Supporting smallholder competitiveness through institutional innovations

chapter 6

Structural adjustment in the 1980s dismantled the elaborate system of public agencies that provided farmers with access to land, credit, insurance, inputs, and cooperative organizations. The expectation was that removing the state would free the market for private actors to take over these functions—reducing their costs, improving their quality, and eliminating their regressive bias. Too often, that didn't happen. In some places the state's withdrawal was tentative at best, limiting private entry. Elsewhere, the private sector emerged only slowly and partially—mainly serving commercial farmers but leaving many smallholders exposed to extensive market failures, high transaction costs and risks, and service gaps. Incomplete markets and institutional gaps impose huge costs in forgone growth and welfare losses for smallholders, threatening their competitiveness and, in many cases, their survival.

The last 10 years have seen a broad effervescence in institutional innovations to fill the deficits in land markets, financial services, input markets, and producer organizations. Although significant progress has been made, this institutional reconstruction of agriculture is still incomplete, especially for smallholders and more marginal areas. Moving forward requires more clarity on the roles of the state and the private sector—and more analysis of what works and how it could be improved. This chapter documents how:

- New mechanisms can increase the security of property rights, facilitate land reallocation as rural households adjust their livelihood strategies or leave for the city, and facilitate access to land for the landless.
- Innovations in finance can provide smallholders with better access to credit, savings facilities, money transfer mechanisms, remote payments, and leasing.
- Weather-indexed insurance can provide new ways of reducing problems of imperfect information in mitigating farmers' risks.
- Institutional innovations can also promote more efficient input markets, as new local agrodealers have emerged and market-smart subsidies are tried.
- Producer organizations can engage in more effective collective action to access services, achieve economies of scale in markets, and acquire voice in policy making.

Land policies for secure rights and reallocating resources

Institutions governing land rights and ownership affect the efficiency of land use. If those who farm lack secure rights to land, they have less incentive to exert effort to use it productively and sustainably or to carry out land-related investments. And if women—who cultivate much of the land in Africa—have few vested rights, households tend to produce less than their asset base could otherwise provide. Secure and unambiguous property rights also allow markets to transfer land to more productive uses and users. Cost-effective systems of land administration facilitate agricultural investment and lower the cost of credit by increasing the use of land as collateral, thus reducing risk for financial institutions.

Institutions governing access to land have a long history of adapting to social, natural, and economic factors. Their diver-

sity reflects land's value not only as a factor of production but as a source of status, cultural identity, and political power. Designing property rights that support efficient land use and recognize the multiplicity of rights, particularly for women and indigenous groups, is a highly complex issue that requires further exploration. Land policies were often adopted less to increase efficiency than to further the interests of dominant groups, making land issues politically charged. This section addresses how recent institutional and technological innovations can help deal with such legacies, increase the security of tenure, and provide broad-based access to land to maximize its contribution to agricultural competitiveness and economic development.

Enhancing tenure security

Providing land owners or users with security against eviction enhances their competitiveness by encouraging land-related investment, as numerous studies show.[1] Earlier interventions to improve tenure security focused almost exclusively on individual titling, but this can weaken or leave out communal, secondary, or women's rights. Moreover, the process of titling can be used for land-grabbing by local elites and bureaucrats. So, although individual titling is still appropriate in many cases, it needs to be complemented by new approaches to securing tenure.

Recognizing customary tenure. In many countries, vast expanses of land held under customary tenure do not enjoy legal protection, often because of legislation from colonial times. For example, many African jurisdictions considered most land to be "state land." Those who had cultivated such land for generations received only precarious tenure rights and could lose their land—say, to make room for "strategic" investments—with little or no compensation. Over the last decade, a large number of African countries adopted a wave of new land laws to recognize customary tenure, make lesser (oral) forms of evidence on land rights admissible, strengthen women's land rights, and establish decentralized land institutions.[2] With greater knowledge of such laws, land-related investments and productivity increase, as evidence from Uganda suggests. With fewer than a third of households informed about the law, further efforts to disseminate information could have a large impact.[3]

Communal lands and common property resources, including grazing and indigenous lands, are a special case of customary tenure. In addition to their productive value, they are often important as safety nets for the poor because of the cultural values embodied in them. But they are vulnerable to degradation and appropriation by powerful chiefs, outsiders, and bureaucrats. Increasing access to and the productivity of such resources can be achieved by the following:

- Formalizing customary laws in ways that are participatory and reflect the diversity of the ethnic, historical, and social construction of land.[4] Delineating legally valid boundaries, identifying existing rights that may overlap or be of a seasonal nature (between herders and sedentary agriculturalists), and registering them as appropriate.
- Vesting day-to-day management decisions in an accountable body that functions transparently—say, as a legally incorporated user group with clear rules for conflict resolution that are respected by all involved.
- Making evolution to more formal types of tenure possible through a well-defined and transparent process. In Mexico certified individual land plots in *ejido* communities can become fully transferable freehold land through a qualified vote by the assembly. But the fact that fewer than 15 percent of *ejidos* chose full titling shows that many users see that the benefits of maintaining communal relations can be greater than those from individualization of rights.

Documenting land rights. While legal recognition of existing rights is an indispensable first step, there is often demand to demarcate plots and issue certificates

to reduce boundary disputes and facilitate land transactions. High survey standards and the associated costs under traditional technology—between $20 and $60 per parcel[5]—have been a major obstacle to broader implementation. But recent advances in technology—particularly the widespread availability of satellite imagery and handheld global positioning system (GPS) devices, together with institutional arrangements that put local actors in charge of systematic adjudication—can greatly reduce the cost of issuing certificates for boundaries with reasonable accuracy. Experience points to considerable demand for these land certification programs, as in Ethiopia (box 6.1).

Where women have a main role in cultivation, their land rights affect productivity and investment.[6] In addition, with land as a key asset, land rights are critical for women's bargaining power within the household, their broader economic opportunities, and their long-term security in cases of divorce or the death of a family member. Recognition of the adverse consequences of discrimination against women in this area has led to changes in constitutional provisions and more specific legislation to require general equality of men and women, mandate issuance of joint titles, modify inheritance legislation, and ensure female representation on land administration institutions.[8]

Such measures can have a positive impact. But legal reforms that clash with traditional power arrangements may be indifferently enforced. Examples, many of them from Asia or Latin America, show that to minimize clashes, a mix of mediation and raising awareness can complement other programs to allow landholders to effectively exercise their rights. For example, Mexico's *ejido* system now includes mediation to protect the property rights of women. In Nicaragua a program to title land rights in the names of both spouses included consultations with the indigenous population to clarify both communal and collective rights.

Expanding options for conflict resolution. In many developing countries a large share of court cases involve land-related disputes. Apart from clogging courts and stifling investment, unresolved conflicts can depress the productivity of land use. In Uganda productivity on plots under dispute is less than a third that on undisputed plots.[9] Traditional institutions can resolve some localized disputes, but they are not well equipped to address disputes that cut across groups belonging to different communities—for example, between nomads and sedentary agriculturalists, across ethnic boundaries, or between individuals and the state. Traditional institutions also tend to be under the control of men and favor men in disputes with women, such as those over inheritance rights.[10] Expanding the options to resolve land conflicts systematically and out of court can have large benefits, especially for the poor and for women who otherwise are seldom able to enforce their legal rights, as demonstrated in Ethiopia and India.[11]

BOX 6.1 *Benefits from community-driven land certification in Ethiopia*

Thanks to the promising results from issuing land-use certificates to about 632,000 households in Tigray in 1998/99, other Ethiopian regions have embarked on a large-scale certification effort, issuing land-use certificates to about 6 million households (18 million plots) in 2003–05.

The process starts with local awareness campaigns, sometimes with the distribution of written material, followed by elections of land-use committees in each village. After a period of training, these committees resolve existing conflicts, referring cases that cannot be settled amicably to the courts. This is followed by demarcation and surveys of undisputed plots in the presence of neighbors, with subsequent issuance of land-use certificates that, for married couples, include names and pictures of both spouses[7] but no sketch map or corner coordinates.

Because land remains state owned with strong restrictions on transfers, certificates document only inheritable use rights. Even so, more than 80 percent of respondents in a nationwide survey indicated that certification reduced conflicts, encouraged them to invest in trees and soil conservation and to rent out land, and improved women's situations. They also felt that having a certificate would increase the possibility of getting compensation in cases of land taking. Many expect demarcation of communal land to reduce encroachment (76 percent) and increase soil conservation (66 percent).

A rough estimate puts the cost of certificates at only $1 a plot, in large part because local inputs to conflict resolution and surveying are voluntarily provided by local land-use committees. Adding handheld GPS with accuracy to less than one meter to record corner coordinates would increase these costs by about 60 cents. With modern technology making low-cost approaches more feasible, systematic certification could help implement new land legislation in Africa and beyond. Without mechanisms to keep records up to date, however, the effect may be short lived. Estimates for the Amhara Region suggest that updating should be possible at about 65 cents per transaction.

Demand for certificates is strong: 95 percent of households outside the program would like to acquire one, 99 percent of those with a certificate would be willing to pay an average of $1.40 to replace a lost certificate, and 90 percent (most of them willing to pay) would like to add a sketch map.

Although the positive impact of certificates is likely reduced by current policies that restrict land rental and prohibit sales or mortgaging of land, certification can be a step toward a broader process of land policy reform.

Source: Deininger and others 2007.

Modernizing land administration. In many countries, land administration is one of the most corrupt public services. Irregularities and outright fraud are frequent in allocating and managing public lands. The rents can be large. In India, bribes paid annually by users of land administration services are estimated at $700 million,[12] three-quarters of the public spending on science, technology, and environment. In Kenya, land grabbing by public officials, systemic during 1980–2005, was "one of the most pronounced manifestations of corruption and moral decadence in our society."[13] Modern technology and partnerships with the private sector can yield quick benefits. One example: computerizing records in the Indian state of Karnataka is estimated to have saved users $16 million in bribes.[14] Automating registration and the associated land valuation allowed outsourcing to the private sector, which significantly improved access to the service and cut stamp duties from 14 percent to 8 percent, while quadrupling tax revenue from $120 to $480 million.[15]

Land administration institutions will be viable in the long term and independent from political pressure only if they can sustain their operations financially, without charging more than users are willing to pay. Although the reforms to make them more efficient are well known, with their effectiveness repeatedly shown (box 6.2), implementation faces strong resistance from interests benefiting from the status quo.

BOX 6.2 ***Improving the efficiency of land administration services in Georgia***

Georgia established a single national land administration agency, made all information publicly available on the Internet, put licensed private surveyors in charge of conducting surveys, and drastically cut staff (from 2,100 to 600) while increasing salaries eightfold. To keep the registry financially independent, the registry law was revised, a free legal consultation established, and the fee structure adjusted.

The time for property registration fell from 39 days to 9 days, and the associated cost decreased from 2.4 percent to 0.6 percent of property value, with attendant benefits for land users—evidenced by greater rental and sales market activity and more mortgages and credit by private and agricultural lenders.

Source: Dabrundashvili 2006.

Access to land

Enabling land rental markets. Getting land markets to work is fundamental where new options emerge for households to diversify livelihoods and eventually leave agriculture. In developed countries, about 50 percent of farmland is rented, often under sophisticated contracts. In most developing countries, by contrast, land rental markets are atrophied. However, land rentals are increasing where they had not been practiced extensively earlier—as in Eastern Europe;[16] in Vietnam, where rental participation quadrupled to 16 percent in five years;[17] and in China, where rentals allow rural communities to respond to large-scale out-migration (box 6.3).

If tenure is insecure or restrictions constrain land leasing, productivity-enhancing rental transactions will not fully materialize or the poor may be excluded. In the Dominican Republic, Nicaragua, and Vietnam, insecure land ownership reduced the propensity to rent and limited transactions to preexisting social networks.[18] In Ethiopia, fear of losing the land, together with explicit rental restrictions, was the main reason for suboptimal performance of rental markets.[19] In India, tenancy restrictions reduce productivity and equity (box 6.4). Replacing them with policies that facilitate renting would improve access to land by those remaining in the rural sector.

Strengthening land sales' markets. Sales markets for acquiring land increase investment incentives and provide a basis for using land as collateral in credit markets. However, imperfections in other markets, and expectations of future land price increases, affect markets for land sales more than those for rentals, implying that sales would not necessarily transfer land to the most productive producers. Historically, most land sales happened under distress, requiring defaulting landowners to cede their land to moneylenders, who could amass huge amounts of it.[20]

Data on land sales over 20 years in India reveal some peculiar features of land sales markets:

- Land went to better cultivators and from land-abundant to land-scarce households, allowing the land-scarce to improve their welfare without making sellers worse off. But sales markets are thinner, more

BOX 6.3 *How land rentals can increase productivity and equity in China*

Land rental markets can contribute much to rural diversification and income growth in a rapidly growing economy. Look at China. After the introduction of the household responsibility system in 1978, land-use rights were allocated on a per capita basis, leading to an egalitarian land "ownership" structure, with land also functioning as a social safety net. Although households held 15-year land-use contracts, administrative reallocation—in clear breach of contractual obligations—was regularly practiced in response to population growth or to make land available for nonagricultural purposes. But with rural-urban migrants tripling from 5 percent of the total labor force in 1988 to 17 percent (or 125 million migrants) in 2000, the limits of exclusive reliance on administrative allocations became obvious.

Decentralized land rentals, which complemented and eventually replaced administrative reallocations, have proven just as equitable but significantly more productive. A national sample with information on the two parties in land transactions highlights the impact of land rentals on occupational structures, land productivity, and welfare:

- Land rentals transformed the occupational structure. While almost 60 percent of those renting out their land relied on agriculture as their main source of income before entering rental markets, only 17 percent continued to do so—while 55 percent migrated (up from 20 percent) and 29 percent engaged in local nonfarm activity (up from 23 percent).
- Land rentals also increased productivity. Net revenue on rented plots rose by about 60 percent, supporting the notion that rental markets, by transferring land to better farmers from those with low ability or little interest in agriculture, can improve rural welfare. Renters—who generally had less land, more family labor, and lower levels of assets and education—received about two-thirds of the gains, with the rest going to landlords in rents.
- Net income for both renters and landlords increased—respectively by 25 percent and by 45 percent (partly due to migration income)—in a very equitable way.

This shows the importance of well-functioning land rental markets in a context of strong nonagricultural growth and migration. But many producers still feel constrained by insecure property rights. To allow land markets to better respond to the needs of a changing economy, recent initiatives, especially the 2003 Rural Land Contracting Law, aim at strengthening farmers' property rights and reducing the scope for discretionary intervention by officials.

Sources: Benjamin and Brandt 2002; Brandt, Rozelle, and Turner 2004; Cai 2003; Deininger and Jin 2005; Kung and Liu 1997.

affected by life-cycle events, and less redistributive than those for rentals.

- Climate shocks increased the probability of distress land sales, although mitigated by local safety nets (employment guarantees) and access to credit from banks.[21]
- Although land ownership ceilings imposed by "reform" may have played a role, land sales and purchases did more than land reform to equalize India's land ownership.[22]

This implies little justification for policy measures to restrict land sales, especially because they tend to drive transactions underground and undermine access to formal credit without addressing the underlying problems of asymmetries in power, information, and access to insurance. Safety nets and other measures, including redistributing land, are more appropriate than constraints on sales to deal with these problems and prevent distress sales. Land taxes can curb speculative demand and encourage better land use, while providing revenue for local governments to fulfill their functions.[23]

Making land reform more effective. In countries with highly unequal land ownership, land markets are no panacea for addressing structural inequalities that reduce land productivity and hold back development.[24] To overcome such inequalities, ways of redistributing assets, such as land reform, are needed. Postwar Japan, the Republic of Korea, and Taiwan (China) show that land reform can improve equity and economic performance. But there are many cases where land reform could not be fully implemented or even had negative consequences. Evictions of tenants or changes of land use ahead of legislation that would have given greater security to tenants or allowed expropriation of underused land often made prospective beneficiaries worse off or prompted land owners to resort to even less-efficient techniques.[25]

If land is transferred through redistributive land reform, improvements in access to managerial skills, technology, credit, and markets are essential for the new owners to become competitive. Some tenancy reforms have proved highly effective,[26] but measures to clarify ownership rights are needed to avoid disincentives for investments. Land reform through market exchange assisted by grants and technical assistance to selected beneficiaries shows promise, with Brazil the leading innovator,

but this approach deserves further analysis of costs and impacts. To be effective, any approach to land reform must be integrated into a broader rural development strategy—using transparent rules, offering clear and unconditional property rights, and improving incentives to maximize productivity gains. Yes, it can enhance access to land for the rural poor. But to reduce poverty and increase efficiency, reform requires a commitment by government to go beyond providing access to ensuring the competitiveness and sustainability of beneficiaries as market-oriented smallholders.

Financial services for smallholders

The ability of agricultural enterprises and rural households to invest for the long term and make calculated decisions for risky and time-patterned income flows is shaped by an economy's financial services. Despite the rapid development of financial services, a majority of smallholders worldwide remain without access to the services they need to compete and improve their livelihoods. Broader access to financial services—savings and credit products, financial transactions, and transfer services for remittances—would expand their opportunities for more efficient technology adoption and resource allocation.

Financial services are delivered to rural populations by organizations that exist along a continuum from informal to formal, with the boundaries between categories often blurred. In general, formal financial institutions are licensed and supervised by a central authority. They include public and private commercial banks; state-owned agricultural or rural development banks; savings and loan cooperatives; microfinance banks; and special-purpose leasing, housing, and consumer finance companies. Informal providers of financial services include rotating savings and credit associations, money lenders, pawnshops, businesses that provide financing to their customers, and friends and relatives. In between stand financial nongovernmental organizations (NGOs), self-help groups, small financial cooperatives, and credit unions.

BOX 6.4 *Rental markets and the impact of restrictions in India*

Where tenants had few alternatives, landlords used land rentals to extract as much as possible. This led Indian policy makers to impose rent ceilings to protect tenants and to prohibit tenancy in many states. Partly as a result, reported land rental activity in India declined sharply, from 26 percent in 1971 to less than 12 percent in 2001, contrary to trends in other countries. Still, renting continues to be an important means of accessing land. More households rented land in 2001 than the total number that have benefited from land reforms since independence.

The assumptions underlying interventions in land rental markets may no longer hold, as a national survey that allows comparisons over time suggests. Instead of causing reverse tenancy, rental markets help land-scarce and labor-abundant households with agricultural skills but little education—37 percent of them landless—to rent land from land-abundant and wealthy households that take up nonagricultural employment. Higher village incomes increase the propensity to rent, because wealthier households are more likely to move out of agriculture and rent out their land.

The equity impact of rental restrictions is shown by comparing the marginal product of one day of labor in agricultural self-cultivation (Rs 150 for males and females) with daily wages in the casual labor market (Rs 46 for males and Rs 34 for females). The (statistically significant) difference implies that, even after subtracting payments to the landlord, renting can improve household welfare considerably. Gender discrimination in casual labor markets would make renting particularly attractive for women, consistent with anecdotal evidence of rural women's use of self-help groups to rent land, often against the law. And eliminating land rental restrictions would facilitate moves into the rural nonfarm economy.

Source: Deininger, Jin, and Nagarajan 2006.

Lifting the pervasive financial constraints that perpetuate poverty

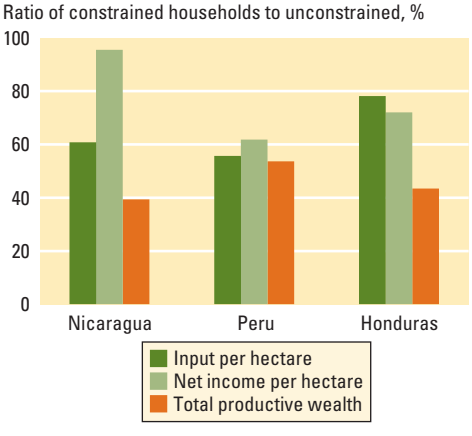
Financial constraints are more pervasive in agriculture and related activities than in many other sectors, reflecting both the nature of agricultural activity and the average size of firms. Financial contracts in rural areas involve higher transaction costs and risks than those in urban settings because of the greater spatial dispersion of production, lower population densities, the generally lower quality of infrastructure, and the seasonality and often high covariance of rural production activities. So banks and other traditional for-profit financial intermediaries tend to limit their activities to urban areas and to more densely populated, more affluent, more commercial areas of the rural economy. Operating costs there are lower, loan sizes large enough to cover fixed transaction costs, and legal contracts more easily enforced.

The rural reality: few households and small firms can meet their need for credit and other financial services. In India a recent survey of 6,000 households in two states showed that 87 percent of the marginal

farmers surveyed had no access to formal credit, and 71 percent had no access to a savings account in a formal financial institution.[27] Informal financial arrangements serve rural communities, but they tend to fragment along lines of household location, asset ownership, or membership in kin- or ethnic-based networks, all affecting the transaction costs of contracting, the size of the possible transactions, and the rate of interest charged.[28] There is thus a tremendous need for financial innovations that can place smallholders on a ladder of ascending financial market access—as well as for innovations that can complement financial services by managing the systemic risks that undercut their supply.

The costs of financial constraints for smallholders are huge—in forgone opportunities and in their exposure to risk. In rural Honduras, Nicaragua, and Peru, the credit-constrained population constitutes some 40 percent of all agricultural producers. Producers lacking credit use on average only 50 percent to 75 percent of the purchased inputs of unconstrained producers and earn net incomes (returns on land and family labor) between 60 percent and 90 percent of the unconstrained (figure 6.1).[29] In Central and Eastern Europe, nearly 50 percent of smallholders in five countries report financial constraints to be the major barrier to the growth and expansion of their enterprises.[30]

Figure 6.1 Credit-constrained rural households use fewer inputs and have lower incomes



Source: Boucher, Carter, and Guirkinger 2006.

The root of the problem is that lenders tend to offer only a limited menu of products, mainly with heavy collateral requirements. Wealthier farmers can obtain larger loans at lower cost from formal lenders because they can credibly pledge assets or future cash flows. Asset-poor households, by contrast, are limited to considerably smaller loans at much higher rates because they have to turn to lenders who must substitute costly monitoring for collateral. Poor farmers may also turn down loans, even if they qualify, because they are unwilling to bear the risk of losing collateral, termed "risk rationing."[31] In the studies of Honduras, Nicaragua, and Peru, 20, 40, and 50 percent of credit-constrained borrowers, respectively, are risk-rationed. Access to credit and insurance are thus closely tied conceptually and empirically and must be jointly improved to enhance access to credit.

The skewed access to credit can blunt employment and contribute to worsening the income distribution. Land market policies also become less effective if there are wealth-biased financial market constraints.

Adapting microfinance to reach smallholders

The inadequacies of rural financial markets reflect real risks and real transaction costs that cannot simply be wished, or legislated, away. Innovations are required to permit more flexible forms of lending while guaranteeing that borrowers repay loans.

One approach to resolve these problems follows from the pioneering efforts of the Grameen Bank. Microfinance institutions (MFIs) open the menu of available contracts with new arrangements that substitute for collateral. They often have guidelines to favor groups—particularly women—excluded from borrowing through other channels. Many MFIs lend to local groups whose members select one another and share the liability for repaying loans, so local social capital substitutes for wealth as collateral. MFIs often target rural areas, where social capital is stronger.

This shared liability creates powerful incentives for rigorous peer selection and borrower monitoring, and it can work well when loans are used for a diversity of (quick

turnaround) activities. However, it works less well for crop activities, where all producers are subject to a common set of weather risks (when one cannot pay, often no one can pay) and where project gestation periods are long and share the same timing. Weather risk also undermines the financial stability of local MFIs, and most explicitly limit their share of lending to agriculture to reduce exposure to risk. Moreover, many microfinance organizations have targeting criteria for maximum landholding that restrict their lending to agricultural activities.

To meet the underserved agricultural market, MFIs have begun to innovate.[32] FUNDEA in Guatemala has offered individual loans to agricultural producers of short-cycle tomatoes and other vegetable crops. It has adopted the value chain approach to financing inputs and outputs, using standing crops as collateral. Caja los Andes in Bolivia began to accept nonstandard collateral assets and lend to farmers well diversified across a range of agricultural and nonagricultural activities.[33] In 2006 it became a bank, Banco Los Andes Procredit, and agricultural loans now constitute 10 percent of its portfolio.

In short, while microfinance lending in agriculture is still small, there are hopeful signs that innovation will permit the microfinance movement to partially fill the agricultural void, at least for producers with small enterprises engaged in high-value activities, particularly animal husbandry and horticulture. There is a strong case for public policy support to search for, and pilot test, technological and institutional innovations that reduce the costs and risks of doing business. Many of the newly developed innovations may have the character of a public good, because innovations by one lender may be quickly adopted by another. This justifies public support for promising start-ups to enable them to reach scale and become financially viable within predetermined time periods.

Reformed financial regulations, coupled with better financial infrastructure, could also boost access to financial services in many countries. Forty developing and transition economies still have interest rate ceilings that make it difficult for MFIs to survive without resorting to nontransparent fees.[34] Other regulations make it nearly impossible for MFIs to mobilize savings and accept deposits. Recognizing this, India recently passed a new microfinance law reducing the amount of start-up capital an MFI was required to have before it could take deposits. Such reforms need to balance protecting small-saver deposits with expanding the menu of opportunities they face. One possibility is a well-structured insurance scheme for deposits.

Reshaping financial services for smallholders and the rural nonfarm economy

MFIs cannot, however, provide the mainstay of rural finance. Promoting, improving, or even creating rural institutions to support a wide range of rural financial transactions remains one of the fundamental challenges facing developing-country governments. The range of alternatives is broad. Government-sponsored agricultural lending institutions have been successful in many now-developed economies such as the Republic of Korea and Taiwan (China). But in many developing countries, government efforts to improve rural financial markets have a record of doing more harm than good, heavily distorting market prices; repressing and crowding out private financial activities; and creating centralized, inefficient, and frequently overstaffed bureaucracies captured by politics.[35] Therefore it is not surprising that public agricultural and development banks came under heavy criticism in the 1980s.[36] Bolivia and Peru simply closed their traditional agricultural banks, while The Gambia and many of the former Soviet republics sold off and privatized all or part of their state banking programs.[37]

Reforming public agricultural banks. Unless state-owned agricultural banks undergo a radical transformation in governance arrangements that can insulate them from political capture, they are unlikely to function in a commercially sustainable manner and serve the needs of smallholders. What's needed is some form of privatization. Banrural in Guatemala shows how

BOX 6.5 *Banrural SA: from ill-performing agrarian bank to profitable public-private financial institution*

Banrural SA in Guatemala shows that financial and development goals can be combined and that a large bank can remain highly profitable while offering financial services to poor, rural, and agricultural clients. Banrural was created in 1997, when Guatemala closed Bandesa, its poorly performing public agricultural bank. With 200,000 credit clients, Banrural has a default rate of less than 1.5 percent. With 1 million savings accounts, it facilitates the transfer of more than $1.3 billion in remittances. It works mainly outside of Guatemala City. Half its clients are women, and it provides biometric and multilingual devices to serve illiterate and indigenous clients.

An innovative governance model. Banrural is controlled by private shareholders. The public sector owns less than 30 percent of the equity and provides no direct subsidies. The remaining 70 percent is divided among five types of stock, each represented on the board of directors. The 10 board seats are divided among the public sector (3), unions (mostly agricultural producer unions, not credit unions) (2), Mayan organizations (2), NGOs (1), small and micro enterprises (including microfinance organizations) (1), and the general public and former Bandesa employees (1). Each group elects its own directors and can sell stock only to other members of the group. This unusual governance model has empowered the private stakeholders and balanced goals of profitability and rural development. It is sustainable because the board and equity makeup cannot be altered significantly over time.

A focus on rural areas and poor clients. Banrural's profits come from a high volume of small transactions, mostly in rural areas. Having learned the lessons of the microfinance revolution, it adapts financial technologies to its clientele—loan officers visit all clients, decisions are based on an evaluation of business and household income flows, and use of traditional collateral is limited—without losing its identity as a bank. Its lending portfolio to agriculture has more than doubled since it was privatized. To increase its reach to smallholders and rural microenterprises, Banrural functions as a second-tier bank, providing credit lines to more than 150 institutions, such as credit unions and financial NGOs. To build strong community bonds, it provides health care and scholarships and supports community activities.

Source: Trivelli 2007.

firm budget constraints and appropriate governance mechanisms can create a public-private institution that meets the needs of rural and agricultural finance (box 6.5). Other reforms of state-sponsored lenders have produced some of the most successful agricultural-oriented finance programs, including Bank Rakyat Indonesia and BAAC Thailand.

Building on existing (but perhaps failed) public banks offers the opportunity of using their branch networks to establish a presence and take advantage of scale and spatial dispersion to reduce costs. The successful restructuring and later privatization of the former agricultural bank of Mongolia (renamed KhanBank in 2006) and of NMB in Tanzania demonstrate the potential of an existing branch bank infrastructure, innovative and independent management and oversight, and strong barriers to political interference to transform financial institutions. But such a transformation is hardly automatic or ensured, because state banks remain vulnerable to political capture. Key elements of reform include those advocated to improve governance and accountability of many state functions: transparency and professionalization. Financial objectives must be promoted by clear incentives for management and staff that tie rewards to the financial performance of branches.

Providing financial services through self-help groups and financial cooperatives. In several Indian states, a separate movement has emerged, based on village-level women self-help groups and their federations at the village, mandal, and district levels. These estimated 2.2 million groups collect savings from their members and either deposit them in rural banks or lend them to members. After demonstrating their capacity to collect on loans over a six-month time period, rural banks will typically leverage a group's savings by a factor of four, providing additional capital that is mostly used for agricultural purposes. It is often easier for self-help groups to obtain loans than it is for larger farmers, many of them poor customers for rural banks. With the self-help groups responsible for all screening, processing, and collection activities, the transaction costs for loans are greatly reduced.

Financial cooperatives and their networks are reemerging as promising institutions in rural finance in many countries, combining the advantages of proximity with modern management tools.[38] Locally based, their transaction costs are typically lower than those of other financial institutions. But because they are members of a larger network, they can offer the variety and volume of financial services that rural customers require, and they can pool risks as well as costs. In Burkina Faso, RCPB, the largest network of financial cooperatives, is establishing rural service points and very small village-based credit unions, managed and supervised by financial cooperatives in larger villages.[39]

Expanding the reach of rural finance. Information technologies offer a broad array

of new ways to extend financial services to rural areas, for value chains and for agriculture more broadly. The use of mobile phones for banking is being pioneered by Wizzit in South Africa and by Globe Telecom and Smart in the Philippines. The phones can be used to pay for purchases in stores and to transfer funds, significantly reducing transaction costs. With legal frameworks in place, m-banking could be one of the major breakthroughs in extending outreach to poor customers.[40] Branchless banking—using post offices, stores, gas stations, and input providers—is another successful approach to reaching rural customers at low cost. Brazil, India, Kenya, the Philippines, and South Africa demonstrate its financial viability, although there are issues in regulating such endeavors.[41]

Rural leasing is another financing option for rural entrepreneurs, in agriculture and in the rural nonfarm economy. Commercial providers in Mexico, Pakistan, and Uganda show that leasing can finance the acquisition of productive assets.[42] Now running profitably, these commercial providers all benefited from access to government and donor funds to jump-start their operations, demonstrating the potential benefits of public-private partnerships.

Financing through interlinked agents. Yet another way to increase agricultural access to capital is financial intermediation through linked agents in value chains (input suppliers or output processors) (chapter 5). Those agents are often more able to cost-effectively monitor on-farm behavior (eliminating information asymmetries), thus reducing monitoring costs and enabling financial institutions to accept nonstandard forms of wealth as collateral, such as standing crops or, for warehouse receipt financing, harvested crops.[43]

Further work is needed to determine whether these (often spatially monopolistic) practices offer finance at competitive rates and whether transaction costs continue to bias them against smallholders. As mentioned, some MFIs and cooperatives have themselves begun to adopt this form of secured lending. But their success has in many instances been undercut by inadequate legal frameworks, which often prevent the collateralization of less conventional assets (such as an input supplier's contract for a standing crop).[44] Further undercutting collateralized lending are legal systems that fail to provide clear rules for priority claims on assets and prompt redress in the event of default. Without collateral, high risks cannot always be compensated by higher interest rate premiums, so many smallholders are simply rationed out of the credit market.

Reputational collateral through microcredit reporting bureaus. Microcredit reporting bureaus that establish individual reputations can help small farmers use their past credit histories as an asset. A smallholder begins by establishing a credit history in the MFI sector, often using credit for nonagricultural purposes. In some instances, savings records are also accepted as proof of good financial behavior. The credit bureau establishes a reliable, portable signal of the borrower's reputation. Armed with this signal, a borrower should then be able to climb a lending ladder, moving from the more restricted purposes and term structures of MFI credit to standard loan contracts from institutions able to bear the portfolio risk and term structures required for agricultural loans.

For a lending ladder to work, two things must happen. First, a credit report must help lenders select clients and induce clients to repay loans. This becomes all the more essential as competition among lenders rises. Second, information on a borrower's credit worthiness and reputation must flow up the rungs from MFI to commercial lenders. A study of a credit bureau that includes MFIs in Guatemala shows that both can happen.[45] However, a client's credit history addresses risks related to the borrower's financial behavior—but it does not, and cannot, address business risks related to weather and prices in agriculture.

Insurance to manage risk

Risk distorts investments and puts assets in jeopardy. Insurance can assist farmers in taking more risks in production and prevent shocks from depleting their assets. It can

also reduce interest rates needed to offset the risk of default and increase the availability of agricultural credit by making traders and other intermediaries more willing to put their assets into an agricultural loan portfolio.[46] And in addition to enhancing the supply of agricultural credit, insurance can make potential borrowers more willing to bear the risk of conventional collateralized loans. As always, there is a tradeoff. Insurance is costly and leads to higher overall costs when added on to a loan.

Individuals and local networks can do much to manage risk, but such strategies often founder on systemic risk, beyond the capacity of the individual and community to manage. Innovations to address systemic risk can complement the local capacity to manage idiosyncratic risks. By so doing, the expectation is that the innovations will underwrite a more productive and sustainable pattern of agricultural and human capital investment.

Individual and community responses to risk

One element of any strategy to address the cost of risk is to expand a household's risk management opportunities. Communities have developed informal systems of mutual insurance and contingent loans to respond to shocks based on traditional norms[47] and local information. For example, pastoralists in Kenya provide cattle to neighbors who have lost a portion of their herds to repay past assistance and to create future obligations.[48] But these systems tend to fail poor families, for several reasons. One is the inherent limitation of insuring for covariate shocks: one's neighbors cannot provide assistance if they are also under stress. Another is that such systems entail transaction costs of searching for partners, coordinating activities, and monitoring reciprocal arrangements. As these costs increase, the optimal size of a mutual-support network is reduced, also reducing risk sharing. Moreover, individuals tend to form networks with others of their own caste, ethnicity, and gender, as well as a similar asset base. Mutual insurance, though useful, tends to be weakest for the poorest and to fall short when it is most needed.

Managing risk through microfinance

As discussed, the absence of insurance limits access to credit. Conversely, accessible credit can help a household smooth consumption and avoid distress sales. But shouldn't households save in anticipation of future needs and use their savings to self-insure? Households do, of course, save grain and cash, but less than might be expected. Just as there are credit constraints, households have limits to saving because of low (or even negative) real interest rates, security concerns, and the inaccessibility of banks. In addition, family obligations and gender roles hinder the accumulation of cash. On the supply side, many banks find that transaction and regulatory costs make small deposits unprofitable. MFIs partially address this. In addition to their well-known extension of credit to households with limited collateral, many MFIs offer secure and convenient ways of saving small amounts, often requiring a savings history before granting a first loan.

MFIs can serve an additional role in risk management: they can reduce the marketing and monitoring costs of insurance by being intermediaries for insurance to their clients. MFIs often require insurance on the assets purchased when a loan is taken out—for example, to insure against the loss of a cow. They may also require clients to insure against external factors that interfere with the ability to repay on schedule or offer loan-protection insurance to ensure that debts are not passed on to survivors.

MFIs can serve as intermediaries for other types of insurance covering individual risks, taking advantage of their ability to collect small amounts regularly and in keeping with the transformation of some MFIs from lending institutions to providers of a broader range of financial services, including savings accounts. The marginal costs for collecting payments are reduced when staff networks are already in place, opening the possibility of providing death and disability insurance as well as health and crop insurance. Indeed, the lives of more than 1.6 million Africans were insured in 2004 through a profit-making microinsurance product marketed though 26 NGO-managed MFIs, 24 of them in Uganda.[49]

Meeting the promise of weather-indexed insurance

MFIs cannot necessarily address moral hazard or adverse selection, two major obstacles to providing insurance. One innovation that might do so is insurance indexed to an objective indicator of weather, such as rainfall or temperature. Because weather is not affected by individual behavior, indexed insurance can address both monitoring costs and moral hazard. The choice of indicator depends on both the type of coverage and the cost and availability of data for estimating the probability of a payout. Cumulative rainfall or the date of the start of a rainy season is often proposed as the indicator; the number of days with temperatures below or above a cutoff is also in common use.

One concern is basis risk—the correspondence of the indicator and the actual losses incurred by a policyholder. The more specific the indicator, the lower the basis risk and more responsive it will be to farmers' needs. But a diverse range of products—including separate rainfall contracts for planting, growing, and harvesting stages—would make their marketing more difficult because individuals often find it hard to assess the probabilities of an event. Furthermore, addressing individual shocks increases monitoring costs. So, index-based insurance may have its greatest potential in addressing broad covariate shocks.

Several approaches are being tried to adapt indexed insurance to diverse conditions. Because they are still in pilot stages, no definitive statement about their sustainability or their impact on credit rationing, input use, and portfolio choice is available. Mexico determines the timing of assistance to small farmers after weather-related shocks on the basis of a weather index. The payment amount is based on proxies for chronic poverty. In 2006, 28 percent of the nonirrigated cultivated area was covered through an insurance contract with the federal and state governments, with the availability of weather stations the main limitation. Mongolia, by contrast, promotes private livestock insurance, with the government addressing reinsurance to share risks among herders, the insurance companies, and the government (box 6.6). In Malawi, weather-indexed insurance covers the loans necessary to finance improved seeds and fertilizer, with insurance payouts going directly to banks to settle the farmers' loans. In India, an MFI, BASIX, intermediates between insurance companies and its clients. The entry of private investors and the number of repeat customers for unsubsidized weather insurance indicates the potential for a private market.

BOX 6.6 *Mongolia's index-based livestock insurance*

Since 2005, Mongolia has piloted index-based livestock insurance to share risks among herders, insurance companies, and the government. The project combines self-insurance, market-based insurance, and social insurance. Herders retain small losses that do not affect the viability of their business (self-insurance), while larger losses are transferred to the private insurance industry (market insurance through a base insurance product). This is not a purely commercial program, however. The government bears the final layer of catastrophic losses (social insurance through a disaster-response product).

Herders pay a market premium rate for the base insurance product, which pays out to individual herders whenever the livestock mortality rate in a local region exceeds a threshold. As excess mortality reflects a combination of dry, windy summers and cold, high-snowfall winters, the insurance index is linked not to a weather event, but to historical livestock mortality data. Insurance payments are thus not directly linked to individual herders' livestock losses; payments are instead based on local mortality. This should avoid or reduce moral hazard and adverse selection—and reduce costs.

A key to the approach is having good data to develop the livestock mortality index. Mongolia has a 33-year time series on adult animal mortality for all regions and for the four major species of animals (cattle and yak, horse, sheep, and goat). The mortality index provides the basis for determining the specific mortality rates that would trigger indemnity payments.

Source: World Bank 2005l.

Defining government's role in agricultural insurance

The track record of agricultural insurance directly supplied by governments is not encouraging. In Brazil, costs exceeded premiums by more than 300 percent.[50] However, governments may have a role in inducing insurance services. In Tanzania, what farmers were willing to pay for insurance was less than the actuarial fair cost of providing coverage, particularly among low-income farmers.[51] Indeed, the tendency for wealthier households to purchase more insurance is a general pattern, with implications for income distribution.[52] Targeted subsidies might thus be warranted for variable costs to induce learning, especially when insurance premiums are less costly than ex post assistance. Subsidies can also offset the fixed costs of establishing a market.

Governments can also improve ex post risk mitigation by improving the data necessary for privately provided market insurance. For example, insurers may be unable to estimate the costs of rare events: a 1-in-100 event is hard to distinguish from a 1-in-80 event. Similarly, risks are hard to quantify in a changing climatic or economic environment. Thus, insurers may require higher premiums to accommodate such ambiguity of risk. When governments assemble information that can be employed in index-based insurance, they provide a public good that can improve the efficiency of markets and reduce costs.

Developing efficient input markets

Agricultural productivity has grown rapidly where modern varieties and fertilizers have been widely adopted, but not where adoption has lagged (chapter 2). In much of Asia and parts of Latin America, promoting seed and fertilizer use was accompanied by complementary investments in irrigation, rural roads, marketing infrastructure, financial services, and other factors that made using seed and fertilizer profitable and paved the way for dynamic commercial input markets. But throughout most of Africa, these complementary investments are small or nonexistent, and private input markets have yet to emerge on a large scale. Recent initiatives to build seed and fertilizer markets provide lessons that can inform future policy design.

Special challenges in seed and fertilizer markets

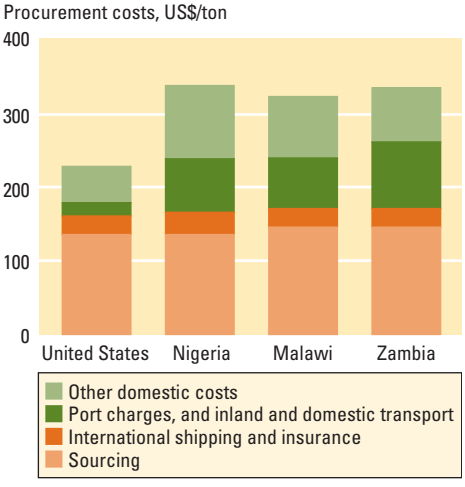
Why are efficient markets for seed and fertilizer so difficult to develop? To begin with, demand for both inputs is highly variable in time and space. In developing countries, the demand for seed is strongest when farmers are growing hybrids, whose seed must be replaced regularly. It is weakest when farmers are growing varieties whose seed can be saved from the harvest and replanted for several cropping seasons. In addition, the quality of seed found in the market may be unknown as quality cannot be determined through visual inspection.

Similarly, demand for fertilizer used on noncommercial crops is generally weak and unstable, for many of the same reasons: lack of knowledge, information asymmetries, liquidity constraints, risk and uncertainty, and high opportunity costs.[53] Profitability tends to weigh heavily in farmers' decisions, because the cost of fertilizer often represents a large share of cash production costs.[54] When cost factors and risk factors act in tandem, as they do in most rainfed environments, the impact on fertilizer demand can be significant.[55]

How do the distinctive features of demand for seed and fertilizer affect supply? The incentives for private firms to invest in producing and distributing seed depend on the potential profitability of these activities. In industrial countries, where economic incentives (and the expanding use of intellectual property rights) make it more likely that farmers will regularly purchase seed, plant breeding is done mainly by seed companies. But in smallholder agriculture in developing countries, seed companies depend on public research programs to provide varieties. This makes the pipeline for new products uncertain. Private seed companies usually have incentives to serve the needs of business-oriented farmers when the predominant seed technology is hybrid, when onfarm seed production is difficult, or when output markets demand a uniform product that depends on genetically uniform, high-quality seed.[56] When these conditions are absent, as is often the case in smallholder farming systems, the incentives for private seed companies are low.

For fertilizer, seasonally variable and geographically dispersed demand discourages potential suppliers because markets are small, making low-cost procurement difficult. Producing, importing, and transporting fertilizer entail major economies of scale.[57] Importing fertilizer, for example, is most cost effective in lots of 25,000 tons, considerably above the annual demand in most Sub-Saharan African countries. Transport costs are particularly high in Africa because of the generally poor road and rail infrastructure. Because of domestic transport costs, fertilizer use is higher in coastal African countries than in land-

Figure 6.2 Transport costs make up about one-third of the farmgate price of urea fertilizer in African countries, 2005



Source: Gregory and Bumb 2006.

locked ones.[58] In Malawi, Nigeria, and Zambia, international and domestic transport costs make up about one-third of the farmgate price (figure 6.2).

Adding to the high logistics costs are high financing costs. Fertilizer purchases typically involve large volumes, and a year or more can elapse between the time advance payments are made to a supplier and the time proceeds are received from retail sales. Just as producers face risk, so do input suppliers. If rains fail early in the season, sales of fertilizer can plummet as farmers scale back their planting. And if rains fail late in the season, credit recovery can become difficult as farmers experience crop failures and are unable to repay their loans.

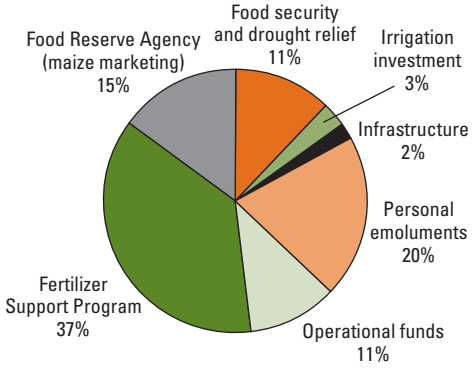
Promoting seed and fertilizer use in Africa

Given the market failures that lead to socially suboptimal use of seed and fertilizer, governments frequently step in to distribute them directly. Government-led distribution programs have often increased input use, but the fiscal and administrative costs are usually high and the performance erratic.[59] Recent cutbacks in public seed multiplication schemes and public seed distribution programs have saved money for governments, but private companies have not always stepped in to fill the gap, leaving many smallholders with no reliable access to seed.

Initiatives to promote fertilizer use have usually encouraged cost-effective importing. Many Sub-Saharan countries do not have access to the raw materials to manufacture fertilizer, and few have a domestic market big enough to support an efficient manufacturing facility. Government initiatives have often sought to make fertilizer more affordable at the farm level, commonly through subsidies, which are enjoying new popularity.[60] Subsidies remain controversial, however, in part because of their high cost. To cite a possibly extreme example, in Zambia 37 percent of the public budget for agriculture in 2005 was devoted to fertilizer subsidies (figure 6.3). Subsidies may also heighten inequality by benefiting mainly the larger farmers.[61]

There are situations where fertilizer can be productively subsidized, but they need to be carefully identified (box 6.7). When used as part of a broader strategy to address the binding constraints on supply and demand, well-designed fertilizer subsidies can help to overcome temporary market failures. But they should be "market smart," contributing to the development of viable private-sector-led input markets.[62] Market-smart subsidies should be targeted to poor farmers to encourage incremental use of fertilizer by those who would otherwise not use it. As volumes increase, the market price of fertilizer will come down to the true economic price and reduce the need for subsidies.

Figure 6.3 More than a third of Zambia's 2004/05 public budget for agriculture went to fertilizer subsidies



Source: Jayne and others 2006a.

BOX 6.7 *Is there a rationale for fertilizer subsidies?*

Fertilizer subsidy programs have tried to remedy low fertilizer use by small-scale farmers in Africa. Various benefits are cited in justifying the subsidies—economic (real productivity increases), environmental (reductions in land degradation), and social (poverty alleviation or emergency relief). Despite having some obvious drawbacks—the high cost, difficult targeting, and crowding out of commercial sales—fertilizer subsidies continue to have strong support from farmers and from politicians who view farmers as an important constituency.

Two questions should be addressed in considering whether subsidies are appropriate for promoting increased fertilizer use. First, can fertilizer subsidies bring economic benefits to societies that exceed their costs? Second, are there circumstances when subsidies are justified to achieve social rather than economic goals?

For efficiency

Fertilizer subsidies can bring economic benefits to society in several ways:

- They can kick-start fertilizer markets by offsetting high initial distribution costs until the market expands, economies of scale are realized, and prices decline.
- They can stimulate adoption by encouraging farmers to use fertilizer and learn about its benefits, creating positive externalities for others.
- They can overcome missing or imperfect credit or insurance markets for farmers that cause farmers to use suboptimal amounts of fertilizer.
- They can offset taxes or output price controls that make fertilizer financially unprofitable, when removal of taxes or price controls is not feasible.
- They can generate environmental externalities associated with higher soil fertility—reducing soil erosion, deforestation, and carbon emissions.

In practice, it has been difficult to implement subsidies and avoid undesirable market and distributional effects.

For welfare

If it would not be economical to use fertilizer even when input, output, finance, and risk markets are working well, is there a rationale for using subsidies to achieve noneconomic or social safety-net objectives, such as food security or emergency income support? Fertilizer subsidies would have to be the most cost-effective option for achieving the desired social objective, compared with such alternatives as food aid, food for work, and cash transfers.

Whether fertilizer aid is cheaper than food aid depends on the relative costs for governments to acquire fertilizer and food, and to deliver the items to needy households. It also depends on the additional food crop output likely to be generated per dollar of fertilizer distributed to and applied by farmers—and other cost savings associated with fertilizer aid, such as avoiding farm-to-market transport and handling costs incurred when farmers must sell a portion of their crop to repay fertilizer loans.

Fertilizer aid would be appropriate if food markets are working poorly. However, cash transfers to enable households to purchase food may be more appropriate if food markets are working well, especially in marginal areas where food production payoffs for fertilizer use are risky.

Sources: Conley and Udry 2001; Foster and Rosenzweig 1995; Gramlich 1990; Morris and others 2007; Sachs 2003; Pedro Sanchez, personal communication, 2007.

Market-smart fertilizer subsidies can be justified, but the conditions for using them efficiently are demanding. They should stimulate new demand for fertilizer without displacing existing commercial sales. They should encourage competition in fertilizer-distribution channels. And they should be temporary, introduced for a limited period, with a clear schedule for phasing out when they've achieved their purpose. Fertilizer subsidies used as a safety-net measure in marginal production environments can rarely be recommended, because other instruments for providing income support or ensuring food security will almost always be more effective.

What shows promise?

Because public interventions in seed and fertilizer markets have so often failed, attention is turning to new approaches to establish sustainable private-sector-led input distribution systems. What can be done to overcome the weak demand and inadequate supply for seed and fertilizer?

On the demand side, efforts to encourage greater use of seed and fertilizer have often focused on strengthening the ability of farmers to acquire inputs. To stimulate market development, vouchers have been distributed rather than the inputs themselves. In Malawi, under a scheme known as Inputs for Assets, vouchers were distributed only to those who had participated in a public works project, providing some self-targeting because wealthier farmers were less likely to participate in building roads. Vouchers were redeemable with local agrodealers, which strengthened effective demand for inputs and increased sales—and profits—of private distributors.[63] More recently the government of Malawi has sought to increase demand significantly through large-scale distribution of coupons (about 3.5 million in 2006/07), with farmers expected to pay a cash price when redeeming the coupon equivalent to about one-third the retail price of fertilizer. With the help of favorable weather, aggregate maize production increased sharply

after the program was launched, but the budgetary costs of the program have been very high and difficult to control, and there has been a high level of displacement of smallholder commercial fertilizer sales.

In an experimental pilot scheme in Kenya, fertilizer vouchers were sold to farmers at harvest time as a commitment device to ensure that funds were reserved for fertilizer rather than drawn away to meet other demands—with good results.[64] In Mali and Nigeria, matching grants were provided to producer organizations during an initial period for use in testing and learning about new technologies.[65]

On the supply side, the international research centers of CGIAR have promoted partnerships in eastern and southern Africa between public plant-breeding programs and private seed producers. In West Africa, Sasakawa Global 2000 has supported small-scale private seed producers by providing technical training, business advisory services, and access to credit. In Kenya, Malawi, and Uganda, the Rockefeller Foundation has teamed with local NGOs to build networks of rural agrodealers (box 6.8).[66] In Angola, Mozambique, and other countries where farmers lost their seed stocks during civil conflicts, NGOs such as Seeds of Hope have sponsored seed fairs and seed exchanges to supplement emergency seed distribution.[67]

Another avenue for improving input supply systems is to strengthen the capacity of producer organizations to take responsibility for the final stages of distribution. For smallholders, purchasing inputs in bulk and organizing distribution through their own organizations is a way to compensate for inadequate private sector delivery. For input suppliers, dealing with producer organizations presents considerable advantages over dealing with geographically dispersed farmers who individually purchase only very small quantities of inputs. In Ethiopia, producer organizations are taking over retail fertilizer distribution from government and parastatal companies.

These and other innovative efforts to stimulate greater use of improved seed and fertilizer provide lessons about state and donor support to private-sector-led agricultural input markets. Progress in improving seed and fertilizer distribution systems will not be sustainable, however, unless there is strong, effective demand for both inputs, assured only as long as investment in seed and fertilizer is profitable for farmers. That will be the case only if they have access to reliable markets for selling their products at remunerative prices (chapters 4 and 5). Building input markets must go hand-in-hand with building output markets and linking farmers to those markets.

BOX 6.8 *Thriving rural input supply retailers as agrodealers in Africa*

The Rockefeller Foundation has led the development of agricultural input supply pipelines in rural Kenya, Malawi, and Uganda. Working with global partners such as the International Fertilizer Development Center (IFDC) and local organizations, it has piloted:

- Training rural retailers to develop their technical, product, and business management skills. After being trained, the retailers become certified as agrodealers.
- Linking certified agrodealers to major agricultural input supply firms, using partial credit guarantees that cover 50 percent of the default risk.
- Repackaging seed and fertilizer into small packs (as small as 1 kilogram for seeds and 2 kilograms for fertilizer) to increase the affordability for farmers.
- Organizing agrodealers into purchasing groups to facilitate bulk purchasing from suppliers. The group members provide joint collateral to guarantee repayment.

These efforts to strengthen rural distribution networks are beginning to bear fruit. In Malawi a recent survey of rural markets showed that the majority of farmers now buy their inputs from local agrodealers, not from the government-owned Agricultural Development and Marketing Agency or from large commercial distributors in urban areas.

With the number of agrodealers expanding, the distances traveled by smallholder farmers in search of inputs have been drastically reduced in many districts. The range, volume, quality, and price of agricultural inputs supplied into rural areas have also improved significantly.

Meanwhile, the default rate on the credit guarantees was less than 1 percent in the first three years of the program. The low default rate is attributed to the high quality of the technical and business management training for the agrodealers—and their acting together to ensure repayment. As a result of greater involvement in seed and fertilizer sales, agrodealers have become important extension nodes, and several seed, fertilizer, and agrochemical companies now use the agrodealers to conduct demonstrations of new technologies.

Source: Morris and others 2007; Kelly, Adesina, and Gordon 2003; International Fertilizer Development Centre (IFDC) 2005.

Producer organizations in a context of value chains and globalization

A prosperous smallholder sector is one of the cornerstones of an agriculture-for-development strategy. Yet, smallholders typically face high transaction costs and low bargaining power in factor and product markets. They have limited access to

public services, and their voices are often not heard in policy forums where issues that affect their survival are being decided. In a world increasingly dictated by value chains and the rules of globalization, competitiveness is the condition for survival. To confront this situation, smallholders have formed various types of producer organizations to better compete. These organizations have expanded rapidly in developing countries, and there are dispersed successes on three fronts: markets, public services, and voice. However, the world of value chains and global market forces is creating new challenges for their organizations. The challenge for the organizations is how to respond; for governments and donors it is how to assist without undermining the organizations' autonomy.

Producer organizations have increased rapidly in developing countries

Producer organizations are membership-based organizations or federations of organizations with elected leaders accountable to their constituents. They take on various legal forms, such as cooperatives, associations, and societies.[68] Their functions can be grouped in three categories:

- Commodity-specific organizations focusing on economic services and defending their members' interests in a particular commodity, such as cocoa, coffee, or cotton
- Advocacy organizations to represent producers' interests, such as national producers' unions
- Multipurpose organizations that respond to the diverse economic and social needs of their members, often in the absence of local governments or effective public services

In industrial countries, producer organizations have been fundamental to the success of the family farm, still the dominant form of organization of production today. In the United States, dairy cooperatives control about 80 percent of dairy production, and most of the specialty crop producers in California are organized in cooperatives.[69] In France, 9 of 10 producers belong to at least one cooperative, with market shares of 60 percent for inputs, 57 percent for products, and 35 percent for processing.[70]

In the 1960s, many developing-country governments initiated cooperative development programs, often to ensure quotas for cash crops and distribute subsidized credit and inputs. Cooperatives were largely government controlled and staffed. So farmers considered them as an extended arm of the public sector, not as institutions that they owned. This form of cooperative was rarely successful. Political interference and elite capture resulted in poor performance and discredited the movement. For example, in the case of the Indian sugar cane cooperatives, large growers depress the price of sugar cane to the detriment of small farmers. This generates retained earnings within the cooperatives that large farmers can then siphon off through various means.[71]

This situation changed radically in the 1980s. Political liberalization opened opportunities for producers to become active players through organizations of their own. Structural adjustment disengaged the state from many productive functions and services. Contrary to expectation, the dismantling of parastatal agencies led to only limited entry of private providers, mostly in high-potential areas. Smallholders thus turned to producer organizations to compensate for the withdrawal of state services and the lack of private alternatives. Where government interference in cooperatives prevailed, producers often sidestepped them and created associations.

As mentioned in chapter 3, producer organizations have spread rapidly. It is estimated that 250 million farmers in developing countries belong to one.[72] Producers are also organizing at the regional and international levels (box 6.9). These organizations enable producers to participate in consultations with regional and international bodies.

Producer organizations engage in a broad array of activities that are reviewed in the *Report*. They participate in trade negotiations and domestic agricultural policy making (chapter 4), improve the terms of

access to output (chapter 5) and input markets (above), support the generation and adoption of technological innovations and diversification into new activities (chapter 7), and contribute to natural resource management (chapter 8). They are a fundamental building block of agriculture-for-development agendas (chapter 10). And they are actively engaged in participatory governance, particularly in relation to decentralization and community-driven development approaches (chapter 11).[73]

Among the better-known producer organizations are the Indian Dairy Cooperatives Network and the National Federation of Coffee Growers of Colombia. In 2005 the Indian Dairy Cooperatives, with 12.3 million members, accounted for 22 percent of the milk produced in India. Sixty percent of the cooperative members are landless, very smallholders, or women. (Women make up 25 percent of the membership).[74] Created in 1927, the National Federation of Coffee Growers of Colombia has 310,000 members, most of them smallholders (less than 2 hectares), and it provides production and marketing services to 500,000 coffee growers. It uses its revenues to contribute to the National Coffee Fund, which finances research and extension and invests in services (education and health) and basic infrastructure (rural roads, electrification) for coffee-growing communities.[75]

Producer organizations face many challenges

Producer organizations have expanded rapidly, but existence does not guarantee effectiveness. For that, they need to face five major challenges, both internal and external to the organization.[76]

Resolving conflicts between efficiency and equity. Producer organizations typically operate in the context of rural communities where they are subject to norms and values of social inclusion and solidarity. This may clash with the requirements of professional, business-oriented organizations that must help members compete to survive in the market place. In the name of inclusion, organizations have difficulty excluding members who do not comply with obligations. In the name of solidarity, they are pressed to cross-subsidize poorer-performing members at the expense of better performers, thereby weakening rewards for efficiency and innovation. They are also frequently pressed to deliver public goods to the community, putting a drain on their resources.[77] An analysis of 410 producer organizations in Chile shows that ones that succeed have strict rules that are performance oriented. Rules allocate costs and benefits to each member on the basis of his or her farming performance and market conditions; enforce agreements between the organization and the individual; and reduce the transaction costs of negotiating, monitoring, and enforcing agreements between the organization and its members.[78]

Dealing with a heterogeneous membership. Producer organizations have to represent the interests of an increasingly diverse membership (chapter 3). This creates a major challenge in achieving fair representation across a widening spectrum of interests. Leaders tend to be older males, larger-scale farmers, and members of the rural elite. Yet, organizations have to ensure that the interests of smallholders, women, and young producers are fairly represented and their needs adequately served. There is

BOX 6.9 *Producer organizations with international memberships*

The International Federation of Agricultural Producers (IFAP) was founded in 1946. To meet the needs of farm organizations from developing countries, it created AgriCord in 2000, an alliance of agriagencies that offer programs to strengthen farmer organization members of IFAP. Under AgriCord's capacity–building program, farmer organizations from industrial countries help to strengthen their colleagues in developing countries. IFAP represents 115 national organizations from 80 countries, and developing countries now form the majority of IFAP membership. It is the only world forum for farmers from industrial and developing countries to exchange concerns and set common priorities. It has general consultative status with the Economic and Social Council of the United Nations and the CGIAR.

Via Campesina, an international network of 92 federations or unions, was created in 1992 to coordinate organizations of small and midsize producers; agricultural workers; rural women producers; and indigenous communities from Africa, America, Asia, and Europe. It aims at influencing decision making by governments and multilateral organizations regarding the economic and agricultural policies that affect its members and strengthening women's participation.

Sources: www.ifap.org/en/index.html; www.viacampesina.org.

an important role here for public social services and NGOs to help enhance the capacity of weaker members in acquiring skills and achieving voice in the organizations. Important is to put in place more transparent decision-making mechanisms as well as information and communication systems, using media and information technology to empower the newer and weaker members, improve the governance of the organizations, and enforce leaders' accountability toward their members.

Developing managerial capacity for high-value chains. Globalization and integrated supply chains place new demands on the managers of producer organizations. Managers must deal with more sophisticated national and international supply chains, with stringent and changing requirements (chapter 5). They must orchestrate members' supplies to meet the demands of these value chains—achieving scale and timing in delivery; satisfying sanitary and phytosanitary standards; and meeting the specifications demanded by agroprocessors, exporters, and supermarkets.[79]

Here as well, governments and donors have an important role to play in supporting capacity building in a wide variety of areas: management; market intelligence; technical aspects of production; input procurement and distribution; meeting phytosanitary standards; and engaging in policy analysis, dialogue, and negotiations. Donors have also been involved in strengthening leaders' managerial capacities and putting in place transparent financial management systems.

Participating in high-level negotiations. Producer organizations participating in high-level technical discussions, such as global trade negotiations, need new technical and communication skills.[80] In addition, experts that represent the organizations must remain true to national and local members' interests, a difficult challenge for apex organizations covering a wide range of interests. This requires maintaining open channels of communication with their memberships at the local, regional, and national levels. Governments and donors can enhance the effectiveness of producer organizations' participation in these consultations by helping them gain equal access to information, seek professional advice to better understand the consequences of the policies being discussed, and recruit expertise to prepare their inputs into the policy dialogue.

Dealing with a sometimes-unfavorable external environment. However effective they are internally in meeting the above four challenges, producer organizations cannot successfully promote the interests of smallholders without an enabling legal, regulatory, and policy environment that guarantees the organizations' autonomy. This requires changing the mindset of policy makers and staff in government agencies about the role of the organizations. Organizations must be recognized as full-fledged actors, not as instruments of policies designed and implemented without consulting them, nor as channels for implementing donors' agendas. Public services must be client oriented to partner with the organizations, with mechanisms that allow equitable negotiations between the organizations and other sectors. Governments' interference in cooperatives management must be removed, a difficult process that requires confronting powerful, vested individual and political interests.[81] Donor support to the Indian dairy cooperatives was partly motivated by the objective of improving their efficiency through removing government interference. Although considerable progress was made, the objective was still not completely achieved by the end of two decades of support.[82] Hence, an effective use of producer organizations as part of an agriculture-for-development agenda requires a strong, proactive state setting the conditions for this to successfully happen.

Supporting producer organizations to empower them

Governments and donors have supported producer organizations, often through specialized NGOs. Several producer organizations in industrial countries support

organizations in developing countries through NGOs financed by member fees.

However, investing in social capital is not easy. To be effective, support should be committed for the long term but with a clear phasing-out strategy. Donor and government support, whether financial, managerial, or technical, can be a double-edged sword, creating dependency and undermining the organizations rather than empowering them, depending on how that support is provided.[83] Although there is no blueprint for the best way to give support, one approach that has proven effective is to use demand-driven funds, with producer organizations selecting activities and service providers, such as happens in Senegal and Mali.[84] Another approach, introduced by the Participatory Policy Generating Program financed by Dutch aid, supports producer organizations' links with universities that can provide policy research for proposed producer organizations positions. The African Farmers Academy provides training courses tailored to the needs of farmer leaders in the areas of agricultural policy and international and regional trade. These and other approaches to empower producer organizations require further experimentation and solid impact analyses to become more effective.

Institutional innovations—still a work in progress

Despite the recent effervescence of institutional innovations across a broad range of countries and markets, huge institutional gaps remain in supporting the competitiveness of smallholders. Land markets are still incomplete and inefficient. Financial markets are still laden with asymmetries of access and information. Insurance against risk is available to only a few individuals and communities. Input markets are inefficient as a result of small scale and distorted by subsidies that tend to benefit more the larger landholders. Producer organizations are only beginning to represent the interests of poor smallholders. With so much left to do, the chapter closes on a note not of satisfaction with accomplishments but of work in progress, with much left to be done and urgency in doing so to reduce the inefficiencies, inequities, and human costs of the remaining institutional gaps.