, cassava, and food crops for local markets and pineapple for export. Real returns to capital were estimated at 250–300 percent for the new technology of pineapple cultivation and 30–50 percent for well-established food crop cultivation (Udry and Anagol 2006).

A recent Kenya study analyzed the profitability of fertilizer use, an important issue because of high fertilizer prices following market liberalization. Kenyan farmers switch back and forth between using and not using fertilizer, and many never use it for maize production. The study tested the possibility that fertilizer and hybrid seed may increase maize yields on model farms but may not be profitable on small farms where conditions are not optimal (Duflo, Kremer, and Robinson 2008). Yield increases on small farms due to fertilizer use were found to be in the range of the estimates found on model farms. The return for the most profitable quantity of fertilizer (only 1/2 teaspoon of top dressing fertilizer per planting hole) was 36 percent over a season, or 69.5 percent on an annualized basis. Other levels of fertilizer use, however, were not profitable for sampled farmers, so the demand for credit to purchase fertilizer will depend on the farmer knowing the level of fertilizer application that will earn the higher return.

These results are promising because they point to the possibility of earning higher returns in agriculture. However, even if returns are high relative to the interest rate for loans, households may voluntarily withdraw from the credit market. High borrowing transaction costs may reduce borrowing, and farmers who could access may decide not to borrow because

19 Borrower transaction costs ranged from a low of 4 percent to a high of 180 percent of explicit interest charges in the several case studies summarized.

20 Yunus (2006) as cited by Karlan and Murdoch (2010).

21 Policy makers are tempted to impose interest rate controls to “protect” borrowers. This practice can lead to unexpected consequences. For example, in May 2010 the Central Bank of Ecuador reduced the maximum lending rate for retail microlenders from 33.9 to 30.5 percent. It was reported that lenders made larger loans to existing clients rather than expand lending to poorer clients, and some lenders may have needed to sell their portfolios to larger institutions with lower fixed costs (Business News Americas, May 6, 2010, downloaded from [www.bnamericas.com/new/banking](http://www.bnamericas.com/new/banking) on May 12, 2010).

they are risk averse and will therefore settle for lower-return, lower-risk activities.<sup>22</sup>

### 7.3. RATES OF RETURN IN MICROENTERPRISES

Recent microenterprise studies report returns to capital that are surprisingly high. McKenzie and Woodruff (2006) used Mexican data to estimate returns to capital that ranged from 10 to 15 percent a month for the smallest firms with capital stocks of less than \$500. For each additional \$100 invested in the enterprise, earnings rose \$10–\$15 a month. The authors acknowledge the possibility that capital investment is correlated with ability that was not measured in the study; therefore, they conducted a follow-up randomized experiment to generate data for a consistent measure of returns to capital (McKenzie and Woodruff 2008). Data were collected from a panel of male-owned retailing microenterprises. A 1,500 peso (\$140) treatment was estimated to increase monthly profits by at least 292–487 pesos, a marginal return to capital of 20–33 percent. If financially constrained households tend to be poorer, this result suggests that poorer households have more ability to pay for capital than better-off households, and interest rates of even 10 percent a month seem reasonable.<sup>23</sup>



Women's enterprise, Rwanda (Photo: Renate Kloepfinger)

Part of the reason for high returns could be the lack of access to credit. The authors acknowledge a puzzle: given the high returns to capital and the lack of any meaningful minimum investment threshold, why have the enterprises not grown through reinvesting profits?

22 These concepts are discussed more fully in Boucher, Guirking, and Trivelli (2006).

23 This point was emphasized by Karlan and Murdoch (2010). Of course, the ability of borrowers to pay high interest rates does not justify inefficiencies in financial institutions that unnecessarily drive up interest rates.

A study by de Mel, McKenzie, and Woodruff (2007) involved an experiment in which small firms in Sri Lanka were given small grants, half in cash and half in the form of equipment or inventories. If returns were low at low levels of capital stock, this result would show that lack of capital was an important barrier to opening a business. If, on the other hand, returns were high, this would mean that an entrepreneur could open a business and grow by reinvesting profits. The average real return to capital was found to be 5.7 percent a month, substantially higher than the market interest rate. The analysis did not address whether enterprises lacked credit because they were screened out or because of lack of demand.

Further analysis of the Sri Lankan data produced an unexpected result because of the popular focus on women in microcredit programs. About half of the participating enterprise owners were women. Contrary to expectations, the grants resulted in large, sustained increases in income for male owners, but no increase in income for female owners (de Mel, McKenzie, and Woodruff 2009). Apparently men turned the grants into a sustained source of income by making profitable investments in their enterprises, resulting in an accumulation of household durable goods and financial assets. Women, on average, did not generate a sustained source of income from the grant, either because they did not invest the grant in their enterprise or because they did not earn additional profits when the grant was invested. The reasons for these gender differences could not be determined.

A common problem in studies of returns to capital concerns the measurement of all resources used in the enterprises (Karlan and Morduch 2010). Enterprise profits are often measured without explicitly valuing some inputs used in production, such as unpaid family labor or the value of managerial inputs. Therefore, the estimated profit levels reflect the returns to three inputs—capital, unpaid labor, and management—thereby overestimating the returns to capital alone. On the other hand, if entrepreneurs have little opportunity to employ their resources elsewhere, investing in their enterprises may be their best option even if they earn a low return for their labor. The key result is that high profits imply that borrowers could pay high interest rates and still have funds left over for other purposes.

### 7.4. SENSITIVITY OF LOAN DEMAND TO INTEREST RATES

A few studies have attempted to directly measure the sensitivity of loan demand to interest rates. Dehejia, Montgomery, and Morduch (2009) analyzed the impact of interest rate

changes when a microfinance NGO operating in Bangladeshi slums raised interest rates on loans from 2 to 3 percent a month. Borrowers were highly sensitive to the rate increase. They tended to take out smaller, more frequent loans and repay them more quickly, leading to a reduction in overall loan balances. The less wealthy households, however, were particularly sensitive to the rate increase, so the NGO's portfolio shifted slightly away from its poorest borrowers when it raised interest rates. The rate increase raised revenues enough to cover the NGO's costs even though some customers changed their borrowing behavior.

Karlan and Morduch (2010) report on an experiment by the Compartamos bank in Mexico to randomize interest rates at the community level in 80 geographic clusters. Half the clusters were randomly assigned to receive a 0.5 percentage point reduction in the monthly interest rate (roughly a 10 percentage point reduction in the annual percentage rate). The microcredit borrowers were found to be quite sensitive to interest rates. The interest reduction led to an increased number of clients and larger loan sizes, and this demand response was large enough to generate higher revenue. Costs increased with the higher volume of lending, but not as much as revenues (and consequently profits) increased.

A recent study of interest rate sensitivity involved an effort to estimate individual (rather than average) demand elasticities (Turvey 2010). Experimental techniques were used to estimate household credit demand functions for farm households in China in 2009. The findings suggest considerable heterogeneity in credit demand, that the need to use a variety of credit policies should be used to address differences across farms. For example, nearly 20 percent of the farm households had nearly perfectly inelastic demand for credit, but nearly 20 percent had elasticities above -0.75, including some 15 percent with elasticities greater than -1.0. Higher-risk farms had lower demand elasticities, whereas farms with mean revenues had more elastic demand elasticities. Households with higher savings rates had more inelastic demand than low savers, which suggests that high savings groups substitute savings for credit and low savings groups view savings and credit as complements. The elasticity of credit demand was higher for consumption goods than for agricultural production, suggesting that interest rate policies have a greater impact on consumption than production.

*Implications.* These studies of profitability and credit demand have five implications. First, each study represents a unique situation, so it is difficult to generalize about the profitability of farm and nonfarm enterprises and the returns earned

by male- and female-headed firms. As Banerjee and Duflo (2004) suggest, very high and very low rates of return may coexist in the same economy. Even if entrepreneurs report high returns on average, there may be wide variations, a finding that complicates policy making.

Second, some microenterprises earn high rates of return to capital, implying an ability to pay high MFI rates of interest. There is also evidence to contradict the notion that rates of return in agriculture are so low that farmers cannot pay interest rates as high as those paid by microentrepreneurs. If there is great heterogeneity in rates of return, as implied earlier, farmers may not demand credit until they learn the correct combination of inputs to use or until enterprises and value chains are developed that generate higher returns than are possible with traditional agriculture.

Third, the low returns reported for women is surprising considering the importance MFIs place on reaching women, but this result may reflect occupational choice and traditional gender roles in a particular setting (Sri Lanka) rather than representing a generalizable phenomenon. Given that studies frequently find differences in how women and men spend money, it would not be surprising to discover that the profitability of women's businesses may be different from that of male businesses.

Fourth, Turvey's finding of great heterogeneity in credit demand among farms requires further investigation. If further research supports that result, it would signal an important complication for policy making—namely, that responses to a general interest rate policy in agriculture will be hard to predict and could produce unexpected results. Interest rate policies may have a greater impact on consumption, but policy makers normally consider production rather than consumption when debating credit policies.

Fifth, demand for credit is driven by many factors besides interest rates. Transaction costs of borrowing, the complexity of administrative procedures, access to other financial products, loan sizes, and repayment schedules may all have an impact. Microfinance provides useful insights, but more information is needed about farmer financial behavior, production and marketing risks, farmer risk aversion and mitigation techniques, and other factors to derive robust conclusions about demand for loans.

## Chapter 8: **STRENGTHENING AGRICULTURAL CREDIT: THE WAY FORWARD**

There is a consensus that agricultural finance in many parts of the world could work better than it presently does for small farmers. It seems that financial sector reforms in many countries did not percolate down to the small farmers, and access to finance is still a challenge for them. There is surprisingly little quantitative evidence, however, to document credit flows before and after reforms.<sup>24</sup> Nonetheless, there is a widespread belief that farmers with good investment projects are stymied because they lack access to formal credit.

Agricultural credit was overlooked in the 1980s and 1990s because of the focus on microfinance, but interest is now reemerging. Advances are being made in institutions, products, services, processes, and enabling environments that contribute to increased outreach and sustainability (Nagarajan and Meyer 2005). Many financial innovations are being tested as already noted, but the pace of financial sector development seems slow for critics. Therefore the question arises: How can agricultural finance be improved in tune with the requirements of rapidly developing agriculture and the needs of smaller farmers?

### **8.1. THE USE OF SUBSIDIES AND GRANTS IN FINANCIAL SECTOR DEVELOPMENT**

This chapter delves into contentious issues at the heart of the old-paradigm debate—namely, the appropriate use of subsidies and grants to strengthen rural finance. Donor programs operate with nonrepayable grants or below-market rate loans to governments and partner organizations. In quite a few cases, these entry-level subsidies are carried forward as grants and loans as part of foreign assistance programs. Subsidies are frequently justified as temporary measures to improve economic efficiency or for long-term redistributive objectives. As already outlined, economic arguments can

be used to justify government interventions into financial markets. This chapter outlines issues to be considered when evaluating the role of subsidies in these interventions.

### **8.2. FORMS OF SUBSIDIES**

Several forms of subsidies are used to improve the supply and demand for financial products and strengthen financial systems. Direct subsidies at the level of the financial institution may fund interest rate subsidies and result in “cheap loans” for end borrowers or support institutional development of the financial institution itself. Others focus on the economic environment, rules and regulations, and support institutions that indirectly affect the performance of the financial system. Other subsidies aid specific financial institutions, such as innovation grants to help MFIs design and test products, develop MISs, and provide management and staff training.

Loans supplied to financial institutions at below-market interest rates for on-lending to farmers were a popular form of direct subsidy under the old agricultural credit paradigm. Indirect subsidies for financial institutions take the form of tax exemptions and the provision of goods and services at below-market prices. Some subsidies are designed to reduce the cost of resources used in the production of goods or to reduce the cost of services, such as loans, to improve competitiveness and increase demand.

Subsidized investments in financial infrastructure, such as credit bureaus and collateral registries, are justified as public goods. Likewise, legal reforms that improve secured transactions and enhance property rights encourage financial development by improving borrower creditworthiness, reducing lender risks, and increasing demand for investment credit. Subsidies for guarantee funds and insurance products also reduce lender risks. Subsidies to aid clients, such as financial literacy programs and training in production technology to help small farmers effectively participate in value chains, also benefit financial institutions.

<sup>24</sup> A Latin American study concluded that the ratio of agricultural credit to agricultural gross domestic product (GDP) had fallen in some countries but risen in others (Wenner and Proenza 2000).

Subsidies are also used to influence choices concerning production and consumption decisions. For example, training programs and capital subsidies are designed to encourage financial institutions to modernize financial systems and upgrade MISs. Another subsidy of great interest, especially in Africa, is the use of cash subsidies or vouchers to encourage farmers to increase their uptake of inorganic fertilizers.

### 8.3. CRITICISMS OF SUBSIDIES

Critics of subsidies focus on potential distortions, such as the overuse of fertilizer and the undermining of the emerging private sector when governments supply free food to the poor or cheap loans and grants to farmers. There are concerns, especially in crises, that when costs are too great to provide subsidies to all, political manipulation will occur and only an elite few will be served. Moreover, subsidies for financial institutions may create subsidy dependence because it is difficult to avoid creating the expectation of future subsidies in increasing amounts.<sup>25</sup> It is often difficult to withdraw well-established agricultural subsidies once they are in place.

The recent highly successful initial public offerings of Compartamos in Mexico and SKS in India, and the great profits that private and institutional investors earned from them, prompted questions about the ethics involved in the use of and gains from public subsidies and from high interest rates charged for microcredit (Von Pischke 2008). On the one hand, high returns have caused excitement among investors and attract more private capital into the sector. On the other hand, there are concerns, especially in the Compartamos case, that the high profits were earned by charging poor borrowers excessively high interest rates.<sup>26</sup>

### 8.4. ANALYSIS OF THE USE OF GRANTS TO STIMULATE INVESTMENTS

Grants are used as a special form of subsidies by governments, international agencies, and foundations to stimulate investments.<sup>27</sup> Grants for national and international agricultural research and extension are widely recognized for contributing to the Green Revolution technologies critical in

alleviating world hunger (Pingali and Kelley 2007; Evenson and Gollin 2007). Grants to NGOs and service providers have been important in expanding the supply of fertilizer and other agricultural inputs, improving small farmer access to agricultural value chains, and developing microfinance institutions. Although economic theory recognizes that grants are potentially useful instruments to solve or compensate for market failure, it is important to anticipate the risks of grants. If grants are based on wrong assumptions and analyses, they can have harmful effects on the development of private markets. Since a grant is a subsidy, the question of justification is critical.

The World Bank identified several problems with using grants to overcome market failure in agriculture, and similar problems may exist in other institutions.<sup>28</sup> The grants analyzed were designed as one-time subsidies for expenditures on economic services with mixed public and private goods characteristics. The analysis found that grant users justified the grants by describing obstacles encountered in development, but it was often unclear if these obstacles were really market failures. In many cases, the argument was simply that the target population is poor and lacks assets (Donovan 2006). Disagreements exist over whether it is legitimate, effective, and efficient to provide grants to address market failures and if grants are the best instrument for this purpose. Uncertainties about the best remedies to mitigate market failures create opportunities for inserting political and ideological preferences in public expenditures regarding grants (van der Meer and Noordam 2004).

Twelve World Bank rural development projects that provided grants for agricultural research and development, private enterprise, and community development were reviewed in detail. The review identified three major weaknesses. The first was lack of discussion about the market failures to be solved and the justification for using grants. Second was the lack of economic evaluation of the project, and, third, insufficient information about implementation modalities. To improve the design and implementation of grants designed to reduce market failure, four categories of issues need to be considered:

- analysis of obstacles to private investment and their possible remedies;
- analysis of the costs and benefits of resolving the market failure;

<sup>25</sup> Jacob Yaron wrote several World Bank publications using his Subsidy Dependence Index to analyze the dependency of financial institutions on subsidies (1994).

<sup>26</sup> The Compartmos case was analyzed by Rosenberg (2007).

<sup>27</sup> The Terra Viva Grants web site manages information about grants for agriculture, energy, environment, and natural resources in developing countries.

<sup>28</sup> This section draws heavily on the World Bank analyses discussed by van der Meer and Noordam (2004) and Rajalahti and Farley (2010).

- determination of the optimal grant percentage and the amount of grants to be given to particular investments, to individual applicants, and to identified target groups; and
- methods for implementation of the grants scheme.

In addition, a set of questions was recently drafted to ask in determining whether to use a competitive grant scheme to address market failure.<sup>29</sup>

### 8.5. USE OF GRANTS AND SUBSIDIES FOR RURAL FINANCE

The international agencies reviewed their experiences in using grants and subsidies under the old-paradigm agricultural credit projects. As a result, the World Bank identified a new strategy involving three pillars of support for rural finance sector development: (1) government policies and the legal, regulatory, and supervisory framework; (2) financial sector and real sector infrastructure; and (3) financial institutions (World Bank 2006). Likewise, IFAD recently developed a new rural finance policy statement based on six guiding principles for intervention at the micro, meso, and macro levels (IFAD 2009a, 14). Both institutions support the financial systems approach discussed in the *FAO/GTZ Agricultural Finance Revisited* monograph series. The financial systems paradigm shifts the focus from target groups to financial systems and institutions (and their supporting infrastructure) based on the argument that only well-managed sustainable financial intermediaries can guarantee the long-term supply of financial services to rural customers. A range of financial institutions, models, and delivery channels and demand-driven and innovative approaches to creating financial products and services are advocated. The previous poor experience with credit lines suggested caution about their use, and emphasis was placed instead on investments in institutional capacity building (World Bank 2005a). World Bank projects also need to comply with policies on financial intermediary lending (OP8.30), which stipulate that interest rates to end-customers not be subsidized.

The World Bank identified several subsidies that could contribute to rural development and poverty reduction without distorting the development of sustainable rural finance. The general rule is that subsidies should be time-bound, limited, and decreasing over time. Examples are given in Box 1.

### BOX 1: Examples of Subsidies That Contribute to Sustainable Rural Finance

#### Pillar 1. Subsidies for Financial Intermediaries

Subsidies to financial intermediaries must be

- transparent, targeted, and capped;
- funded explicitly through the government budget or other sources subject to effective control and regular review;
- fiscally sustainable;
- fair, not giving an unfair advantage to some intermediaries vis-à-vis other qualified and directly competing institutions; and
- economically justified.

Appropriate subsidies could

- provide technical assistance to financial intermediaries to improve systems that enhance efficiency, such as management information systems;
- develop and introduce demand-responsive products on a pilot basis;
- help develop or improve service delivery mechanisms that enable greater outreach into rural areas; and
- cover a portion of the cost of establishing new branches in areas that do not have financial intermediaries that serve the poor.

#### Pillar 2. Subsidies for Financial Infrastructure

Time-bound subsidies may be appropriate to

- create capacity within regulatory and supervisory bodies;
- support the creation of industry associations; and
- develop training institutes and credit information agencies.

#### Pillar 3. Subsidies for Economic and Social Infrastructure

Subsidies in this category involve investments in economic and social infrastructure that facilitate the carrying out of income-generating activities by members in the community. Such subsidies should

- decline over time, as the local organizations build up capacity to cover costs through user fees; and
- include a match from the beneficiaries, preferably in cash but also in kind, depending upon the beneficiaries' economic circumstances.

Source: Excerpted from World Bank (2006, 13–16).

29 See Box 4, Page 12 in Rajalahti and Farley (2010).

The revised rural finance strategy by the international agencies recognized that potential borrowers of financial sector loans must attain a minimum level of economic capacity before they can effectively use and repay loans. Those who are extremely poor, living in post-conflict or emergency situations, or seriously ill may not be able to profitably manage an economic activity. Therefore, grants may be useful to help kick-start an economic activity by providing the very poor with an income-generating asset, if these grants are followed by a package of assistance to help beneficiaries graduate to sustainable sources of financing. However, since grants are not a source of sustainable financing, their use should be limited in time. The World Bank also drafted guidelines for grants to the poor to help them accumulate assets and thereby build their capacity for future access to loans. These guidelines are listed in Box 2.

### **BOX 2: Subsidies to the Poor for Asset Acquisition**

General guidelines for grants for economic activities include the following:

- Grants for economic activities should be limited to (1) very poor people who are too vulnerable to take on the risk of a loan, (2) poor people living in communities that are beyond the reach of financial institutions willing and able to extend services to the poor, and (3) poor people with some assets and earning capacity but unable to earn enough to pay the investment costs within a reasonable time frame.
- Grants must be carefully targeted with strong eligibility criteria to avoid capture of benefits by elites.
- Grants should be made on a matching basis, and beneficiary equity contributions should be made in cash if possible. In-kind contributions would only be appropriate in situations such as emergencies or post-conflict situations, where the majority of participants cannot be expected to save for a cash contribution.
- To ensure that beneficiaries value and care for the assets financed by the grant, they should contribute as high a percentage as is reasonable, given their overall economic circumstances. This should be at least 10 percent of total cost, and in many cases, a much greater percentage.

- Developing a cost-recovery mechanism can help ensure that only people with serious intentions receive grants. One possibility would be to establish local savings and credit associations to capture recoveries and hold beneficiary savings. The recoveries would help capitalize the entities for future lending within the groups.
- Grants are sometimes made to groups to finance expensive assets that cannot be provided by grants to individuals. However, conflicts can arise from group ownership of an asset. If group ownership does not have clear advantages that significantly outweigh these potential conflicts, it might be preferable to provide grants to carefully targeted individuals.
- For poor people with some assets and income-earning capacity, financing a portion of the investment with a grant and the remainder with savings and a loan from a financial institution should be considered. There should be a strict separation between the financial intermediary issuing the loan and the body issuing the grants, even if the funding comes from the same financial institution. This way, it can be made clear to the beneficiary that the loan is indeed a loan and needs to be paid back. If both sources of funding appear to come from the same organization, confusion among beneficiaries is likely to result in poor repayment and damage to the local credit culture.
- Grants for income-generating activities should in many cases be combined with training in selecting, planning, and managing economic activities. The World Bank Institute has an established grassroots management training program, which includes household management, business skills, and financial skills. Such training programs improve the ability of targeted groups (especially rural women) to manage their income-earning activities and finances, often obviating the need to seek credit and making them more successful when they do. Such programs are sometimes linked with literacy and health programs.

*Source: Excerpted from World Bank (2006, 13–16).*

Some MFIs have experimented with temporary grants for the very poor. BRAC, the huge NGO/MFI in Bangladesh, is a well-known leader in providing this type of infant industry support for some of its poorest members. CGAP and the Ford Foundation are testing nine graduation models that target the ultra-poor (El-Zoghbi, Montesquiou, and Hashemi 2009). However, such subsidies raise the possibility that pressures could develop to convert the temporary client subsidy into a permanent subsidy. Grants provided to the poor by MFIs imply that richer borrowers pay higher interest rates to cover the cost of the grants or that the MFI obtains a continuous supply of external subsidies to finance this component of its operations (Armendariz and Morduch 2005).

Subsidies for savings rather than credit could be even more important for the poor. IFAD's strategy notes that savings are important because they enable poor households to withstand income shocks and mitigate the effect of emergencies and crises. Access to secure savings services is also expected to promote financial discipline and help borrowers service their loans on a timely basis. However, customer education and protection are critical, savings should be adequately protected, and any risks should be clearly explained to savers (IFAD 2009a).

### 8.6. THE CONCEPT OF SMART SUBSIDIES

The debate over the proper use of subsidies has focused attention on the idea of designing so-called "smart" subsidies. Smart food subsidies aim to increase food availability in the short term while stimulating growth and rural development and increasing (or at least not suppressing) effective demand for and commercial distribution of inputs in the long run (Dorward et al. 2008). The concept of smart subsidies seems to be most advanced by supporters of fertilizer subsidies in Africa when they propose that governments avoid past mistakes and implement instead "smart subsidies" designed to target the poor and support rather than undercut private input distribution markets (Minot and Benson 2009). Although these arguments paint an enticing picture for smart subsidies, they provide little guidance on what form they should take in practice, how the traditional problems of elite capture and resale can be avoided, how subsidies can best be administered (for example, through private or state-controlled systems), and how leakages and distortions can be minimized. Little evidence is provided on the relative costs of subsidies versus other forms of income or food transfer (Crawford, Jayne, and Kelly 2006).

Two important caveats about fertilizer subsidies apply to all subsidies. First, there are significant opportunity costs in devoting substantial public resources to the supply of fertilizer, a private good (as is credit), at the expense of public goods, such as infrastructure, education, or public health services, that may have a greater impact in reducing poverty (Minot and Benson 2009). Second,

...although there is an increasing perception among political leaders that there is a huge and unacceptable human cost in waiting for markets to develop well enough to support agricultural intensification in Africa, it may be equally important to ask what is the human cost of not taking active steps now to make markets work in the future. There is a very real possibility that quick fix approaches to promote fertilizer use may leave inadequate resources and little political will for effectively improving the situation for the long run (Crawford, Jayne, and Kelly 2006, 46).

The use of subsidies to meet short-term objectives, therefore, potentially implies high opportunity costs in the form of insufficient resources for and lack of attention to long-term development needs.

### 8.7. SMART SUBSIDIES FOR MICROCREDIT AND AGRICULTURAL CREDIT

The pros and cons of subsidies for microfinance have been analyzed based on their implications for agricultural credit



*Savings Credit Cooperative associated with XacBank in the Hentii Aimag Province of Mongolia (Photo: Michael Hamp)*

(Armendariz and Morduch 2005). Smart subsidies were defined as carefully designed interventions to minimize distortions, mistargeting, and inefficiencies while maximizing social benefits. The authors accept the financial system's

argument of “subsidize the institution but not the borrower” but recognize that this is impossible in practice because any subsidy to an institution means it has fewer costs to pass on to borrowers. A variation of this idea is to subsidize start-ups but not operating costs, but this is hard to accomplish in practice unless the provider of the subsidy (government or donor) has a firm and credible exit strategy.<sup>30</sup> It is easier to justify indirect subsidies for the creation of public goods useful to several financial institutions or direct subsidies used for specific time-bound institution-building tasks.

One example of a smart subsidy is the World Bank’s new Agriculture Finance Support Facility, launched in June 2009 to subsidize the expansion of agricultural finance. The facility, with the support of the Bill and Melinda Gates Foundation, will provide capacity-building grants to retail financial institutions in Africa and Asia for up to 50 percent of development costs for initiatives that will enable them to enter into or significantly scale up agricultural lending. Eligible expenses include technical advice, rural outreach infrastructure, staff and client training, consultancy services, and staff salaries on a declining basis. Grantees will exchange experiences through peer-learning and networking opportunities.<sup>31</sup>

*Conclusions.* The following general guidelines for “smart or market-friendly subsidies” emerge from this summary of subsidy issues:

- Subsidizing the institution but not the borrower is the best way to reduce distortions even if this implies a degree of direct subsidy to borrowers.
- Projects to subsidize selected institutions should explicitly consider the interest rates to be charged relative to competing institutions so the subsidies do not undermine competition.
- Subsidies that successfully create public goods for the benefit of the entire financial sector may generate higher returns than subsidies for specific institutions because no single institution can justify making the investment alone when the benefits accrue to many.
- Subsidies for institution-building of individual financial institutions are easier to justify if there is a natural positive spillover to nonsubsidized institutions. Subsidies to finance innovations created through networks of financial institutions may be preferred because of the

likelihood that the benefits will be spread among all members.

- Indirect subsidies that benefit many borrowers may generate more total benefits than direct interest-rate subsidies to borrowers.
- Quantitative performance measures should be included in project agreements so subsidies to financial institutions do not dull incentives for achieving high performance levels. For this reason, subsidies need to be time-bound with explicit exit strategies specified for the supplier of the subsidies.
- Comparative cost-benefit studies are needed to identify which subsidies generate the greatest payoff in practice.
- Recipients of grants should provide matching cash or in-kind contributions to demonstrate their commitment to the projects funded.
- The provision of grants to financial institutions should be designed so recipients clearly understand the difference between grants and loans that need to be repaid.

<sup>30</sup> The authors use the example of the difficulty of removing favorable tariff protections for infant industries.

<sup>31</sup> Information on this facility can be found at [www.agrifinfacility.org](http://www.agrifinfacility.org).

## Chapter 9: **FIVE MAJOR APPROACHES TO SUPPORT AGRICULTURAL FINANCE AND DESIGN OF SUBSIDY INFLOWS**

This chapter discusses five major interventions frequently supported by governments and international agencies to support financial services. These interventions are (1) microinsurance and weather index-based insurance, (2) guarantee funds, (3) warehouse receipts, (4) agricultural development banks, and (5) agricultural investment funds. These interventions may be useful in their own right, but they are also important because they may induce financial institutions to serve more rural clients and farmers. All involve some kind of subsidy intended to kick-start a private-sector activity. This section summarizes the rationale for each and offers an analysis of the extent to which they seem to achieve the objective of contributing to expanded agricultural credit.<sup>32</sup>

### **9.1. MICROINSURANCE AND WEATHER INDEX-BASED INSURANCE**

Access to insurance for agriculture and poor people has received comparatively little attention relative to access to credit in most developing countries, but that has changed dramatically in recent years because of two major lines of experimentation. The first is microinsurance for poor people offered as a standalone product or in conjunction with other MFI products. The second is indexed crop and livestock insurance targeted to agricultural producers. The rationale for providing insurance to the poor is that they live in risky environments, and without insurance they are less likely to take advantage of income-generating opportunities to reduce poverty. In agriculture, poor uninsured farmers may choose to produce low-value, low-risk crops rather than adopt higher-income alternatives. Lenders may refuse to grant credit because they perceive that uninsured farmers are too risky. As with credit markets, informal and village-based risk-sharing and insurance mechanisms are considered inferior to formal insurance.

#### **9.1.1. Microinsurance**

Microinsurance aims to protect low-income people against specific risks in exchange for regular premium payments proportionate to the likelihood and cost of the risk involved. Much of the emphasis of microinsurance is on reaching poor people who work in the informal economy and therefore have less access to commercial insurance provided through employment (Churchill 2006a). Yet insurance for poor rural people is not limited to microinsurance alone; where population densities and service costs permit, health insurance, conventional crop insurance, and other types of insurance are increasingly provided by national insurance agencies, especially on the Indian subcontinent.

Four major challenges face commercial insurers attempting to serve the poor. First, their products are not ideally designed to meet the small irregular cash flows typical of the informal economy. Second, the commercial insurance industry lacks a distribution network necessary to reduce transaction costs. Third, insurance companies lack experience and data to calculate the risks faced by the poor and adequate methods to control adverse selection and moral hazard. Fourth, the poor are often skeptical about insurance and refuse to pay premiums for insurance products offering future benefits that they may never receive.

Microinsurance can be considered either a private market product or an activity that plays a redistributive social function worthy of public subsidies. Therefore, advocates argue that expanding sustainable insurance should involve dual objectives: work with the private sector to supply appropriate products and systems and work with the public sector to increase demand for insurance and subsidize the costs for the poor (Jacquier et al. 2006). Therefore, the insurance frontier lies in finding ways to successfully wed social protection against extreme risks with private market protection against smaller risks (Hill and Torero 2009).

<sup>32</sup> See also GTZ's *Rural 21*, Issue No. 4, 2010.

To protect their loan portfolios, MFIs prefer clients with insurance, and because they already have financial transactions with the poor, it may be most cost-effective for them to link insurance with other products. Some MFIs offer insurance, frequently developed by or in conjunction with insurance companies, along with other financial products and make insurance purchase obligatory for borrowers to reduce costs and ensure viability.<sup>33</sup>

Long-term sustainability of microinsurance has been difficult to achieve. Subsidies have been a mixed blessing and are not recommended. For example, government subsidies have kept the cost of health care insurance artificially low in several countries. Although subsidies speed uptake in the early stages of programs, they make insurance vulnerable to political influence and policy changes. When subsidies are discontinued, premiums must be raised, leading to a contraction in renewal rates (Churchill and Garand 2006).

The future for expanded microinsurance will depend on

- development of an insurance culture to increase demand for insurance; a logical place to start is through credit life insurance offered by MFIs;
- product designs responsive to evolving customer demands in which health insurance may be the logical next step after credit insurance; the limits of market-based solutions may emerge in this process so public social protection services may become a logical demand;

<sup>33</sup> Several public and private sector microinsurance models are discussed in Churchill (2006) and form the basis for conclusions presented in that volume and summarized here.

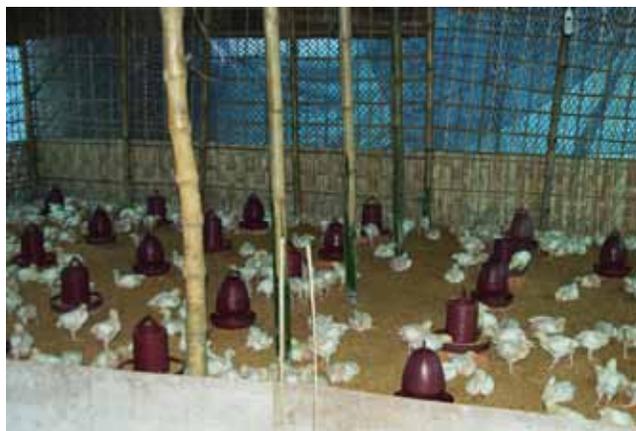
- improved institutional capacity, investments in new delivery channels, and creation of new insurers;
- improved operating efficiency to reduce premiums;
- enhanced business models including the increased use of reinsurance;
- regulations providing a balance between prudence and entry barriers; and
- strong macroeconomies with efficient financial markets and infrastructure to facilitate long-term investment strategies (Botero et al. 2006).

### 9.1.2. Indexed crop and livestock insurance

Creating sustainable insurance for crops and livestock is especially challenging. Besides the normal adverse selection and moral hazard problems, returns to farming are typically covariate, and frequent health risks impose logistical challenges. The problems of providing sustainable crop insurance are well known (Hazell, Pomerada, and Valdes 1986; Roberts 2005). It is costly to write insurance contracts for large numbers of small farmers and implement farm-level inspections. Because farmers are unwilling to pay the full cost of all-risk crop insurance, traditional programs are public schemes subject to political pressures and are often used as income transfer mechanisms for farmers. A distinction exists between, on the one hand, insurance that “protects” the livelihoods and assets of the poor from catastrophic losses that must be subsidized as part of the social safety net and, on the other hand, insurance that is linked to agricultural development through private intermediaries. The latter may be sold on an unsubsidized basis if the insurance enables



Ethiopia (Photo: Renate Kloepfinger)



Poultry farming by a microfinance client/loan beneficiary of BRAC in Rangpur, northwest Bangladesh (Photo: Michael Hamp)

farmers to participate in new technologies or high-value markets that significantly raise expected incomes.

The creation of index-based insurance has raised hopes of breaking the major barriers to protecting individual farmers against production risks. With an index, insurance is paid out when an independently observed trigger (such as level of rainfall or temperature) shows that an insurable event has occurred. Index insurance has the potential of reducing several problems. First, it reduces moral hazard because the insured cannot significantly influence the index value and the indemnity paid by the insurance contract. Second, adverse selection problems are reduced because the contract's indemnity schedule and premium rate are based on publicly available rather than privately held information. Third, it does not require individually tailored terms of indemnification or verification of individual loss claims so administrative costs are reduced, making it more affordable, particularly for poor farmers or cooperatives, farmer associations, or lenders that purchase insurance for them. The disadvantage is that basis risk (the risk that payouts may not match the losses a farmer experiences) may be substantial, making it difficult for farmers to understand and accept (Skees 2008).

Several pilot index schemes have been launched, but it is too early to judge their success. A small number failed to generate demand and were discontinued. In India, however, 1.25 million farmers were reached in 2009. Experience to date suggests the following lessons: (1) insurance needs to be accompanied with improved access to technology and credit so that farmer incomes are likely to rise with adoption, (2) basis risk needs to be reduced, (3) improving understanding and trust are key to increasing demand for the insurance, (4) scaling up will require public goods investments in weather data infrastructure and in creating new products, and (5) uptake will be affected by whether lenders offer loans to clients to pay for insurance premiums and the extent to which insurance premiums are subsidized.<sup>34</sup> The use of smart subsidies to kick-start insurance markets must be carefully justified, and robust impact studies are needed to learn from pilot schemes and demonstrate their economic and social benefits.<sup>35</sup> IFAD and the World Food Programme

(Hazell et al. 2010) suggest the following key drivers of sustainability and scalability of weather index insurance:

- Create a proposition of real value to the insured, and offer insurance as part of a wider package of service.
- Build the capacity and ownership of implementation stakeholders.
- Increase client awareness of index insurance products.
- Graft onto existing, efficient delivery channels, engaging the private sector from the outset.
- Get access to international risk-transfer markets.
- Improve the infrastructure and quality of weather data.
- Promote enabling legal and regulatory frameworks.
- Monitor and evaluate products to promote continuous improvement.

A sequential strategy for developing insurance markets beginning with linkages to lending was proposed by Skees et al. (2007, 10). This strategy proposes using index-based weather insurance to first address the biggest risks of major catastrophes. This step will then facilitate the development of other products for different categories of farmers and rural households. The strategy advocates long-term sustainability and limits the role of government to that of a facilitator and not a direct deliverer of insurance. Governments may choose to fund insurance for catastrophic losses as part of the social safety net but generally not provide insurance<sup>36</sup> nor provide direct premium subsidies that will undermine incentives for private sector insurance. In practice, subsidies tend to favor wealthier farm households, thereby eroding poverty objectives, while targeted premium subsidies rarely work as planned. Governments should establish an appropriate enabling environment, provide certain public goods, support improvements in the legal and regulatory environment, improve data systems and collection, conduct educational efforts about weather insurance, assist with product development, and facilitate access to global insurance and reinsurance markets.<sup>37</sup>

34 Miranda and Gonzalez-Vega (2010) demonstrate that subsidies for index insurance premiums may affect borrower incentives to repay loans and, therefore, the returns earned by lenders. Lenders may be in a better position to buy insurance than borrowers.

35 Carter, Galarza, and Boucher (2007) conducted an analysis of the potential for weather-based index insurance in Peru and identified three major reasons for private market's failure to provide it: (1) the novelty of the product and the costs associated with its innovation; (2) the scarcity of long-term data on which to base

insurance contracts; and (3) the cost of marketing the products, especially to the smallholder sector. They use the public good argument to advocate for a public role in underwriting innovation costs, creating reliable long-term information, and sharing some of the excess risks until more long-term information is available.

36 Clarke and Dercon (2009) are more open to the use of subsidies for insurance for low-income people.

37 In a recent paper, Teh and Martina (2008) focus on the catastrophe issue and demonstrate their belief that conglomerates of intermediate financial institutions may need to be formed in developing countries to acquire risk-transfer financial instruments. They argue that the preferred instrument in responding to natural

The current insurance experiments need to be evaluated with attention to improved understanding of basic questions such as:

1. developing a better understanding of traditional risk mitigation strategies of households, such as savings, accumulation of saleable assets, and on-farm management practices;
2. learning more about the preferences of farm households, their willingness to pay for insurance, and the appropriate role of subsidies to kick-start insurance markets;<sup>38</sup>
3. alternative ways to deliver insurance products since not all potential buyers will be borrowers of financial institutions; and
4. the role of the government in creating disincentives for insurance in crisis situations through programs of emergency relief, loan forgiveness, and subsidized emergency loans.

*Conclusions.* A considerable amount of analysis is required concerning the design of insurance products and appropriate delivery systems for the poor and for agriculture. Donors can play a useful role in conducting or financing careful evaluations of insurance experiments to improve understanding about basic questions. Additional experiments in more diverse environments and with different product designs and delivery systems will be important to eventually develop best practices. Robust evaluations are needed to assess whether insurance investments produce the desired effects and to determine the appropriate role for public subsidies in developing private insurance markets and for catastrophe insurance.<sup>39</sup> The proposed insurance development strategy

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disaster floods and droughts is subsidized catastrophe bonds, not reinsurance or lump-sum foreign disaster assistance. Foreign assistance should focus on the idea of subsidizing the issuing of catastrophe bonds. Stutley (2010) also discusses the role of government in the development of index insurance for major natural disasters in Africa.

38 A discussion of the pros and cons of subsidies for weather-index insurance and on the design of appropriate insurance products can be found in Hazell et al. (2010).

39 Some weather risks may be impractical to insure conventionally, and derivatives and other alternative risk transfer mechanisms can provide a solution. Insurance-linked securities or cat bonds expanded until 2007, when cat bond sales reached US\$7 billion of insured covered globally. The market then contracted because of the global financial crisis but has recovered again somewhat. A pilot scheme has been launched in the Caribbean, and cat bonds are expected to replace a significant percentage of conventional disaster relief in developing countries.

of first addressing the biggest risks of major catastrophes requires careful analysis.

In addition, there may be short-term opportunities for donors and governments to accelerate progress and speed innovations for both microinsurance and index-based crop and live-stock insurance by supporting financial institutions committed to developing sustainable insurance. Bundling insurance with loans and savings is emerging as a logical first step to reduce costs and speed adoption. Careful feasibility studies are needed to evaluate where conditions are most appropriate for new pilot index-based insurance projects.<sup>40</sup>

The logical role of governments and donors is to focus on long-term investments in public goods, such as weather-reporting stations and basic data collection and analysis, needed to create the necessary conditions for thriving insurance markets. Innovations, technologies, and ongoing experimentation will make it more likely that better insurance protection will emerge for poor households. But complementary investments are also needed in the basic methods of reducing risks through low-cost irrigation, drought-resistant seed varieties, improved sanitation, and better preventive health care (Hill and Torero 2009).

## 9.2. CREDIT GUARANTEE FUNDS<sup>41</sup>

The objective of credit guarantee funds is to reduce default risks for lenders as an inducement to lend to specific target groups or types of institutions. Although the nature of the specific market imperfection is often not well analyzed, guarantee subsidies are often justified to accelerate learning so lenders become more effective in credit analysis. The enthusiasm for guarantees is somewhat surprising. Even though they are widely used in commercial credit transactions, several studies in the 1990s were cautious about advocating guarantees to stimulate lending or expecting significant impacts from credit guarantee projects. There was no international consensus that such schemes widen access to formal bank credits for small and medium enterprises (SMEs).<sup>42</sup>

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40 See Hartell and Skees (2009) for an example of a prefeasibility study that revealed the complications of introducing weather-index insurance in Mali.

41 I am indebted to Calvin Miller for useful comments on this section.

42 Several aspects of this discussion are included in Meyer and Nagarajan (1996), Llisterri and Levitsky (1996), Gudger (1997), Levitsky (1997), Doran and Levitsky (1997), Vogel and Adams (1997), and Gudger (1998).

A recent example of the enthusiasm for and impacts expected from loan guarantees can be found in a report by the Alliance for a Green Revolution in Africa (AGRA).<sup>43</sup> It reported using \$17 million in loan guarantee funds to leverage \$160 million through four major lending programs. This included a \$10 million line of credit that the National Microfinance Bank in Tanzania agreed to lend to agro-dealers at an interest rate of 18 percent, compared to the typical rate of 46 percent charged by MFIs. In Kenya in 2008, AGRA and IFAD provided \$2.5 million each as a loan guarantee that leveraged \$50 million from Equity Banks. As of May 2009, the program had loaned more than 679 million Kenyan shillings (about \$9.8 million) to almost 20,000 small-scale farmers. The bank reportedly hired 100 new staff to expand and improve the program's outreach and effectiveness. In March 2009, Standard Bank in Africa agreed to offer \$100 million in loans to smallholder farmers and agricultural businesses: \$25 million each went to Ghana, Mozambique, Tanzania, and Uganda. With several contributing partners, AGRA developed a loan guarantee fund of \$10 million for these loans (AGRA 2009). No details were provided on the design of the guarantees or the circumstances of the lenders involved to show whether the guarantees actually induced these amounts of additional lending.

### 9.2.1. Rationale for guarantee schemes

Arguments in favor of guarantees follow a similar pattern (for example, Doran, McFayden, and Vogel 2009). Banks have liquid funds but are risk averse so they invest in secure government securities rather than make retail loans to small farmers and SMEs or wholesale loans to cooperatives, NGOs, and other MFIs that serve these neglected markets. Therefore, it is believed that potential borrowers have profitable projects but are starved for credit. These problems are exacerbated when legal and administrative frameworks do not support collateral contracts effectively, resulting in larger collateral requirements than necessary for prudent lending.<sup>44</sup> Collateral substitutes, in the form of third-party sureties or partial guarantees from external funds, are sometimes available, but guarantee funds are considered necessary to break the credit bottlenecks. Once lenders gain experience, it is

expected that they will see lending to the target group as less risky than envisioned and will make nonguaranteed loans when the guarantees end. Guarantees are perceived as cost-effective for donors; by offering partial guarantees, donors can benefit more borrowers than they could by using the same funds directly for credit lines.

There are at least two problems with this standard rationale. First, if the reluctance to lend is attributed to problems such as legal and administrative frameworks, regulatory requirements, high rates of return paid on government securities, or other problems, then the most appropriate strategy is a market-oriented one that addresses these problems directly so that all borrowers, not just a specific target group, will benefit.

Second, the underlying concept of an international guarantee appears naïve. Guarantors, who know little about the local environment or conditions faced by borrowers, imply that they are better able to evaluate credit risks than are local lenders. As a result, they are willing to offer guarantees to absorb part of the credit risk.

What the guarantors probably mean is that they have learned to correctly evaluate the risk profile of the target group elsewhere and because of this experience will be effective in this new environment, as long as (1) their proven lending technology is used, and (2) the local environmental and other constraints are no worse. Therefore, some minimum conditions must be met (such as appropriate regulations or complementary inputs such as training and technology transfer) for the guarantee to succeed. These complementary activities may actually be more important than the guarantee itself. In extreme cases, the guarantee may not even be necessary or will make little additional impact if the complementary activities are undertaken.

### 9.2.2. Review of guarantee experiences in the 1990s

The reviews of guarantees in the 1990s focused on two main issues. First, there was little clear evidence of additionality—that is, evidence that loans made with a guarantee would not have been made without it. It is difficult to evaluate additionality without a clear counterfactual (what lenders and borrowers would have done without the guarantee). The fact that a lender guarantees a loan does not “prove” that it would not have been made otherwise. Guarantees may have several other possible impacts on lenders. They might induce larger loans, longer-term loans, reduced collateral requirements, reduced interest rates, speedier loan processing, and increased marketability of loans in secondary markets. Just

43 AGRA was initiated in 2006 with initial funding of \$150 million by the Rockefeller Foundation and the Bill and Melinda Gates Foundation to help millions of small-scale farmers and catalyze an African Green Revolution. Other organizations subsequently provided support.

44 An analysis of loan collateral problems and the potential impact of resolving them is presented in Fleisig, Safavian, and De La Pena (2006).

as it is difficult to evaluate the impacts of microcredit, it is difficult to evaluate the impacts of guarantees on borrowers. Potential economy-wide benefits of **loan guarantees**, such as higher employment and economic growth, also need to be tested.

Second, many guarantee schemes were not sustainable without subsidies, and data were sparse to assess whether or not the magnitude of subsidization decreased over time. Many guarantees suspended or delayed payments on claims to preserve the sustainability of their funds, which undermined confidence among lenders. Poorly designed subsidized guarantees may have crowded out the development of private unsubsidized guarantees and hindered rather than aided the development of a market-oriented financial system.

The design of guarantees affected additionality, sustainability and other possible impacts. The critical design features were eligibility, leverage, risk sharing, fees, and claims procedures, but no clear best practices were defined. Many countries believed that guarantees were the most economic way to provide financial support to SMEs, but there was no consensus that they widened access to formal bank credit (Levitsky 1997). A more recent report also concluded that government or donor-financed loan guarantee schemes generally have not led to significant additionality but that mutual guarantee associations seem to be more useful (World Bank 2003).

### 9.2.3. CGAP study of guarantees for MFIs

A CGAP study reviewed guarantees for supporting microfinance (Flaming 2007). The review analyzed loan guarantees issued to back up loans mostly from local banks to rapidly growing, small, profitable MFIs. The MFIs had a strong demand for funding because they did not have access to savings. The guarantees were expected to enable them to obtain bank loans that were otherwise unavailable, and the experience would increase the participating bank's appetite for nonguaranteed lending in the future. Loan guarantees could also increase the MFI's collateral so that local banks would comply with banking regulations concerning unsecured lending. In addition, the guarantees had potential spillover effects in terms of inducing non-MFI lenders to experiment with MFI technologies to lend to farmers and rural residents.

Both the guarantors and MFI managers reported that the guarantees helped the MFIs obtain loans from banks, but they had little impact on the terms of loans offered. The guarantor's annual fees, when added to the bank's interest rate, made these funds more costly than the MFIs' other sources. Therefore, the primary MFI motivation for participating was to



*Selling farm tools in Madagascar (Photo: Maria Pagura)*

begin to develop a long-term relationship with a local bank, to diversify funding, or to gain prestige by associating with an international institution.

The results of the review were mixed regarding MFI graduation to unguaranteed borrowing, for three reasons. First, lenders may continue to use guarantees indefinitely if they are more efficient than other methods of risk management. Second, when guarantees are used to overcome regulatory barriers, they will continue to be necessary for future transactions unless regulations are changed. Third, MFIs often find other funding sources with better terms (such as lower costs, longer terms, lower collateral requirements) than the retail terms offered by local banks. For regulatory, political, and other reasons, banks in some markets chose to lend to MFIs on more favorable wholesale terms. Larger MFIs could raise funds through savings, certificates of deposits, and bonds.

The review found that guarantee agencies subsidize their guarantees, but few supply financial reports, so subsidy levels cannot be estimated. Operating expenses are often supported by general agency budgets and are not allocated to the guarantee. Typically, agencies determine fees by estimating what banks and MFIs would be willing to pay rather than by evaluating the agencies' costs or the true market value of the risk involved.

The overall conclusion was that the cost of guaranteeing MFIs loans would be unsustainable without considerable subsidization. The benefits of guaranteed loans were typically modest, and the costs of the loans were high despite substantial subsidies by the guarantors. As competitive MFIs grew, they found better sources of funding than retail loans from local banks. For most MFIs, bank loans are not a long-term sustainable source, especially when they face

competition and can no longer pass on high funding costs to borrowers. Guarantors realize their greatest potential by focusing on lenders that use guarantees to structure loans to MFIs in conditions competitive with other funding options. No effort was made to compare guarantee benefits with costs.

#### 9.2.4. USAID guarantees

The U.S. Agency for International Development (USAID) implements guarantees through its Development Credit Authority (DCA) to support the programs of its field missions, and it has posted several evaluations.<sup>45</sup> The USAID microfinance program also conducted evaluations of DCA guarantees that help MFIs obtain loans. The primary objective of the DCA guarantees is to influence lender behavior in favor of market segments (such as agriculture and SMEs) that are underserved by lenders. The USAID missions pay the U.S. Treasury an amount estimated as potential losses, but sustainability of a guarantee fund is not an objective, and no costs are imputed for management of the guarantee and the oversight provided by the USAID missions.

Four types of partial guarantees are offered: single project loan guarantees in which specific lenders and borrowers are identified up front; loan portfolio guarantees from lenders to a pool of borrowers; bond guarantees; and portable guarantees in which targeted borrowers shop for the best loan package. It is expected that the effects of guarantees will be sustainable, but sustainability depends on factors beyond the guarantee. Positive impacts can occur at the level of borrowers and participating financial institutions through potentially lower interest rates and collateral requirements and through greater credit availability. The DCA covers up to 50 percent of defaults on loans made by private financial institutions. Since it was established in late 1999, the program reported more than 225 partial credit loan and bond guarantees in more than 60 countries. Claims have been approximately 1 percent, and the total cost to USAID was reported at approximately \$61 million, but no information was provided to explain the costs

included in these estimates. Important details are sketchy concerning the selection of institutions and borrowers for guarantees, guarantee designs and fees, and how the guarantees support local missions.

Only one evaluation report specifically covered agriculture: the José Maria Covelo Foundation (FJMC) in Honduras, which began to offer direct credit as an MFI in 1995. In January 2008 it established the Banco Popular Covelo (Bancovelo), a licensed commercial bank. The guarantee helped FJMC jumpstart its agricultural lending. The number of loans supplied increased along with average loan size and length, while the bank kept interest rates low. However, it is unlikely that these positive outcomes will be sustained because Bancovelo put ceilings on its agricultural lending and may sell its agricultural portfolio. The FJMC experience did not stimulate other MFIs to get involved in agricultural lending. Past governmental debt forgiveness schemes and subsidized interest programs deter lending to agriculture.

The evaluation of DCA guarantees in Uganda was more rigorous than the other five evaluations. The USAID Rural Savings Promotion and Enhancement of Enterprise Development (Rural SPEED) project managed three DCA loan guarantees with six banks and one microfinance depository institution (USAID/Rural SPEED 2007). One guarantee supported lending to SMEs and MFIs by seven commercial banks, and the second targeted small loans to micro, small, and medium enterprises (MSMEs), especially in rural areas. The third was a collateral management program to encourage lending to the grain industry, but it was canceled for reasons unrelated to the guarantee.

About 40 percent of the guaranteed loans went to agriculture in the first guarantee, and 78 percent in the second. The guarantee coverage of 50 percent on net principal losses was thought to have increased lending. Repeat loans to MFIs were larger than the original loans, suggesting that the guarantees helped cover the additional risk. Some banks reduced collateral requirements, others began to accept different types of collateral, and a few offered unsecured lending to proven clients. The guarantees helped two large MFIs obtain credit, and two could now get access to commercial credit without a guarantee. One bank self-selected to “graduate” and lend to rural MSMEs without guarantees. Claims paid by USAID under the first guarantee were only 1.6 percent of portfolio lent, and no claims had yet been made under the second guarantee. These low claim rates may show that lenders were being too selective and not effectively testing the market in spite of the guarantees.

45 Unless otherwise noted, information about the DCA and the five evaluations was obtained from the material posted at [http://www.usaid.gov/our\\_work/economic\\_growth\\_and\\_trade/development\\_credit/](http://www.usaid.gov/our_work/economic_growth_and_trade/development_credit/). The evaluations include (1) EcoBank, a prominent Nigerian-owned retail bank in Ghana; (2) Bank Danamon, a large and profitable private commercial bank in Indonesia; (3) José Maria Covelo Foundation in Honduras; (4) Local Government Unit Guarantee Corporation in the Philippines; and (5) portfolio guarantee with Bank Center-Invest, a regional bank in the Southern Federal District, Russia. For unknown reasons, USAID requested that the evaluations discuss only findings and conclusions, not lessons learned or recommendations.

Technical support was credited with facilitating the use of guarantees and building understanding of SME lending. This support ranged from intensive two-week credit officer training to follow-on loan mentoring to specialized training in agricultural lending. Banks were positive about the complementary support activities in the loan mentoring program, and all banks liked the ability to interact with the DCA portfolio manager at any time for clarifications essential to speedy operations.

*Conclusions.* The case for expecting major impacts from guarantee schemes continues to be unclear. The methodology used to evaluate the impacts of guarantees has been weak, so questions of additionality and sustainability are as valid today as in the 1990s. It is possible that guarantees may provide an additional bit of comfort for financial institutions that are interested in testing the feasibility of lending to a new client group. It is unlikely, however, that a guarantee alone will induce much additional lending by lenders who do not have such an interest.

International agencies could perform a valuable service by conducting a few robust evaluations to determine if and under what conditions guarantees really produce the expected results. The evaluations should assess how the details of guarantee design affect performance. It is also critical to evaluate whether they distort markets and prevent rather than encourage private credit market development. The sequencing of market development may be important in affecting guarantee performance. For example, if a new credit registry system is created, a guarantee may help nudge lenders to begin to use it.

The most interesting possibility is that the training and technical assistance components of guarantee schemes are more important than the guarantees themselves in stimulating lenders to work with a new client group. This suggests that “guarantee plus” programs may be critical in affecting performance. The guarantees may be the frosting on the cake, not the cake itself.

### 9.3. WAREHOUSE RECEIPTS

Warehouse receipts are an old form of collateralized commodity transaction now being considered in several countries as a catalyst to stimulate agricultural lending where other attempts have failed.<sup>46</sup> The basic rationale is that instead of taking a credit risk by lending against the borrower’s expected future cash flow and repayment capacity, the lender takes a minimal performance risk because the collateralized commodity can be easily liquidated in the event of nonperformance (World Bank 2005b). The commodity becomes the first source of repayment rather than the second source, as in typical loans.

Warehouse receipts play a limited role in agricultural credit by facilitating postharvest financing. Except in the case of double or triple cropping, credit obtained after harvest does not directly solve the problem of supplying the working capital required to plant a new crop. After harvest, the commodities

<sup>46</sup> Several publications discuss the concept of warehouse receipts and provide examples from several countries (such as Fries and Akin 2004; Coulter 2009; and World Bank 2005b).



Warehouse storage and receipt, India (Photo: Mark Wenner)



Uganda (Photo: Renate Kloeppinger)



*Savings Credit Cooperative, Ethiopia (Photo: Renate Kloeppinger)*

are stored in a licensed and bonded warehouse that issues a receipt certifying the amount and quality stored. The owner of the commodity (farmer, miller, trader, company, cooperative, or farmer association) gives the receipt to the lender in exchange for a loan. The lender offers a percentage of the value to cover the cost of selling the commodities in the event of loan default, as well as any price declines that may occur before liquidation. More sophisticated lenders can use hedging to reduce price volatility. The warehouse operator will not release the commodity without authorization from the lender. Usually the borrower who owns the commodity plans to use or dispose of it and repay the loan before the due date, but the lender has the legal right to sell it in case of default. Repurchase agreements, factoring, and other forms of collateralized transactions are used in more advanced markets.

Warehouse receipts lending can reduce the risk and transaction cost impediments for agricultural lenders caused by small size transactions and high information and supervision costs, so interest rates may fall for borrowers. Securely stored commodities may be second only to land as preferred collateral, providing that the legal procedures for selling stored commodities are efficient. Through the conversion of commodities into collateral for short-term loans, borrowers can preserve their land, buildings, and other assets as collateral for long-term loans.

### 9.3.1. Prerequisites for warehouse receipts lending

There are at least seven prerequisites for successful warehouse receipts lending: (1) an appropriate legal system that essentially treats warehouse receipts as cash; (2) active commodity markets to value and liquidate commodities; (3) a system of grades and standards for classifying commodity quality; (4) regular patterns of postharvest seasonal price increases sufficient to compensate for storage and borrowing costs; (5) appropriate financial, technical, and administrative

standards for warehouse operations and effective licensing and monitoring of warehouses; (6) an effective indemnity fund or bond as insurance against potential fraud or negligence by warehouse operators; and (7) local financial institutions willing to experiment with a new product. Oftentimes these prerequisites can be most easily met for traditional export commodities such as coffee and cotton, but their use for cereals and other nontraditional export crops often requires preliminary work to create essential support systems.

The liquidity that warehouse receipts financing provides may be useful for traders, millers, and processors and may indirectly benefit farmers through increased competition for their harvest. But it makes only a limited direct contribution to the objective of increasing production credit for small farmers. Private warehouse operators normally have little interest in dealing with the small transactions of individual farmers. Farmer associations and cooperatives may be more important users and managers of warehouses, but they are often poor credit risks for lenders because of poor management and weak governance. Moreover, it is difficult for member-owned institutions to enforce grades and standards for commodities delivered by their members.

### 9.3.2. Warehouse receipts financing in Africa

Warehouse receipts financing seems to be less well developed in Africa. It is often reported to be unavailable for smallholders and is used mainly by a few large borrowers, usually importers, under expensive collateral management agreements involving international inspection companies. Models funded by donor NGOs have often failed because of limited scale economies and government policies that damage incentives for storage by importing commodities in the event of expected grain shortages (Coulter and Onumah 2002; Coulter 2009).

A more inclusive model of warehouse receipts financing was proposed for Zambia. This proposal suggested making commercial finance more readily available through a network of privately managed warehouses authorized to issue transferable warehouse receipts. To engender confidence, an arms-length, self-financing regulatory agency, insulated from direct government control would be created to certify and inspect warehouse operators. Certification would be based on meeting criteria such as suitability of warehouses, experienced management, minimum net worth, insurance, a bond, and acceptance of frequent unannounced inspections. The certification agency was designed to operate on user fees but with subsidies in its initial years. The objective was to break even quickly by increasing the number of warehouses and

the range of crops stored. The service would be available to producers, processors, and traders with a minimum grain deposit of 10 to 30 tons. Commodities to be stored initially would be maize, wheat, and soybeans meeting prescribed weight and grading standards, with expansion later to other crops. The certified warehouse operators would own or lease sheds or silos on commercial terms and would be free to charge economic storage rates (Onumah 2003). Although the features of this design seem sound, Coulter (2009) discussed the problems encountered in implementing a warehouse receipts program in the country. A major remaining constraint is the need to make appropriate changes in the agricultural credit act.

Two African case studies summarize the challenges and accomplishments of projects to expand warehouse receipts lending. A village-level rice inventory credit product called "Grenier commun villageois" (GCV) is offered by the Caisses d'Épargne et de Crédit Agricole Mutuels de Madagascar (CECAM) in Madagascar (Bouquet, Wampfler, and Ralison 2009).<sup>47</sup> Six-month loans allow producers to store harvests until the lean season, when market prices are normally higher. After repaying the loan, the producer can either (1) consume the stock or (2) sell it, thereby realizing the difference between the harvest and lean period prices. The minimum quantity required for a loan is only 75 kilograms, so it is easily accessible to small-scale producers who cannot provide the collateral required for other loan products. Storage is provided in local warehouses secured by two locks, one kept by the CECAM credit officer and one by the representative of the warehouse. Interest rates are charged at 3 percent per month for a minimum of five months.

No third party is involved. CECAM monitors the storage, and the members who store their inventories are responsible for maintaining the stock in good condition. Both rich and poor producers use the storage, but poorer households reportedly use it for consumption smoothing more than the rich households. They value the GCV as a means to forcibly save rice for family consumption until the lean season. But the poor are also highly dependent on agricultural income and unable to engage in remunerative off-season activities, so may have a hard time repaying the loan. This situation may force them to take expensive informal loans or sell their stored rice in advance to a local trader at a discounted price.

The second case is Uganda, where USAID implemented a pilot project with a warehouse receipts component for the 2,100-member Kapchorwa Commercial Farmers Association (KACOFA). It was designed to increase maize farmers' incomes by overcoming the cyclical nature of farm income and lack of access to credit (USAID/ Rural SPEED 2006). The Stanbic Bank branch agreed to lend up to 80 percent of the value of farmers' maize stored in the association warehouse while it participated in USAID's DCA loan guarantee program, also managed by the Rural SPEED project (see section 8.2.2.4. on guarantees). Two other USAID projects worked with KACOFA to increase farmer production and improve postharvest handling to improve maize quality. USAID helped develop improved warehouse receipts legislation, while other donors supported farmer development activities in the region. To increase procurement from small farmers, the World Food Programme (WFP) agreed to buy high-quality maize from the warehouse at 350 Uganda shillings per kilogram, compared to the 120–180 shillings paid by local traders. USAID subsidized the warehouse collateral manager for the first year, but KACOFA was expected to produce enough grain to make subsidy unnecessary the second year.

The amount of grain delivered to the warehouse dramatically exceeded initial expectations. As a consequence, KACOFA considered expanding the warehouse receipt system to barley and beans, and similar programs are being developed in other parts of Uganda. However, because many donor projects were involved, it is difficult to disentangle the impact of the warehouse receipts on lender behavior or to clearly identify all prerequisites for success. The complex reality of operating a warehouse receipts system was becoming clear and was viewed as an expensive undertaking for the nascent farmers and farmer groups. The substantial requirements of operating a suitable collateral-managed warehousing facility (especially insurance, secure premises, and cleaning and drying facilities), in addition to the high cost of managing collateral, were considered too large and complicated to be handled by a small farmers' organization without substantial external financial support (Besigye 2009).

Another recent effort in Uganda attempts to deal with these problems. It involves an agreement between the WFP and the Uganda Commodities Exchange to construct and rehabilitate warehouses for the WFP maize procurement and storage program. Discussions are under way with banks concerning the issuance of warehouse receipts for use as loan collateral (Bashaasha and Odeke 2010).

<sup>47</sup> Village-level warehouse receipts systems operated by banks are reported to exist in India, but no information was obtained about them.

Several public good investments have been identified to enhance warehouse receipts systems in Africa (Coulter 2009). For example, to achieve widespread provision of such services, it will be necessary to establish accreditation or licensing to build up confidence in the industry. Such systems will ensure standardized documentation, particularly electronic documentation, and establish uniform performance guarantees to protect depositors against warehouse failure or bankruptcy. Such systems and safeguards increase financial institutions' confidence and reduce their transaction costs in dealing with the systems. These systems will also require strict regulatory processes to prevent fraud. If countries opt for direct public sector regulation, authority needs to be vested in the body least susceptible to political interference. Coulter also argues for a strategy of developing warehouse receipts systems within a framework of overall market development and integrating all market participants, including the WFP, to achieve sufficient scale.

*Conclusions.* There are too few careful analyses of warehouse receipts systems to evaluate when and where they make important contributions to improved access to agricultural credit, especially for small farmers. They may improve commodity storage and marketing functions in value chains, with trickle-down benefits in terms of prices paid to farmers. The high costs associated with creating, operating, and monitoring these systems imply that scale is a serious challenge, so simple, small-scale village-level systems may be the most appropriate way to benefit small farmers directly. Moreover, the critical need for small farmers may be production loans that meet seasonal cash outflows at the beginning of the planting season rather than marketing loans after harvest.

There is also a critical need for more analysis of farm-level commodity price data to determine which crops normally experience seasonal price variations large enough to compensate for storage and borrowing costs. If price variations are too small or irregular, there is little economic rationale for the public sector to subsidize a warehousing strategy. The fact that warehousing is common for export crops suggests that analysis is needed to understand the economic barriers that constrain expansion into grains and other commodities produced primarily for local markets. Sequencing may also be important. Once farmer associations and cooperatives have established a successful track record of performance, they may consider undertaking warehouse management and linkages with financial institutions to benefit their members. Several long-term public good investments have been identified to make warehouse receipts financing work effectively in Africa. Many of them may be appropriate for donor funding.

#### **9.4. SPECIALIZED AGRICULTURAL DEVELOPMENT BANKS<sup>48</sup>**

Several forms of institutions deliver financial services in rural areas, and they offer different combinations of advantages and limitations. For example, cooperatives, credit unions, and other member-owned institutions may be able to reach more distant locations with cheaper services because they are located closer to the clients, have access to local information, and rely on volunteers for administrative functions. However, membership organizations frequently experience governance problems. Small unit or community banks are also located close to clients and share the problem of being vulnerable to localized shocks, such as crop failures, that damage many clients simultaneously. Commercial banks have the capacity to offer multiple services, provide more safety for savings because they are regulated, and have extensive branch networks, but they are expensive institutions for managing small loans (Zeller 2006).

Specialized state-owned agricultural development banks (AgDBs) are of particular interest. Many were created as part of the subsidized directed-credit paradigm. Generally they performed poorly, although there have been notable exceptions. Many have been privatized or closed, especially in Africa and Latin America; some are technically bankrupt and continue to limp along but are unable to attract substantial new funding. The loss of rural banking outlets that occurs with closure, plus some well-known successful examples of reform, has renewed the debate regarding the appropriate strategy for dealing with these institutions (World Bank 2006).

##### **9.4.1. Principles for reforming agricultural development banks**

Advocates make strong arguments in favor of AgDB reform. They emphasize the potential for serving the rural poor if reforms are implemented properly. The successful reforms of BRI in Indonesia and the evolution of BAAC in Thailand provide evidence of the possibilities (Seibel 2000). Seibel, Giehler, and Karduck (2005) propose that AgDBs should be transformed into self-reliant, sustainable financial intermediaries based on the following four principles:

<sup>48</sup> This section focuses on the long-term development impacts of agricultural development banks. Except where specifically noted, many of the ideas presented here are drawn from the literature reported in Nagarajan and Meyer (2005). Rudolph (2010) looked at the question of the role of state banks in responding to the financial crisis.

- mobilization of domestic resources and provision of positive real returns to depositors;
- repayment of loans and coverage of costs from operational income;
- production of sufficient retained earnings to offset the erosion of resources from inflation and to finance expansion; and
- continually increased outreach to savers and borrowers and improved quality of services provided to all segments of the rural population, including the poor.

Latin America has had many negative experiences with AgDBs, and several have been closed. There are cases (such as in Ecuador) where they continue to operate but provide poor-quality financial services and depend on periodic recapitalizations. Attempts at reform in some countries have failed because of lack of commitment by major stakeholders. One successful reform (as measured during the first four years following reforms) was the transformation of BANDESA, a government-owned development bank, into BANRURAL S.A. in Guatemala in 1998. It was turned from a government-owned bank into a mixed capital company (70 percent private sector and 30 percent public sector ownership), and the target market was specified as farmers, merchants, artisans, and micro, small, and medium entrepreneurs. Guatemalan autonomous organizations, including Mayan and Xinka indigenous groups and small farmers' legally recognized organizations, were included as owners. These changes in ownership and governance were important factors in improving outreach and financial performance (Alfaro-Gramajo 2003).

#### 9.4.2. Ownership and governance

Ownership and governance have been identified as the most important success factors in reforming Asian public banks. Most loan losses are attributed largely to politically motivated interference rather than nonrepayment from "normal" borrowers. Several approaches have been identified to limit political influence:

- separation of politically initiated programs from normal banking business;
- replacement of political stakeholders with managers from the private sector;
- diluting the degree of political ownership through issuance of shares;
- imposing stricter regulatory requirements similar to commercial banks; and

- obtaining a commitment from political stakeholders that they will refrain from interfering in the banking business (Kanathigoda and Steinwand 2003).

Additionally, banking decisions can be shielded from political influence by requiring reformed banks to obtain funds for refinancing from capital markets rather than from governments. Good economic performance requires improving loan recovery through suitable lending policies and incentive systems, improved efficiency and staff productivity, and freedom to set interest rates that cover costs and losses. Several reformed institutions have found that demand from rural savers has been greater than loan demand (World Bank 2006).<sup>49</sup>

#### 9.4.3. Adopting microfinance technologies

Another strategy for reforming AgDBs is to broaden their functions, adopt microfinance lending technologies, and, in several cases, reduce their exposure to agriculture.<sup>50</sup> A successful Asian reform case was the Agricultural Bank of Mongolia (AgBank, now called XAAH), which designed new loan, deposit, and money transfer products using lessons learned in microfinance, upgraded the staff, required greater accountability for managers, and developed new reporting systems. By 2002, the reforms were so successful that it was completely privatized (Dyer, Morrow, and Young 2004).

An African success story is the reform that created the National Microfinance Bank (NMB) in Tanzania. In 1997 the state-owned National Bank of Commerce (NBC) was separated into two entities: the old NBC retaining mainly urban outlets while the new NMB received the rural network with 100 outlets. The NMB also processes government payments throughout the country. The government helped the bank make loans to creditworthy clients and resisted political interference. The transfer products were revamped, and loan products were developed for microenterprises, small-scale farmers, and employees. Financial performance improved enough so that by 2002 it was in the process of privatization (Dressen, Dyer, and Northrip 2002).

#### 9.4.4. Risk management techniques

If financial institutions, whether private or public, are going to specialize in agriculture, they must find ways to manage

49 Trivelli and Venero (2007) report that development banks in Latin America that lend to agriculture are successful for similar reasons.

50 A risk management technique widely used by successful agricultural lenders in Latin America is to limit portfolio exposure to less than 40 percent of total lending (Wenner et al. 2007).

risks. The CRDB bank in Tanzania, a state-owned rural development bank privatized in 1996, offers an example. Its borrowers are heavily involved in cotton and coffee and are exposed to international price risks that caused other banks to withdraw from lending. The government export guarantee fund is costly, and there are difficulties in settling default claims. To reduce risks, CRDB requires all coffee and cotton clients to use collateral management arrangements and is working to get access to international markets for price hedging. By purchasing options contracts for clients, it expects to lock in floor prices that protect against downward price movements (World Bank 2005b).

*Conclusions.* Three key lessons emerge from these reforms of agricultural development banks. First, successful reforms of AgDBs are possible only if governments are prepared to make fundamental changes in ownership, governance, products, and services, and perhaps even the clientele served. Second, selected successful microfinance procedures and lending technologies need to be adopted and applied to agriculture. Third, more sophisticated risk management techniques will be needed for those financial institutions that expect to devote a large proportion of their loan portfolios to large loans to farmers and nonfarm businesses closely linked to agriculture. A significant challenge is that most financial institutions do not have experience using more sophisticated risk management techniques (such as insurance, hedging, futures markets, derivatives, and swaps), and a minimum scale is often necessary for their adoption (Wenner et al. 2007; Nair 2008). A greater knowledge and use of value chain finance may also help resolve problems of lending costs and risks.

A problem for donors is to develop a response in countries where local leaders create a new AgDB out of frustration with the slow pace of agricultural lending by other financial institutions. Although the World Bank reports success with the creation of two banks in the former Soviet Union,<sup>51</sup> the negative experiences with political interference in many AgDBs do not bode well for such projects. A necessary condition for successful start-ups is an institutional design that solves the governance and management problems already noted and maintains a successful firewall between credit operations and political interference. A critical component is government commitment to charging full cost recovery interest rates. It may also be possible to avoid political capture by adopting an initial strategy of targeting small loans and using

microfinance technologies. As institutional capacity grows, a more ambitious strategy with larger loans can be slowly implemented.

## 9.5. AGRICULTURAL INVESTMENT FUNDS

Investment funds are a relatively new method of financing agriculture. They are expanding rapidly and are of interest here both because of the positive direct effects they may have on agricultural investments and because of the additional agricultural lending that may be induced because of the investments made. By observing the performance of the investments made by the funds, local investors and financial institutions may also identify other creditworthy investments to be financed, as well as pitfalls to avoid.

An agricultural investment fund is similar to a financial mutual fund that pools capital from different investors and allocates the funds for agricultural investments meant to generate profits for the investors. Funds offer investors an opportunity for risk pooling through diversified investments while employing specialized professional fund managers to manage investments. The managers conduct risk assessments of alternative investment opportunities, administer the investment portfolio, and have fiduciary responsibilities to the investors. The funds may have social or altruistic objectives, such as combating hunger and poverty, but private sector investors increasingly recognize that attractive financial returns can be realized if invested properly in agriculture.

### 9.5.1. Microfinance investment funds

Although investment funds are new to agriculture, they have a longer track record of public-private sector partnerships in funding microfinance, and this experience may have insights for agricultural investment funds. The success of these funds has attracted considerable investor interest. The first commercially focused investment structure targeted for MFIs was Profund launched in 1995. By mid-2005, 23 investment funds provided equity to MFIs with total assets amounting to about 536 million euros (equivalent to about \$725 million at the time). About 262 million euros (\$355 million) of the total was invested in microfinance (Goodman 2009). About two-thirds of the assets were in microfinance development funds that place more emphasis on furthering development than on earning financial returns. Commercially oriented microfinance investments funds with expected financial returns higher than those of microfinance development funds actually made a larger share of equity investments in MFIs.

51 The Agricultural Development Bank of Latvia and the Kyrgyz Agricultural Finance Corporation (World Bank 2006).

Microfinance was just beginning to attract private investors at that time (Goodman 2009).

The Profund history is a revealing case. It invested in what became some of the well-known Latin American success stories (Compartamos, BancoSol, and Mibanco), but it also incurred losses on other investments. At the final 2005 shareholders' meeting, it had provided an average return to shareholders of 6 percent a year. An important conclusion was that it initially expected to balance its investments between intermediaries catering to small businesses and those serving microenterprises. However, market forces and pragmatism led it to concentrate on the latter for three reasons: (1) microentrepreneurs are more flexible and resilient and better at coping with downturns; (2) they have fewer financing options, so they see credit from a formal institution as a privilege and feel a more serious obligation to repay loans; and (3) they normally operate with low levels of capitalization, so money lent to them generates large marginal productivity, allowing them to thrive while still paying high interest.<sup>52</sup>

A huge expansion in investment funding for MFIs was reported by MicroRate in its 2010 survey (MicroRate Incorporated 2010). It concluded that 88 microfinance investment vehicles (MIVs) had more than \$6.0 billion in total assets at the end of 2009. At the end of 2009, the MIVs held a total of 3,033 microfinance investments with an average investment size of \$1.4 million. Debt comprised approximately 81.6 percent, followed by equity at 17.6 percent, guarantees at 0.5 percent, and other microfinance assets at 0.3 percent. Most MIV assets were in Latin America and the Caribbean (37 percent) followed by Eastern Europe and Central Asia (35 percent), but the fastest growth, admittedly from a low base, occurred in East Asia and the Pacific.

Although the MIVs attracted more than \$1.0 billion in new funding during the year, they found it difficult to place the funds, with the result that less than half of the funding mobilized ended up in microfinance. Part of the explanation was the decline in demand for funds from MFIs owing to a slowdown in loan disbursements. MicroRate concluded that liquidity has reached unsustainable levels and that pressures to disburse funds, coupled with the decrease in investment opportunities, could lead to a deterioration of portfolio quality as fund managers seek to reduce liquidity. This situation could be an opportunity for the MIVs to strengthen their operations and focus on delivering the products and services that microfinance institutions truly require.

### 9.5.2. Investment funds for agriculture

The FAO studied 31 investment funds for agriculture involving a total of \$7 billion (Miller et al. 2010). The majority have less than \$100 million in capital and are global or focus on Sub-Saharan Africa. Most are public-private partnerships that draw in private capital to leverage public resources. About one-third of the funds were created during the past three years with only private capital. Their recent creation reflects donor interest in becoming more heavily engaged in foreign investment as the demand for food, fiber, and other agricultural products continues to rise. The funds invest in equity only, debt only, mixed equity/debt, microfinance, guarantees, and miscellaneous categories.

Private capital comes from individuals, institutional investors, and foundations whereas public funds are provided by international donors and development finance institutions. Most funds target the "missing middle," including larger processing companies or agricultural SMEs that are too large to receive MFI loans or that require equity investments. Two-thirds of the funds have a social and development mission, such as agribusinesses with sound environmental and social practices or investments supporting women entrepreneurs. Public funding is often used for the considerable costs and time involved in setting up funds. At least 50 percent of funds provide technical assistance to strengthen capacity so the investments are more productive. Technical assistance may also contribute to mitigating investment risks and help cover the costs of helping small farmers participate in value chains where investments will be made.

Expectations for returns vary between 3 and 25 percent depending on the fund's orientation. Most investors have mixed social and profit objectives. Some public investors treat their capital as a grant while some private investors expect a close-to-market rate of return. Impact data showing large returns to investors, employees, suppliers, consumers, competitors, and the community were provided for the investment funds managed by Small Enterprise Assistance Funds (SEAF 2007). Although considerable data were collected from the firms in which the fund invested, the methodology used was too weak to argue that the fund "caused" the impacts reported.

New investment funds continue to be developed. A recent example was the 2009 announcement of the 10-year African Agricultural Fund, a \$300 million fund supported by the African Development Bank, Agence Française de Développement, Alliance for a Green Revolution in Africa, Banque Ouest Africaine de Développement, Ecowas Bank

<sup>52</sup> Reported in an unofficial history entitled "ProFund Internacional, SA" (n.d.) supplied courtesy of Tomas Miller, IADB.

for Investment and Development, and IFAD. It will invest in agricultural businesses (established as companies or co-operatives) operating in food production industries, or provide financial services to small agribusiness operators and SMEs, cooperatives, or farmers' organizations. A Technical Assistance Facility, funded through grants from bilateral and multilateral institutions and private foundations, will finance feasibility studies, training programs, and other external services useful to the implementation and long-term monitoring of the fund. The fund's targeted rate of return is 6 or 8 percent, depending on the category of shareholder.<sup>53</sup>

An Oxfam report presented a cautious interpretation of the potential impact of socially responsible investment funds (Doran, McFayden, and Vogel 2009). The authors argue that high transaction costs and fund economics mean that such funds must necessarily exclude small investments. With small management teams of highly paid professionals, it is not feasible for funds to make and closely supervise investments of substantially less than \$1 million, even if there may be subsequent larger financing rounds for some investments. Most funds are based in Europe or the United States, so transaction costs will be high unless they can effectively resolve the problem of linking with a local agent or company to facilitate deal-sourcing, due diligence, and post-investment support. Countries where external investment is rare and information and contract problems are serious may attract little investment because legal protections for investors may be weak and exit options limited.

*Conclusions.* Evaluations are needed of the activities of investment funds to determine their impact and the extent to which they induce more local lending by financial institutions. Estimates of agricultural investment requirements in developing countries are very large, so a logical argument can be made for more external investments. Important learning about the potential returns and risks of investing in agriculture can occur if the funds will share their experiences.

It is likely that the market segment that will benefit most from fund investments will be the more affluent and entrepreneurial farmers and agribusinesses, so wealth and income distribution implications may be important, as they are with many improvements in access to finance. Benefits in the form of better access to inputs, markets, and jobs flow through the value chain linkages to smallholders, and some other benefits may trickle down to the poor in general. But high information, transaction, and contract enforcement

costs mean that special measures will be needed to integrate poor farmers into value chains that benefit from these investments. Moreover, unless these funds invest in developing financial institutions that serve agriculture, they will not contribute to broadening the supply of rural savings, insurance, and other financial services important to farmers and rural people.

International agencies can play an appropriate and productive role by subsidizing intensive monitoring and analyses of fund activities. Providing subsidies for the technical assistance components of the funds may also be helpful to strengthen local capacities, make the investments more productive, mitigate risks, and cover some of the costs of helping small farmers participate in the value chains where investments are being made. If the technical assistance helps facilitate direct investments in financial institutions, the funds may make important contributions to broadening the supply of rural financial services.

53 African Agriculture Fund, "Summary of Principal Terms and Conditions," draft dated March 15, 2010.

## Chapter 10: CONCLUSIONS AND EMERGING RECOMMENDATIONS

This paper reviewed the challenges faced in developing sustainable agricultural credit supplies for small farmers in developing countries. Donors and governments have spent billions subsidizing programs and policies to develop and strengthen financial institutions. Nonetheless, national decision makers, international donors, and farmers in nearly all countries are dissatisfied with the supply and cost of agricultural credit. Market-oriented financial reforms were implemented following the collapse of the directed-credit paradigm, but critics claim they have failed because in most countries agriculture continues to receive only a small share of a country's total formal credit. Most farmers report that they rely on their own savings or loans from informal credit suppliers, family, and friends to finance working capital and investments.

The first part of this paper reviewed how the financial systems approach was successfully used to develop the microfinance industry. This experience provides lessons useful for developing agricultural credit markets. Likewise, the debates about the use of grants and subsidies in food, fertilizer, and credit markets were reviewed as guides to future interventions by governments and international agencies.

The second part of the paper highlighted the literature covering the rationale for and experiences of international agencies in five major program areas in support of agricultural finance: microfinance, microinsurance, and weather-index-based insurance, credit guarantee funds, warehouse receipts, specialized agricultural development banks, and agricultural investment funds.

What are the major conclusions derived from the literature consulted for this review? What lessons can be learned, and what are the frontiers for policy and projects that CABFIN members might support in their projects and programs?

### 10.1 CONCLUSIONS

1. **No magic bullets.** There are no simple magic solutions in the toolkits available to governments and international agencies for creating sustainable agriculture credit systems. With a few noteworthy exceptions, the old-paradigm approach managed to push out loans but generally did not lead to sustainable agricultural credit institutions. Success requires careful development of products, policies, institutions, and supportive infrastructure.
2. **Back to basics.** Economists are asking some fundamental questions, such as, Why are there such large wedges or gaps between the rates for depositing and lending in developing countries? Why would some people pay so much more than others for loans? Why don't banks simply raise interest rates high enough to make lending to the poor remunerative? Are the high costs of small loans explained largely by the high fixed administrative costs of lending, or are they also affected by adverse selection and moral hazard? Is the impressive success of microcredit explained, at least in part, by its ability to generate reductions in monitoring costs? Does group liability work, not because of the formal structure of liability, but because, after being together for a while, the group members began to value relationships with other members? Is one of the basic values of microcredit the fact that it commits the borrower to a savings plan and helps avoid temptation spending (Banerjee and Duflo 2010)? The rigorous methods used by this new group of researchers provide good prospects for deepening our understanding of human behavior and how it influences credit market operations. This research, plus the lessons learned from the many innovations being tested around the world, needs to be widely disseminated for the benefit of the entire financial industry. Supporting and learning from research and innovations will provide international agencies with many opportunities to help push out the frontier of agricultural credit in developing countries and learn how to use selective subsidies and investments to make the greatest impact.

3. **Microfinance offers a partial solution.** The financial systems approach has contributed to a thriving microfinance industry that is now slowly penetrating rural areas, but the highly standardized MF products and lending methodologies are not well suited to farming clients. MFIs in many countries are still clustered in urban and peri-urban areas or in densely populated rural areas. There may be considerable payoff to subsidizing the learning and innovation costs of MFIs and other local financial institutions that are committed to entry into agriculture lending. The use of agents and mobile phones are currently among the promising methods for driving down the costs of rural banking.

## 10.2 EMERGING RECOMMENDATIONS

4. **Avoid interest rate controls.** The directed-credit paradigm often involved subsidies to farmers in the form of subsidized interest rates, which saved them money on interest charges but undermined the financial institutions that lent to them. These subsidies also tended to distort the allocation of loans in favor of richer farmers. Microfinance has thrived in spite of high operating costs and risks because it has generally been able to avoid interest rate controls, although the industry is threatened in several countries that have imposed interest rate ceilings. International agencies need to continue their strong efforts to inform and advocate on behalf of market-oriented interest rates. There is evidence that rates of return in agriculture are often higher than assumed, so cheap interest rates may be less critical to borrowers than policy makers expect.
5. **Subsidizing institutions and infrastructure rather than borrowers.** Subsidies for building institutions and financial infrastructure contributed to the success of microfinance, and such subsidies are generally accepted as part of the market development strategy for rural finance. This type of indirect subsidy to borrowers is generally considered to be less distorting than the direct interest rate subsidies granted to borrowers under the old paradigm. The key to lower interest rates for agricultural credit is increased efficiency and competition, as experiences with microfinance have shown in several countries.
6. **Investments in lending technologies and institutional design.** MFIs have also demonstrated that design matters. They have successfully created lending technologies and institutional designs to match the needs and capacities of a poor clientele. Through a variety of techniques, MFIs have found ways to reduce information and contract enforcement problems typical in credit markets. Group lending was an important early innovation, but much of the industry has successfully evolved to provide individual lending. Innovation grants made to MFIs have contributed to the search for new innovations, and several reformed AgDBs owe their success to their emulation of MF approaches. Agricultural credit needs similar careful innovation and design to be successful. Value chain finance helps identify opportunities for innovations.
7. **Diversified loan portfolios.** Specialized agricultural development banks were considered key to successful agricultural finance under the old paradigm. Although specialization may lead to improved knowledge on how to serve agriculture, evidence from reformed AgDBs and successful MFIs and agricultural lenders suggests that a diversified loan portfolio is needed to help manage the risk associated with covariate agricultural incomes. No data have been found to confirm the argument that agricultural loans are more risky than others, so an important empirical task is to measure the correlation in incomes among farm and nonfarm enterprises to evaluate how well portfolio diversification may reduce credit risk. In the meantime, prudent policies should be followed, such as setting a ceiling on the share of agricultural loans in a loan portfolio, especially in the early stages of experimentation. International agencies can make a useful contribution by helping financial institutions reduce their exposure to systemic risks by improving their capacity to lend to both farm and nonfarm activities in rural areas and to lend in multiple geographic areas. The present enthusiasm for value chain finance needs to be tempered with the recognition that excessive lending to participants in one chain leads to portfolio risk.
8. **Subsidizing public goods.** Subsidies to create public goods that benefit the entire financial sector can generate higher returns than subsidies to specific institutions and may be critical once the immediate priorities of creating products and institutions are met. Improving property rights for agricultural assets, collateral registries, credit bureaus, special courts for credit defaulters, and other support institutions help the entire financial sector resolve information and contract enforcement problems. International agencies can play their logical role in championing a longer-term view of credit market development by identifying

gaps in support institutions and proposing methods to address them.

9. **Subsidizing networks.** The many national and international networks related to microfinance provide public goods by facilitating the exchange of information and innovation within the industry. Subsidies for innovations may produce a larger payoff when channeled through networks because the benefits will be spread among all members. Subsidies received by CGAP, the MIX, and the Microcredit Summit generated substantial benefits because of the leadership and sources of innovation they provided to microfinance. By comparison, the networks for agricultural credit and rural finance are not as well developed and could benefit from this same type of investment and leadership.
10. **Experiment and evaluate.** What gets measured gets attention. Compared with the large amount of funds invested in programs and projects to support agricultural credit, surprisingly little is spent on monitoring and evaluation to determine if the expected results are being achieved. The evaluations that are conducted lack the same robustness that is now being advocated and designed for microfinance impact analysis. Effective project design requires that a few robust analyses be conducted in the five major areas of donor support discussed in the second part of this paper.
11. **Microinsurance and weather-index-based insurance.** Microinsurance is expanding quickly, and the proper role for private and public sector support will eventually become clearer. Weather-index-based insurance needs international support for testing and

analyzing alternative designs and for long-term public goods investments in networks of weather reporting stations and data collection and analysis. Subsidies for individual countries may be justified: the lack of private sector initiative implies first-mover problems in which private investors resist making initial investments in research and development, fearing the ease with which competitors can copy their products. Two key types of analyses are needed. The first is analysis of the demand for such crop and livestock insurance, recognizing that uptake by farmers is poor in most developed countries without huge subsidies. The second consists of robust ex post evaluations to determine if insurance has the expected effects on farmers' livelihood strategies and incomes and if it helps protect lives and assets, enabling people to avoid or escape poverty. These results will be especially important in determining the appropriate role of public subsidies for catastrophe insurance.

12. **Credit guarantee schemes.** Credit guarantee schemes play a surprisingly large role in development programs considering the lack of international consensus about their impact on access to finance. Recent evaluations of USAID guarantees used weak methodologies and thus constitute an unreliable source of evidence on effectiveness. The training and technical assistance provided to financial institutions along with guarantees may be far more important in encouraging lenders to improve credit access to a target group than the guarantee itself. Once again, design matters, but critical design features of eligibility, leverage, risk sharing, fees, and claims procedures are not well discussed or evaluated in projects. The international agencies should conduct a few robust evaluations to determine if credit guarantees produce the expected results, to identify the best designs for assuring additionality and sustainability, and to assess the preconditions (such as commitment and interest of the participating financial institutions) and complementary activities (such as training and technical assistance) required for success.

13. **Warehouse receipts.** Warehouse receipts projects were pioneered by the European Bank for Reconstruction and Development in Eastern Europe and the Commonwealth of Independent States countries in the 1990s. They are not yet popular, especially in Africa, because this traditional form of commodity collateralization is mostly limited to export crops. This mechanism is expected to improve access to finance



Monitoring and evaluation, Capetown, South Africa (Photo: IMA International)

and possibly reduce interest rates by reducing the risk and transaction costs for agricultural lenders facing small-size transactions and high information and supervision costs. However, it will make only a small contribution to the objective of increasing production credit for small farmers, and warehouse operators may have little interest in dealing with small transactions of individual farmers. Farmer associations, cooperatives, and private traders may be more frequent users. Systems of grades and standards must be created and enforced in parallel for these systems to be effective. The large expense of operating these systems is a serious challenge for small farmers, so simple, small-scale village-level systems may be more appropriate. There is a critical need for farm-level price data to identify which crops normally have seasonal price variations large enough to compensate for storage and borrowing costs. The fact that warehousing is common for export crops suggests a need to look at economic barriers that constrain expansion into commodities produced for local markets. Resolving these underlying barriers is a logical use for subsidies.

14. **Specialized agricultural development banks.** A more optimistic view has emerged about the possibility of successfully reforming state-owned agricultural development banks in recent years. Ownership and governance have been identified as important success factors. A number of reformed banks have been successful by broadening their functions, adopting microfinance lending technologies, and reducing their exposure to agriculture. When these banks choose to specialize in agriculture, they must find ways to reduce lending risks, but most do not use the more sophisticated forms of risk management, such as insurance, hedging, futures markets, derivatives, and credit swaps. International agencies should work with financial institutions and farmer groups to develop awareness and capacity so eventually they can adopt these methods.
15. **Agricultural investment funds.** Investment funds for agriculture are a relatively new method of investing, so their impact cannot yet be assessed. The public-private sector partnerships in these funds are expected to help meet the huge projected demand for investments in developing countries. A large proportion of these funds have a social and development mission, so there is hope that sound environmental and social practices or investments will be supported. Most funds, however, are based in Europe or

the United States, so transaction costs are high and they have small management teams of highly paid professionals. It is not feasible, therefore, for them to make small investments important for small farmers. Countries with minimal external investment and serious information and contract problems may attract little investment because legal protections for investors may be weak and exit options limited. The market segment most likely to benefit from fund investments will be the more affluent and entrepreneurial farmers and agribusinesses, so it will be important to monitor wealth and income distribution implications. The critical role for donors will be financing subsidies for technical assistance components of the funds. Technical assistance will strengthen local capacity to make investments more productive and will mitigate the risks and costs of helping small farmers participate in the value chains where investments will be made. Moreover, if the technical assistance facilitates direct investments in financial institutions, the funds will contribute to broadening the supply of rural savings, insurance, and other financial services important to farmers and rural people.

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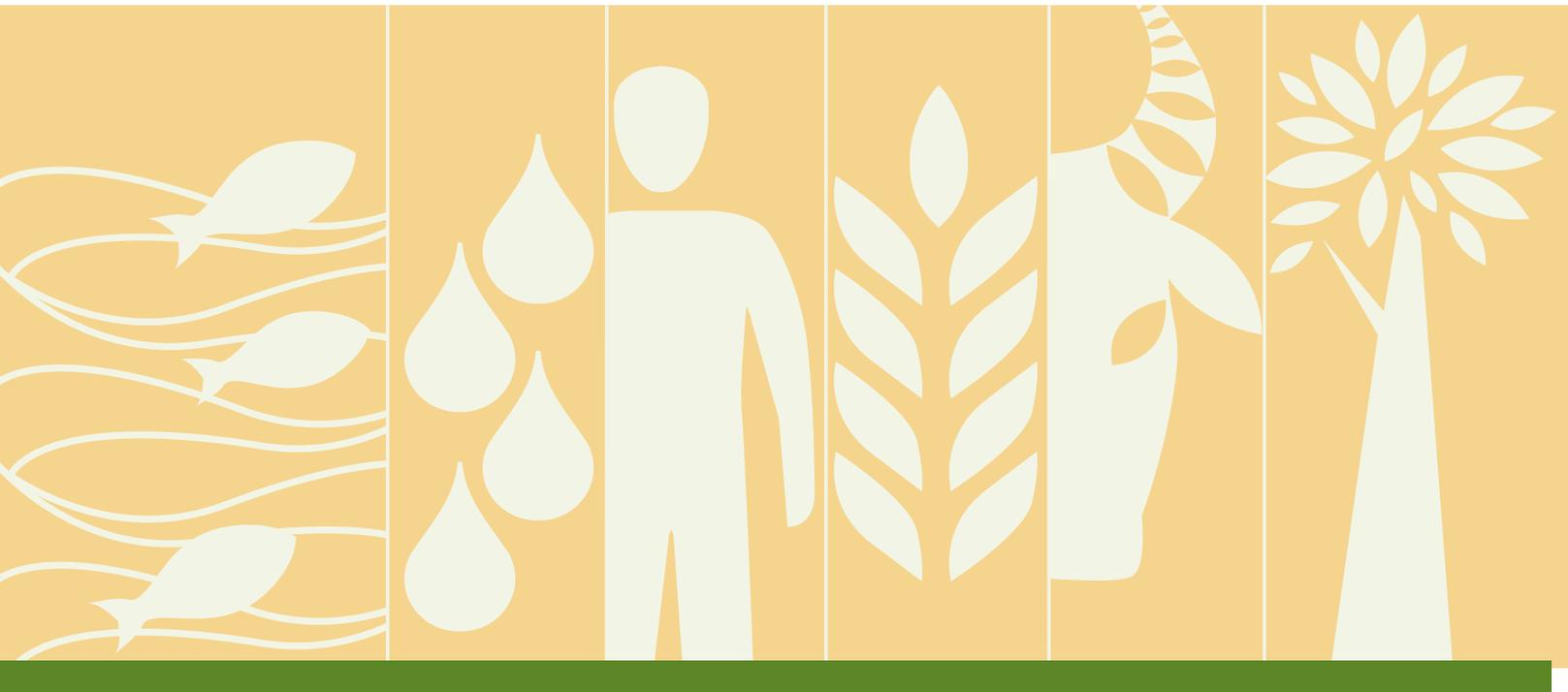
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