

Agricultural Market Reforms

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The purpose of this chapter is to provide guidelines for the examination of the impact of agricultural market reforms on poverty and welfare. This is part of a larger program to elucidate and standardize the methods for conducting Poverty and Social Impact Analysis (PSIA) within the Bank.¹ PSIAs evaluate the distributional impact of policy reforms on the well-being of different stakeholder groups, with particular focus on the poor and vulnerable. They also address issues of the sustainability of reforms and the risks to successful implementation arising from the social impacts of policy changes.

A PSIA is not the same as impact evaluation. While it contains an element of evaluation, it is intended to give policy makers an idea of the potential impact of reforms—what is likely to happen, and what are the consequences relative to a counterfactual outcome—before the implementation of reforms. In other words, it is begun *ex ante*, whereas impact evaluation is generally conducted after the reforms. However, successful reforms must include some core capacity for monitoring and evaluation that is built into the program at its inception. This would enable policy makers to see whether the policies were implemented as planned, whether the results correspond to expectations, what must be changed during implementation, and what might be learned from experience.

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The focus of these guidelines is primarily on the reform of marketing boards and other parastatal or quasi-governmental organizations that intervene directly in agriculture. However, the concerns raised by parastatal reform are inextricably linked to broader issues of reform in the sector. For example, the parastatal organization may be the mechanism by which the government maintains price controls. Thus, the withdrawal of state participation in marketing will have an impact on the prices facing consumers and producers. The tools required to understand the impact of price changes caused by parastatal reform are not different from those used to understand the impact of price changes caused by other factors. This document includes some discussion of agricultural sector reforms and some generally applicable topics of agricultural policy analysis.

These guidelines do not take a position on the tired and misleading debate concerning the relative roles of the state and market in agriculture. Happily, that debate seems to have run out of steam, and we can now turn our attention to more important questions: What kind of institutions lead to efficient and inclusive markets, and how can we create an environment that fosters the development of these institutions and markets for sustained and equitable growth?

These guidelines do take the view that state intervention in agricultural markets has often been clumsy and heavy-handed, has provided means and opportunities for rent-seeking and capture, and has often been unable to achieve even the limited goals it established for itself. Under these circumstances, reform has been and remains essential.

SECTORAL BACKGROUND

Governments have intervened in agriculture for centuries, especially in output markets.² Government intervention in agricultural markets was intended to improve sector coordination and efficiency, to affect the distribution of the gains from trade, and to ensure food security.

Reasons for intervention in agricultural markets

International volatility and declining prices. Prebisch (1950) and Singer (1950) argued that prices for primary commodity exports would fall relative to manufactured imports. Consequently, the terms of trade for commodity-producing developing countries would decline. Groups of producing countries created commodity-specific organizations on sugar, tin, coffee, cocoa, and rubber to manage international trade and prices. Similarly, governments wanted to minimize the volatility of prices

and supplies in world markets, which was believed to depress investment and incomes in the sector. Small farmers cope with variability through diversification, sacrificing the potential benefits obtained through specialization (Dehn 2000).

Thin and volatile domestic markets. Agricultural supply is seasonal, and many farm households produce primarily for their own consumption, supplying to the market only that share of production that is surplus to their requirements. Small variations in yields because of weather and other sources of instability, in the aggregate, may have significant effects on total marketed supply. In addition, small fluctuations in prices could have major effects on farm household incomes and welfare. Intervention was justified by the need to ensure sufficient and consistent domestic food supplies and reduce volatility in domestic prices.

Noncompetitive and predatory marketing practices by private traders. It was commonly believed that rural smallholders were prey to extortion by oligopsonistic behavior among traders and processors who colluded to keep prices low (see Timmer, Falcon, and Pearson 1983). Thin and unstable supply could not support the development of competitive markets among purchasers, so intervention was needed to ensure that producers received fair prices.

Risk aversion among farm households. Farm incomes are highly variable, and farmers face significant risks of catastrophic loss. This reduces the incentive to invest for future productivity, and the risks have important spillover effects on rural employment, merchants, and processors. The impact of catastrophic events is exacerbated by the covariance problem, whereby many households are affected simultaneously, thus reducing the ability to spread risks across households.

Maintaining farm incomes. One major reason for intervention was to support and raise the incomes of small farmers. Rural farm households are generally the poorest in any country. Government intervention could guarantee demand for smallholder production, at a fixed price, reducing the uncertainty facing smallholders and raising their income.

Agriculture as a source of government revenue. Although intervention was ostensibly intended to raise the income of farm households, it often taxed farm income rather than supported it (Knudsen and Nash 1990).³ Many studies, most famously Krueger, Schiff, and Valdés (1991), have

documented the implicit and explicit taxation of the sector. Export crop marketing (for example, coffee, cocoa, and cotton) has proved an especially effective means to tax agriculture by simply setting producer prices below world prices.

Subsidizing food for urban consumers. Food performs two economic functions: it provides income to farm households, and it is a wage good, that is, it is a large component of urban consumption and, as such, it determines the real incomes of urban workers. Any increase in food prices necessitates an increase in urban wages, thereby increasing labor costs and reducing the returns to industrial development. It was thought important to intervene in food markets to keep consumer prices low to encourage investment in modern and urban industries.

Ensuring food security. The Roman price controls noted above were intended to ensure access to food among urban consumers. In ancient China and elsewhere, feudal lords stockpiled grain to combat famine (King 1911). Widespread famine and poverty resulted from the poor harvests and policies introduced following the Napoleonic Wars in Europe. Governments responded by restricting trade, controlling prices, and establishing public works programs, to mixed effect (Webb 2002). More recent times are replete with examples of interventions by governments and international and nongovernmental agencies to ensure food security and alleviate famines (see Barrett and Maxwell forthcoming). Most famous is the scheme introduced by the British in India in 1939 as a wartime rationing measure.

Other externalities. All the above factors are external in the sense that they affect more than simply the farm households or food consumers at the heart of the intervention. In addition, issues such as pollution from chemical runoff, erosion, and deforestation have external costs that cannot be charged directly to the individual who causes them. These factors require some larger coordinating system that can internalize and assign these costs more effectively.

Types of interventions

To some extent, nearly all countries intervene in agriculture by providing essential public services such as the legal enforcement of contracts and agricultural research or, indirectly, by restricting prices or quantities. Many countries have intervened directly by establishing formal market-

ing systems, with prices set by fiat. Here, we briefly describe some of the instruments used to intervene in agriculture markets. These guidelines do not cover restrictions on international trade in agriculture, which are addressed elsewhere.⁴

Price restrictions. Governments have often tried to minimize or eliminate fluctuations in prices, or to ensure uniform prices, by legally restricting prices nationwide. Administered prices may be fixed, or they may be allowed to fluctuate within a band, or they may be restricted by floor or ceiling levels. These administered prices are also generally uniform throughout a country and fixed across seasons, that is, they are panterritorial and panseasonal.

The price restrictions may be maintained by fiat or legal mandate: Prices are not permitted to move outside the bounds set by a government ruling. This type of restriction is almost impossible to maintain for any extended period. The administrative costs and opportunities for avoidance are too great. More commonly, prices are maintained through participation in the market. Governments often keep stocks, ostensibly for food security reasons but also to provide “vent for surplus” (Myint 1971), that is, they purchase products when the supply is great and prices begin to move below some predetermined floor; conversely, they liquidate stocks when the supply is low and prices start to rise.

Governments also influence prices indirectly by providing subsidies on commodities to consumers or on inputs to producers. These interventions are common throughout the world. Input subsidies can be direct, or they can take the form of exemptions from indirect taxes, concessionary credit, special insurance, free or subsidized extension services, subsidized water, and so on. In relative terms, output price supports predominate. Among countries of the Organisation for Economic Co-operation and Development (OECD), output price supports compose 60 to 70 percent of the total assistance provided to agriculture (OECD 2003). Fewer countries subsidize consumer prices, notably Brazil, Pakistan, and countries of the former Soviet Union and of North Africa.⁵

Quantity restrictions. While many countries have imposed quantity restrictions on imports and exports, a few—notably formerly socialist countries such as Ethiopia, Guinea, and Mozambique, as well as the countries of the former Soviet Union—maintained quotas on domestic supply. The government decreed the amount that each producer must supply to the market or, more likely, to a public sector facility charged with assembly and processing.

Demand-side quantity restrictions have been much more popular. This is the outcome of a situation in which domestic demand exceeds supply and imports are restricted. In this case, commodities must be distributed by a nonprice mechanism, such as ration cards. Some countries (most famously Sri Lanka) have implemented food stamp programs.⁶

Direct intervention in markets. Government participation in domestic markets can be benign or even beneficial. Governments can, for instance, provide the public goods necessary for competitive markets to function properly, such as market information, quality regulation, the assignment and maintenance of property rights, and the monitoring and prevention of anticompetitive behavior. These actions must be scrutinized so that, for example, rights are not assigned with bias toward one or another group, especially during periods of reform. But the fact that governments play a role in markets is not *prima facie* cause for structural adjustment.

Here, we are concerned with direct marketing activities conducted by the state or its surrogates, such as parastatal marketing boards. These may be small (price-taking) agents in relatively free markets with many participants. Many governments have assigned monopoly and monopsony power, however, restricting or even prohibiting private trade, and using parastatal agencies to assemble, transport, and market commodities. These agencies have been involved in input supply, as well as product markets. Nine of the 10 African countries surveyed by Kherallah and others (2002) had created parastatal marketing boards with some degree of monopsonistic or monopolistic power. These parastatals ranged from relatively small and weak ones, as in Benin and Ghana, to strictly nationalized industries, as in Ethiopia and Madagascar, where private trade was banned altogether.

History and experience of interventions

Intervention in commodity markets was widespread following the Great Depression and the Second World War, and it continues today. The United States and the European Union intervene heavily, and many countries maintain marketing boards. In 2002, the countries of the OECD provided the total equivalent of US\$318 billion to agriculture (OECD 2003). The International Monetary Fund, as well as bilateral donors, offered compensatory financing to countries suffering from the volatility of international commodity prices. Governments began to introduce domestic stabilization programs, such as buffer-stock schemes (in Bangladesh, India, Indonesia, Mexico, the Philippines, and South Korea), buffer funds (in Côte d'Ivoire

and Papua New Guinea), and monopolistic marketing boards (most of Sub-Saharan Africa) (Varangis, Larson, and Anderson 2002).

The most heavy-handed marketing boards were involved in all phases of agricultural marketing. They provided inputs, such as fertilizer and credit; found a ready buyer for output; owned processing centers such as cotton gins and sugar mills; managed exports and imports; and administered domestic prices that were normally panseasonal, panterritorial, and detached from international prices. Table 4.1 lists the characteristics of selected country marketing boards.

Rationale for reforms

Since the 1970s and 1980s, evidence has mounted that many interventions put in place to facilitate growth have instead become an impediment to growth (World Bank 1983). In many cases, the marketing boards did not achieve their own intended goals, sometimes because they were unsustainable, but also because they were simply ineffective. Bulog (*Badan Urusan Logistik Nasional*, or National Logistics Agency) in Indonesia failed to stabilize rice prices during the 1987–88 and 1994–95 droughts. By the 1990s, the costs of stabilization had grown, partly because of rising corruption, and the benefits had declined (Bappenas et al. 2003). This is not to ignore the remarkable success of Bulog and other agencies in making the country self-sufficient in rice production. Timmer (1993, 1996) argues that government intervention in input, credit, and output markets caused economic growth to be more rapid than what would have been achieved in the absence of intervention. But this success was unsustainable, and Bulog's mismanagement and corruption had become infamous by the 1980s (Timmer 1996).

Many marketing boards were similarly inefficient, wasteful, and fiscally unsustainable, drawing enormous resources that might have been better employed elsewhere. In Zambia in 1990, nearly 14 percent of the government budget went to subsidize food prices for urban consumers and inputs for farmers (McCulloch, Baulch, and Cherel-Robson 2000). The Food Corporation of India has also come under attack on the grounds that it is too costly and inefficient. Of the total food subsidy of the central government in 2001, for example, 57 percent represented the costs of holding stock (Swaminathan 2002).

The impossibility of pursuing simultaneously the goals of supporting farmers and providing cheap food to urban populations is now widely acknowledged. Similarly, policies designed to promote food self-sufficiency conflict with policies promoting export crops. In practice, many governments taxed producers directly or indirectly to keep food prices low and

TABLE 4.1 Selected Description of Country Marketing Boards

<i>Region</i>	<i>Country</i>	<i>Description of marketing board</i>
Africa	Benin	Monopoly parastatal, Office National des Céréals.
	Ethiopia	Grain trade strictly controlled: distorted prices, ban on private trading, producer quotas.
	Ghana	Small parastatal, with only a fraction of the market; “Cookbook” still controls cocoa market (Gilbert and ter Wengel 2001).
	Kenya	Marketing board controlled trade until the 1980s.
	Madagascar	Assembly, processing, transport, marketing nationalized in 1976.
	Malawi	ADMARC established with monopsony control at panterritorial and panseasonal prices.
	Mali	Monopoly parastatal, Office Malien des Produits Agricoles, for coarse grain until early 1980s, for rice until 1987.
	Tanzania	Monopolistic parastatal, National Milling Corporation for maize; Tanzania Coffee Marketing Board completely controlled coffee marketing, provided credit and extension.
	Zambia	Monopolistic parastatal, National Marketing Board, purchased grain at panterritorial and panseasonal prices.
	Zimbabwe	Parastatal Grain Marketing Board expanded to provide credit and extension.
Asia	India	Food Corporation of India is not a monopoly purchaser in the domestic market, but has monopoly control over cereal imports based on food security concerns (Pearce and Morrison 2002).
	Indonesia	National agency (Bulog) stabilized prices for “strategic” foods (rice and sugar, cooking oil, chili peppers, and other items) and also defended a floor price for rice by direct intervention (Bappenas et al. 2003).
	Philippines	National Food Authority ensures food security through rice and maize buffer stock, purchases on domestic market to stabilize prices, has monopoly on rice imports (Pearce and Morrison 2002).
	South Korea	Similar to Philippines (Pearce and Morrison 2002).
	Vietnam	Restricted internal trade as late as 1995 (Minot and Goletti 2000).
Latin America	Mexico	Parastatal (Conasupo) maintained panterritorial producer prices, subsidized inputs and consumer prices; parastatal eliminated in 1995.
	Colombia	Federación controls coffee marketing.
	Guyana	Sugar produced by state-owned, privately managed enterprise, Guysuco.
Former Soviet Union		Producer and consumer subsidies lifted in the early 1990s, reintroduced soon after; “procurement agencies” manipulate prices for consumer protection; quantity controls on sugar and milk (Hartell and Swinnen 1997).
Developed market economies		Introduced state trading monopolies, marketing boards, food corporations, and other interventions in the 1920s and 1930s (Hartell and Swinnen 1997). Some remain, for example, in cotton and sugar.

Source: Kherallah et al. 2002, unless otherwise noted.

Note: ADMARC = Agricultural Development and Marketing Corporation.

favor urban interests (Krueger, Schiff, and Valdés 1991; Mundlak, Cavallo, and Domenech 1989).⁷ In Albania, the government tried to maintain both low bread prices and high wheat prices, while allowing bakers and millers to make a profit. By mid-1996, international wheat prices had risen to record levels, making public imports of wheat fiscally unsustainable (Kodderitzsch 1999). Bates (1981) argues that governments chose intervention precisely because vested interests benefited from the rents created by distortions in markets.

Governments attempted to reduce the budgetary burden by lowering producer prices, thereby adversely affecting production and further undermining the programs. Illegal or parallel markets emerged, and official monopolies could not be maintained. Similar problems prompted market reforms in many coffee- and cocoa-producing countries. In several countries in Sub-Saharan Africa (Cameroon, Côte d'Ivoire, Madagascar, and Uganda), reforms were also motivated by the collapse of the quota scheme of the International Coffee Agreement. Cotton parastatals in Uganda and Zimbabwe were insolvent by the early 1990s largely because of poor management, but also because of producer price supports in countries of the OECD (OECD 2001). They could no longer carry out their responsibilities regarding trade and producer financing, and their capacity to invest in or maintain publicly financed gins was severely limited (Akiyama et al. 2001). Government marketing agencies in Tanzania, such as the Lint Marketing Board, the Coffee Marketing Board, and the Produce Marketing Board, were inefficient and corrupt, and they were bankrupt by the early 1990s (Bazaara 2001).

TYPES OF REFORMS

Most countries in Sub-Saharan Africa began implementing structural adjustment programs in the late 1970s, and, by the 1980s, the implementation of reforms had become a condition to receive loans from the World Bank and bilateral donors (for example, see Akiyama et al. 2003, Table 1; Meerman 1997; Mosley 1987; World Bank 1994a).⁸ Agricultural market reforms were designed to reduce or eliminate distortions in the sector and introduce market forces in agriculture. In principle, reforms would allow agriculture to receive world prices for commodities and would eliminate the transfer of rents to urban populations.

Focus, orientation of reforms

The types of reforms undertaken in the first wave of structural adjustment were generally large scale, including the removal of trade restrictions, the

devolution or dissolution of parastatal agencies, and so on. These reforms can be classified according to the three main areas of intervention in the sector:

- *Prices*: liberalizing prices for inputs and outputs, eliminating subsidies, allowing domestic prices to reflect world prices, eliminating panterritorial or panseasonal prices, and reducing exchange rate overvaluation;
- *Quantities*: removing regulatory controls and other quantity restrictions in input and product markets, allowing the private sector to participate, removing restrictions on movement of goods (for example, export bans), and relaxing quotas and licensing arrangements; and
- *Institutions*: restructuring public enterprises and eliminating marketing boards or restricting the role of marketing boards to the provision of information or the maintenance of strategic stocks.

By 1992, 17 countries in Sub-Saharan Africa had removed subsidies, and 23 had liberalized food markets. As of 2002, parastatals continue to dominate food markets in francophone West Africa and to some extent in southern Africa. The Agricultural Development and Marketing Corporation (ADMARC) in Malawi, the Food Reserve Agency in Zambia, and the Grain Marketing Board in Zimbabwe are still heavily involved in domestic food markets. In some countries (Benin, Ethiopia, Ghana), the marketing board has been transformed into a buffer-stock agency. In Benin and Mali, the parastatals also have responsibility for extension services. In Tanzania, the parastatal is focusing on more remote areas; this is also the intention of ADMARC in Malawi.

Kherallah and others (2002) examine food markets in ten Sub-Saharan African countries that have implemented marketing reforms. Nine of these countries still maintain marketing boards for their main food crops, and eight still restrict domestic markets or require traders to be licensed, although few explicitly restrict prices. For export crops, the degree of market reform has differed significantly. Markets for coffee and cocoa have been almost completely liberalized. Coffee marketing boards have been reoriented to focus on the provision of public goods such as regulation and standards, and there has been a considerable supply response (Akiyama et al. 2001). For cotton, policy differs significantly between western and eastern Africa. In Tanzania, Uganda, and Zimbabwe, all controls have been lifted, whereas most of West Africa is still dominated by state purchasing monopolies. For sugar, where industries had grown dependent on government interventions, domestic privatization has been uneven, and trade interventions remain common (Akiyama et al. 2003).

In a few cases, marketing boards have retained some of the public good functions of commodity agencies, such as regulatory and licensing services (for example, the National Cocoa and Coffee Board in Cameroon and the Uganda Coffee Development Authority). To date, governments have been less successful in establishing new institutions to respond to the needs of the private sector, such as market information systems. In some countries (for example, Côte d'Ivoire and Uganda), cooperatives were expected to assume a greater role in markets for inputs, credit, and sales after the reforms, but cooperatives have generally not been successful in taking on greater roles (Akiyama et al. 2001, 2003).

The reforms swept away many of the ineffective institutions designed to stabilize domestic markets.⁹ However, they did not address two key remaining problems related to commodity risks: (1) the inability of some governments to manage volatile revenue and expenditures prudently, and (2) the high cost paid by vulnerable rural households to limit their exposure to risks and the consequences of risks (Varangis, Larson, and Anderson 2002).

The second wave of reforms focuses on issues of governance and performance, that is, on deregulation, support for the private sector, and risk management through insurance rather than direct intervention. Countries are limited by the World Trade Organization (WTO) in the tools they can use to influence agricultural markets and farm incomes. The Uruguay Round Agreement on Agriculture allows production-neutral policies to support rural incomes and welfare, but it does not allow policies designed to affect the production of specific commodities (Josling 1998).

Sequence and pace of reforms

The sequence of reforms can be important, but, to date, there is more anecdote than evidence of the impact of different approaches to market reforms in agriculture.¹⁰ Intuitively, establishing property rights and institutions for contract enforcement will have a significant influence on the ability of private actors to enter commodity markets. Conversely, some reforms will be ineffective if they are not accompanied or preceded by others. This is the classic second-best argument: removing some constraints, while retaining others that may have little impact. For instance, opening markets to private traders will be unsuccessful if restrictions still exist on cross-regional movements of goods and factors. In the case of land reforms, redistribution should precede liberalization. A recent study of agricultural reforms in Chile argues that, if the economic reforms occurred before land reform, the huge increase in the value of land that occurred as a result of opening the

economy to new technologies would have accrued to traditional landowners (Jarvis, Cancino, and Vera-Toscano 2004).

Policy makers have not always been careful about planning the succession of reforms, for example, how key public goods will be provided for after the parastatal is eliminated. This approach seems to be most typical of countries in which pressing financial crises prompted abrupt changes in policies and contemporaneously made it difficult to fund public goods (Akiyama et al. 2003).

Similarly, the pace of reforms—whether gradual or “big bang” (Kherallah et al. 2002)—can affect the outcome of reforms. Although financial crises necessitated the swift withdrawal of many governments from direct intervention, the speed with which they withdrew varies considerably. In some cases, reforms are part of the long-term transition to a market economy. In Mali, the parastatal Agricultural Products Office withdrew gradually, while private traders entered or expanded their operations. The liberalization of Vietnamese agriculture has proceeded in a series of small steps in response to poor agricultural performance and reduced assistance from the countries of the former Soviet Union. Reforms began in 1980 with the introduction of the contract system, accelerated in 1988 with the devolution of decision making to farm households, and were complemented by liberalization in other sectors in the early 1990s (Minot and Goletti 2000). Conversely, Rozelle and Swinnen (2000) argued that reforms are never exclusively radical or gradual. Their evidence suggests that the road to a successful transition is more subtle and that successful transitions in Asia and Europe have elements of both these characteristics.

Slow and incomplete reforms may be regarded as evidence of insufficient political will among policy makers and poor coordination among donors and will be perceived as opportunities for obtaining rents. Quasi-privatization, involving the transfer of monopoly rights to private actors, is not likely to improve performance within the sector (World Bank 2003a). However, the experience of China illustrates the fact that gradual or partial reforms can be managed successfully.

IMPLEMENTATION MECHANISMS

Policy formation

Although sectoral adjustment was often imposed by donors, there was considerable demand for reforms from within as well. However, adjustment policies were primarily designed by donors. Donors occasionally col-

laborated with national governments but rarely consulted with local stakeholders. According to an appraisal conducted for the Structural Adjustment Participatory Review Initiative (SAPRIN), the lack of participation in policy design by the people most affected by the policy was an issue of concern from the start. The appraisal concluded that policy design has been the preserve of technical experts and that stakeholders have had no input (see SAPRIN 2004).

Although the inclusion of stakeholders is seen as a necessary prerequisite for effective reforms, there is some evidence that transparency and consultation in policy making are a consequence of successful reforms rather than an antecedent to them. Akiyama and others (2001) reported that, when reforms were successful, they resulted in a more open and consultative policy-making environment, as well as a more competitive market.

It is now common to include representatives of private sector stakeholders—farmers, processors, traders, and exporters—in policy-formulating and -implementing bodies, as well as in the parastatals themselves. Private sector representatives play a key role in the Uganda Coffee Development Authority and in the Coordination Committee in Togo. Examples include the Uganda Coffee Development Authority's technical and financial assistance for nursery establishment by the private sector and its collaboration with a private industry organization in training, the use of quality control personnel, the promotion of Ugandan coffee abroad, and the dissemination of market information to the industry (Akiyama et al. 2003).

Policy implementation

Policy reforms were a major part, indeed, a major rationale for multi-lateral lending during the 1980s and 1990s. Liberalization took place under the auspices and with the funding and technical assistance of the World Bank and other agencies and bilateral donors. These donors often provided assistance to marketing boards during reforms or helped establish separate organizations to manage the reforms.

In Mali, for instance, the reform of cereal marketing occurred under the multidonor-financed Cereals Market Restructuring Programme. The program was intended to support reforms of the management of the grain board; establish and manage a national emergency grain stock; provide market information to consumers, farmers, and others in the private and public sectors; and develop tools such as the food crisis early warning system (Dembélé and Staatz 1999).¹¹ The high proportion of program resources going to sector adjustment activities led some observers (for

example, Humphreys 1986) to remark that it seemed ironic that a “market reform” program devoted the bulk of its assistance to the state marketing board. Yet, at least some of this assistance was necessary to build political support for the private sector to play a greater role in the system. For example, some of the former employees who had been affected by the reform used their severance pay to finance their entry into private business and thus became supporters of a more liberalized market (Dembélé and Staatz 1999). As the liberalization took hold, the focus of the program was shifted to those who had been bypassed by the reforms (poor consumers) or those at risk from the continued instability in the market. During the Cereals Market Restructuring Programme IV and V (1994–99), the majority of the budget went to food crisis and mitigation activities (Dembélé and Staatz 1999).

There is a danger that the cure is no improvement on the disease. In Zambia, the government initiated the Agricultural Sector Investment Program with the assistance of donors. The program played a key role in the economic liberalization of the 1990s, but it has become an entrenched and inefficient bureaucracy. There are persistent complaints about late delivery of fertilizer. Additionally, the mixed policy signals sent to the private sector by continued government intervention raise concerns among various stakeholders and discourage investment in the sector (World Bank 2001a).

There is renewed interest in the formation of farmers associations to attract investment in production and marketing services and to overcome the coordination problems of small and fragmented markets (for example, see Mwanaumo 1999 for a discussion of the experience of Zambia). In Colombia and Guatemala, producer associations provide research, extension services, market information, and rural road maintenance, among other services. These associations are financed by a small ad valorem tax on coffee exports. The Coffee Institute in Costa Rica, a public-private sector partnership involved in research, extension, and market information, is also financed by an ad valorem tax on coffee exports. Mauritius has a long history of privately financed and publicly organized institutes that support sugar research. There is a danger that these associations are intended to justify the tariffs, rather than the tariffs supporting the associations. In Mozambique, support for the cashew farmers association was cited as the primary reason for the continuation of high duties on raw cashew exports. The major proponent of the export tariff and of the association was the domestic processing industry, which stood to benefit from the wedge between the world price and the domestic price.

Smallholders remain loosely organized in Africa. This limits their participation in policy making even when reforms encouraged their par-

ticipation. For example, following reforms in Uganda, seats set aside for farmers on the Uganda Coffee Development Authority were occupied by legislators from coffee-intensive districts, because representative associations, which existed for traders and millers, did not exist for growers (Akiyama et al. 2003).

Conversely, public goods can be publicly financed and privately delivered as well. In Togo, a private firm is providing various services, including research, extension, and the supply of agricultural inputs, to the coffee sector under a technical agreement with the government. Importers also frequently employ private companies to guarantee quality when public quality controls fail or are questioned (Akiyama et al. 2001, 2003).

Another option for reform is the establishment of joint ventures or other forms of public-private collaboration. This has happened in the provision of some public services, such as market information systems. In this way, the government can *crowd in* rather than *crowd out* the private sector by providing appropriate regulatory frameworks, infrastructure, and market information. This has been attempted in Mozambique, albeit with limited success (Boughton et al. 2003).

STAKEHOLDERS

A central task in poverty and social impact assessment is the identification of the people, groups, and organizations that may be affected by reforms positively or negatively. The benefit of subsidies and the burden of taxes are not necessarily progressively or even universally applied. Some subset of producers, consumers, or other actors reaps the majority of the benefit. This is true for input subsidies, consumer price subsidies, and so on. One purpose of the PSIA is to understand how the costs and benefits of the existing regime are distributed. Reforms will change relative prices, which will affect everyone, but some more than others. More importantly, reforms may involve the withdrawal of economic rents, that is, benefits accruing to a particular group over and above the surplus that is generated from exchange in a well-functioning market. These may include a price subsidy that permits a group to purchase goods below the market price, or restricted, preferential access to inputs or even markets. Removing these rents may be extremely difficult politically: *rents* may be considered synonymous with *rights*.

In addition, the analyst must identify those people who may be affected and who, in turn, are in positions to influence the implementation process. This will reveal some of the potential resistance to or support for reforms. These groups may be sufficiently powerful to alter or

even derail the reforms. Every policy is replete with unintended consequences, and some of these may be harmful to some groups. Although no reform or policy can account for every eventuality, the implications for implementation are minimized to the extent that the actors buy into or feel ownership of the policy. The reforms must at least have the implicit consent of those who are in a position to influence the outcome. In other words, reformers must be confident that those stakeholders in a position to influence the reforms adversely will refrain from doing so, because they are committed to the outcome, or because they feel sufficiently compensated for the costs incurred. A good policy that is badly implemented, that fails to take note of these risks, is fundamentally a bad policy.

Who are they?

Table 4.2 summarizes the main groups of stakeholders and the channels through which they will be affected. The main categories of stakeholders are producers, traders, processors, consumers, and government and parastatal workers. This list is clearly suggestive rather than exhaustive. It lumps together trade and transport and does not include private sector workers (except as consumers) in other, unrelated industries.¹² Perhaps more importantly, it lumps together cash-crop and food-crop producers. To some extent, this is a false dichotomy, because households can produce both crops; but this observation itself begs the question that there may be significant cross-price effects (for example, substitution) across commodities.

Not all members of a group will be affected, and not all to the same degree or even in the same direction. All else being equal, an increase in the price of a commodity will benefit net producers and harm net consumers. A price change in favor of tradable commodities (such as a reduction in export duties) will benefit producers of tradables relative to producers of nontradables. Note that these are short-term, partial-equilibrium effects and may represent an outside bound to welfare changes. Producers respond to price signals and market opportunities and change their production mix accordingly; the long-term, general equilibrium effects are likely to be much smaller. This phenomenon complicates the examination of trends if farm households gain access to markets and shift into products from which they were previously excluded: Historic price or consumption data may not exist, requiring great care when constructing aggregate indexes for comparison.¹³

It is necessary to identify which subgroups will be affected by the reforms. In the case of input market reforms that include a termination of

the parastatal provision of inputs, those affected initially will be the farm households using the inputs. For example, not all farms use fertilizer, and not all farms receive inputs from the parastatal supplier. In general, fertilizer distribution and subsidies are not well targeted; fertilizer is applied by only a small minority of farmers. There are some differences in fertilizer use across rainfall and agroclimatic zones, but the main predictors are household income and its correlates (that is, irrigation, good soil, labor, improved seeds, animal traction). The poor, who are more likely to live in low-potential areas, are less likely to use fertilizer (Kherallah et al. 2002).

Similarly, fertilizer is not applied on all crops, so the impact of price changes is likely to differ by the crop mix in the household. Fertilizer is used more often on cash crops than on food crops. There are strong regional differences; cotton is heavily fertilized in West Africa, but not in Tanzania. Roots and tubers do not respond well to fertilizer, and maize responds marginally; however, maize receives the most fertilizer in total because it is the largest crop in Sub-Saharan Africa (Kherallah et al. 2002).

Evidence from Brazil shows that reforms did not benefit smaller, low-technology farmers (World Bank 2001b). Changes in policy and markets reinforced the advantages of larger commercial producers. First, technical assistance appears to have benefited larger farmers. Second, commercial farmers were more likely to use purchased inputs. Third, larger farmers were better able to adapt to new, higher-quality standards. Overall, per-hectare returns were negative for small, low-technology subsistence farmers, who used no modern purchased inputs and who experienced falling output prices without seeing any compensation in terms of lower costs.

The impact of reforms on processors will also differ by location. Farm households in areas better served by transport will benefit from liberalization; households in more remote areas may suffer in at least two ways. First, governments have often used panterritorial pricing schemes that do not account for differences in transport costs; producer prices became fixed and identical regardless of distance from the point of assembly or processing. Allowing prices to vary will result in lower producer prices in more remote areas. Second, the parastatal marketing board is often the only purchaser in remote areas. It is not clear that the private sector will be able to replace the parastatal if transport and other transaction costs are too high, especially for low-value commodities. Remote areas may revert to autarky after the marketing board is removed. Using household data from Ethiopia and Tanzania, Dercon and Krishnan (1996) concluded that location and credit could have overwhelming effects on household choices, preventing some households from benefiting from reforms. Similarly, Alwang, Siegel, and Jorgensen (1996) found

TABLE 4.2 Summary of Stakeholders and Their Exposure to Impacts through Various Transmission Channels

<i>Stakeholders/ interest groups</i>	<i>Farm input prices</i>	<i>Commodity prices</i>	<i>Credit and interest rates</i>
Producers	All input users are hurt if subsidy is removed but benefit if tax is removed; impact also depends on response of private sector	All producers benefit if farmgate prices rise; hurt if price supports removed, and benefit if tax removed; impact also differs on tradables versus nontradables, substitution in production	All producers hurt if subsidy removed; impact depends on response of private sector; access likely to fall if parastatals also bear risks
–by size, wealth, other assets	Wealthier households use more inputs and are more likely to capture subsidy	Wealthier households are more likely to sell products, also more likely to capture price supports	Wealthier households are more likely to have access to credit, but these households often captured subsidy; credit may be tied to production
–net buyers/sellers of commodities	n.a.	In general, net buyers hurt; net sellers benefit if prices rise	n.a.
–sex of household head	Cash crops (more input intensive) are often considered men’s crops	Cash crops are often considered men’s crops	Men may have better access to credit, especially if there are sex differences in title/landholdings
–region, agroecological zone	Differences in input responsiveness and input use by agroecological zone	Differences in farming systems and crop mix by agroecological zone	n.a.

Transmission channels

<i>Employment and wages</i>	<i>Market structure</i>	<i>Transfers and taxes</i>	<i>Public goods</i>
Off-farm opportunities may change, especially in linked industries; wage rates will reflect changes in labor demand	All households benefit from lower marketing margins, greater efficiency, and competition	Will suffer from the withdrawal of subsidies and price supports; will benefit from withdrawal of taxes	Parastatals often provided price information, research, extension, control of zoonoses, and so on; it is not certain whether the restructured agency or the private sector will do so
Wealthier households are more likely to hire; poorer households more likely to supply labor; differences in off-farm activities and opportunities, opportunity cost of time, level of human capital	n.a.	Wealthier farmers are more likely to receive subsidies and will suffer if these are withdrawn; wealthy farmers may also be more likely to produce cash crops and benefit if taxes are reduced	Wealthier farmers may be better able to buy these services; private sector may not conduct research on crops grown by the poor
n.a.	n.a.	See above; net sellers receive benefit of price supports; net buyers are less likely to benefit from price ceilings	n.a.
Employment opportunities and wages may differ by sex	n.a.	Female-headed households may lose if targeted subsidies are eliminated	n.a.
Labor demand will differ across regions; wages may differ across regions; may respond differently to changes in labor demand	Panterritorial prices generally benefit more remote households; transport costs may be too high for the private sector to participate profitably	n.a.	Private sector research is likely to focus on high-potential zones and high-value crops, not those grown by the poor

(continued)

TABLE 4.2 Summary of Stakeholders and Their Exposure to Impacts through Various Transmission Channels (*Continued*)

<i>Stakeholders/ interest groups</i>	<i>Farm input prices</i>	<i>Commodity prices</i>	<i>Credit and interest rates</i>
–location, urban/rural, and distance from roads and markets	Differences in transport costs; more competition among suppliers	Differences in transport costs, more competition among buyers; panterritorial pricing generally benefits more remote households	Better-developed credit markets in towns
–ethnic group	Trader networks may discriminate along ethnic lines	Trader networks may discriminate along ethnic lines	Private networks may discriminate along ethnic lines
–by use of inputs	Impact will be proportional to the household's (marginal) use of inputs	Differences in farming systems and crop mix	Households that use inputs may purchase them on credit
Traders	Input suppliers may benefit from higher prices; depends on price demand elasticity for inputs; commodity traders may lose if marketed output falls, but the impact is likely to be small	Impact on traders depends on changes to marketed supply relative to prices; reforms may involve elimination of price supports to producers and subsidies to consumers	Traders may rely on credit to purchase supplies and will lose if subsidized credit withdrawn
–location, urban/rural, and distance from roads and markets	Urban traders not likely to be involved in input supply; differences in transport costs	Differences in transport costs; greater market depth	Private credit more likely to be available in towns
–by size or wealth	Larger traders more able to bear fixed costs to enter sector	Larger traders more able to bear fixed costs to enter sector	Wealthier traders more likely to have access to credit, but these traders often captured subsidy

Transmission channels

<i>Employment and wages</i>	<i>Market structure</i>	<i>Transfers and taxes</i>	<i>Public goods</i>
More remote areas have fewer opportunities, lower labor demand; differences in labor demand will be reflected in wage rates	Private actors may not enter remote areas, where transport costs are too high, after parastatal leaves	n.a.	Information is easier to find where communications are better
Networks may discriminate along ethnic lines	n.a.	n.a.	Networks may discriminate along ethnic lines
n.a.	n.a.	Imported inputs more expensive after exchange rate reforms; cheaper if import taxes reduced	Private sector is likely to focus on high-value output, not low-input food production
Liberalization of markets is likely to increase opportunities for trade and employment in private sector; dissolution of parastatals will involve job losses; wages may or may not be higher than parastatal wages	Traders benefit from increased freedom to transact; may lose if greater competition reduces profits	Reforms may reduce burden of taxation on traders; traders benefit from reduction of trade taxes	Parastatals provided price information; some authority must exist to monitor market behavior, enforce contracts, and so on; private sector may not be able to do this
Greater opportunities and lower transport costs with better communication	Reform will permit transregional trade, but private trade may be slow to develop in remote areas with high transport costs	If taxes are fixed and uniform (that is, "pan-territorial") rather than according to income or scale, remote traders will suffer	Information easier to find where communications are better; where there is little competition, government must regulate monopolies
n.a.	Larger traders may be more able to take advantage of public-private partnerships (joint ventures) and bid for contracts with public sector; larger	Larger traders may have advantage of access to untargeted (or badly targeted) assistance or may be able to negotiate special tax breaks	Wealthier traders may be better able to buy these services; the private sector may not provide services for smaller/poorer traders

(continued)

TABLE 4.2 Summary of Stakeholders and Their Exposure to Impacts through Various Transmission Channels (*Continued*)

<i>Stakeholders/ interest groups</i>	<i>Farm input prices</i>	<i>Commodity prices</i>	<i>Credit and interest rates</i>
–region, agroecological zone	Demand for inputs will differ across agroecological zones	Elimination of panterritorial pricing will allow traders to pass on transport costs, but costs may be too high in remote regions	n.a.
–ethnic group	Trader networks may discriminate along ethnic lines	Trader networks may discriminate along ethnic lines	Private networks may discriminate along ethnic lines
–importer/exporter	Inputs often imported; liberalization reduces tariffs and increases opportunities, but it may raise relative prices of imports	Reforms will increase opportunities for trade, reduce export taxes, and raise relative prices of tradables, for which domestic prices will reflect international prices	n.a.
Consumers	Negligible impact; food crops use little fertilizer	Consumer prices likely to rise in short run; households that received subsidy will suffer; depends on demand elasticities, substitution	Households that had captured subsidy may lose if subsidy withdrawn
–location, urban/rural, and distance from roads and markets	n.a.	Prices likely to rise more in urban areas	Private credit more likely to be available in towns
–by size or wealth	n.a.	Subsidy, intended for poor, usually captured by wealthy; impact also depends on	Wealthier households more likely to have access to private credit, but these

Transmission channels

<i>Employment and wages</i>	<i>Market structure</i>	<i>Transfers and taxes</i>	<i>Public goods</i>
	traders may be able to exert market power		
Remote areas may not respond as quickly, with fewer opportunities for employment	n.a.	n.a.	n.a.
Networks may discriminate along ethnic lines	n.a.	n.a.	n.a.
Private sector opportunities for trade and employment should increase	Reforms will permit/liberalize trade and reduce licensing requirements and other restrictions	Reduction in trade duties will benefit both importers and exporters	Grades and standards essential for export; trade associations may develop this and likely will require public sector assistance
Wages may rise because of changes in prices; this may affect employment	Liberalization may remove restrictions on transit and improve supply	Consumers lose value of food price subsidy	Private sector may respond more quickly to demand; public sector should provide information, contract enforcement, food safety, and so on
Employment in nonagricultural sectors may change because of other reforms	Marketing margins likely to fall, reducing prices and improving supply; food prices will rise, especially in remote areas	Urban consumers most likely to lose because they were targets of food price subsidy	Information is easier to find where communications are better; where there is little competition, government must regulate monopolies
Activities and opportunities differ by human and physical capital	n.a.	Changes in targeting and subsidy will affect welfare; impact depends on degree of capture by wealthy	n.a.

(continued)

TABLE 4.2 Summary of Stakeholders and Their Exposure to Impacts through Various Transmission Channels (*Continued*)

<i>Stakeholders/ interest groups</i>	<i>Farm input prices</i>	<i>Commodity prices</i>	<i>Credit and interest rates</i>
		demand elasticities, substitutes	households often are captured subsidy
–region, agroecological zone	n.a.	Impact depends on relative demand elasticities; substitution among commodities	n.a.
Processors	Impact depends on input use to cash crops; processors may also provide inputs as part of contract with farmers	Significant impact if processors now have to pay world prices for commodities	Will be hurt to the extent that rent in form of subsidized credit is withdrawn
–by size/wealth/technology	n.a.	Larger processors may be able to bear fixed costs; less important if technology divisible (hand-operated mills and so on)	Wealthier processors more likely to have access to private credit, but these groups often captured subsidy
Civil servants	n.a.	See consumers; special subsidy/marketing programs targeted to civil servants may be withdrawn	Households that had captured subsidy may lose if subsidy withdrawn
–employees of privatized/dissolved parastatals	n.a.	See above; unemployed may demand compensation or targeted social assistance	Households that had captured subsidy may lose if subsidy is withdrawn

Transmission channels

<i>Employment and wages</i>	<i>Market structure</i>	<i>Transfers and taxes</i>	<i>Public goods</i>
Employment in linked industries may change; impact may differ across agroecological zones	Impact likely to differ in surplus/deficit regions; the latter is likely to suffer	Impact may differ if parastatal provided special inputs or extension services to different regions	n.a.
Higher costs may force scaling-back of operations, reduction in employment	Greater competition domestically and internationally; may benefit from reduction in tariffs	Reduced taxes, more liberal environment; also face higher (world) prices for commodities	Grades and standards; trade associations may develop this; likely require public sector assistance
If there are no economies of scale, liberalization may encourage development of and employment in small industry	Liberalization may remove barriers to entry for small processors	Larger processors probably received larger benefits from subsidy or tax breaks; reforms will reduce rents	Wealthier processors may be better able to buy these services
Liberalization often involves civil service reforms, cutting back staff, eliminating ghostworkers, and so on	May involve internal competition within civil service, exposure to competition with private sector	Will suffer from the withdrawal of subsidies; will benefit from withdrawal of taxes	Reforms may change the responsibilities of agencies toward providing limited public goods, such as information
Clear impact; may require training, targeted credit, and so on as part of severance; impact depends on finding employment in private sector, duration of unemployment, and wage in private sector	May be instrumental in establishing private response to withdrawal of state	Will suffer from loss of employment, wages, and rents; will benefit from redundancy payments and so on	n.a.

(continued)

TABLE 4.2 Summary of Stakeholders and Their Exposure to Impacts through Various Transmission Channels (*Continued*)

<i>Stakeholders/ interest groups</i>	<i>Farm input prices</i>	<i>Commodity prices</i>	<i>Credit and interest rates</i>
–employees of implementing agencies	n.a.	n.a.	n.a.
–employees of regulatory agencies (for example)	Requires monitoring of market performance; temptation to seek rents	Requires monitoring of market performance; temptation to seek rents	Requires monitoring of market performance; temptation to seek rents

Source: Author's creation.

Note: n.a. = not applicable.

that remoteness and weak input markets precluded gains from liberalization for many rural poor in Zambia.

In general, traders and processors are winners from market reforms. They are able to operate in a more liberal environment, with less intervention from government authorities and, ideally, with simpler and more transparent rules of conduct: one exchange rate, simpler tariff schedules, and so on. This presumes that the government is committed to the reforms; there are numerous examples of incomplete reform or reversals, which discourage the private sector from entering the market (see below).

On the consumption side, it is equally important to understand who consumes what and how significant a commodity is to the welfare and food security of poor households. Poor families in Indonesia spend more than two-thirds of their income on food and more than one-third of their income on rice. An increase in the price of rice therefore has an immediate impact on poverty (Bappenas et al. 2003). Again, this is the short-term effect. In the medium and long term, households may adjust consumption in response to the changing relative prices of the contents of the food

Transmission channels

<i>Employment and wages</i>	<i>Market structure</i>	<i>Transfers and taxes</i>	<i>Public goods</i>
May increase employment temporarily if restructuring is short term; process likely to be drawn out without sunset clauses (that is, if the agencies managing the reforms are created without considering a fixed end-date for their existence)	May involve collaboration with private sector in the form of joint ventures and so on	n.a.	n.a.
May increase employment if state expands regulatory and monitoring responsibilities	May involve collaboration with private sector in the form of joint ventures and so on	n.a.	May expand responsibilities of agencies to provide public goods

basket (although nutrition may be affected in the short term). In addition, many households are producers of rice, so that a price increase will lead to an increase in income as well.

Government and parastatal agencies may lose from reforms. They may be liquidated or privatized, or the reform process may involve the creation of new agencies dedicated to implementing the reforms. The parastatals may be strengthened and reoriented away from direct intervention and toward the provision of public goods such as information and regulation (for example, the Cereals Market Restructuring Programme in Mali; see Dembélé and Staatz 1999).

Liberalization may also have different impacts across ethnic groups and gender. Men and women cultivate different crops. Cash crops are often referred to as “men’s crops.” Women are likely to have less-secure tenure and property rights, and they may not be able to borrow money to make the investments required to respond to a new price regime. Men and women may have different levels of access to suppliers and purchasers, extension services, and so on.

How can they influence reforms?

Individuals and groups who feel their interests threatened or who see the opportunity for gain may try to use their influence to intercede or change the direction of reforms in their favor. Two distinctions should be made. The first is between groups that are internal and groups that are external to the process of policy formation and implementation. Internal groups are, for instance, those charged with implementing the reforms, such as the employees of the Ministry of Agriculture and other government or quasi-government agencies. These groups may feel that their livelihoods or the rents they receive are directly at risk. It may be necessary to directly compensate those who are laid off by the dissolution or privatization of parastatal agencies, even if the prospects for subsequent employment are good.

A distinction should also be made between stakeholders who identify themselves as an organized, cohesive group (for example, labor unions) and those who do not (such as the poor). Although the poor may be a distinct group, they are less able to mobilize behind a common purpose. To the extent that groups are disorganized (for example, landless peasants, smallholders, and small traders), they are less likely to play a significant role in terms of support for or opposition to a policy. Olson (1965) suggests that groups will cohere and exert influence when the number of group members is small and the benefits or rents that accrue to each member are easy to perceive and significant for each member. This explains why the interests of disorganized groups, such as consumers, are typically not influential. Many reforms are designed to reduce or eliminate the rents accruing to small groups of privileged interests. However, these are precisely the policies that are most likely to be fought by the groups that have relatively more influence on the process.

TRANSMISSION CHANNELS

The impact of agricultural market reforms on the household will be felt through consumption and production. The primary impact will be mediated through changes in the prices of goods and services in the liberalized markets. These prices affect the income and the consumption decisions of households.¹⁴ There is some evidence that the income effect usually outweighs the consumption effect. In the seven household studies reviewed by Singh, Squire, and Strauss (1986), the income effect dominated, but in four of those studies, the consumption effect was large enough to dampen the supply response for the commodity for which the prices rose. It is important to examine the impact on both consumption and pro-

duction. Price changes will induce changes in behavior, causing people to adjust their consumption and production decisions. These changes, in turn, will cause shifts in the prices of inputs into production and substitutes in consumption.

Income effects confound consumption effects, and vice versa, and both will confound the analysis. A producer-household's supply response to a price increase may be smaller than expected if the increase raises incomes sufficiently to induce a rise in the consumption of leisure. The same effect may be seen among consumer households. A price increase may have a substitution effect (raising the consumption of substitutes) and an income effect (decreasing overall consumption). The direction of change and some idea of relative magnitudes may be obtained by calculating systems of own- and cross-price elasticities from household-level data. Note that these are partial equilibrium, short-term measures of impact.

Table 4.2 shows the major channels through which the impact of reforms will be manifest. These are again suggestive rather than exhaustive. The main channels of influence are as follows: (1) input prices, (2) commodity prices, (3) credit and interest rates, (4) employment, (5) wages, (6) market structure, (7) taxes and transfers, and (8) public goods. The text below discusses a selection of these issues.

Input prices

Fertilizer and other purchased inputs are not employed by all households, and they are not applied on all crops. In general, fertilizer use is limited predominantly to cash crops. Using United Nations Food and Agriculture Organization data, Kherallah and others (2002) estimate that median fertilizer use on all crops in Sub-Saharan Africa is around 4 kilograms per person per year. In that case, a 50 percent subsidy is the equivalent of US\$1.30 to US\$2.60 per year, or less than 2 percent of income. The value of the subsidy is likely to be even lower for poorer farm households, which most likely apply no fertilizer at all.

Kherallah and others (2002) report that Senegal is the only country in which the removal of the fertilizer subsidy was clearly associated with a drop in the production of the two most heavily fertilized crops: groundnuts and cotton. However, it is difficult to attribute this entirely to the removal of the subsidy because, at the time, there was also a collapse of credit and a fall in world prices.

The total impact of fertilizer price changes depends not only on the price elasticity of demand but also on the responsiveness of crops to fertilizer. There is little evidence, at least for Africa, that fertilizer has any impact

on output, although this may be caused by insufficient fertilizer application rates rather than the absence of a biological response (Kherallah et al. 2002). In addition, the net effect includes the response of farm households to the price change. Households may switch production from input-using crops to those that do not require inputs. Again, the response of households may depend on such other factors as location. Howard and Mungoma (1997) found that subsidy removal and other reforms in Zambia encouraged farmers with access to transport to switch to higher-value export crops, while remote farmers reverted to subsistence crops.

Commodity prices

Consumers will feel the direct impact of the removal of subsidies, but it is generally believed that consumer subsidies are captured by the middle and wealthy classes, so that their removal will, if anything, improve income distribution. The mechanisms of transmission are similar to those on the supply side: Price changes induce an income response and a substitution response. If the price of a good changes, consumption of that good will change, as will consumption of other goods that are substitutes or complements of the good. The examination of the impact of price changes must also account for any changes in the availability of commodities and the extent to which commodities were rationed by the marketing board. If the official consumer price was held artificially low, demand by definition would exceed supply. In that case, how was the right to purchase the subsidized commodity allocated?

It is generally believed that the reduction or removal of commodity price subsidies will hurt the urban poor the most. In Zambia, the parastatal National Marketing Board was dissolved in 1990, and the urban poor suffered from the price rises that occurred between 1991 and 1993. Some of the inflation was the result of the removal of price subsidies, but Zambia also suffered a severe drought in 1992 (McCulloch, Baulch, and Cherel-Robson 2000).

In the short term, net buyers of a commodity will lose from a price increase, and net sellers will gain. Even among rural households, a high proportion are net food buyers. Weber and others (1988) found that 15 to 73 percent of farm households are net buyers, depending on the crop and the country. Barrett and Dorosh (1996) estimate that net buyers of rice account for 49 percent of the farmers in Madagascar, while Sahn (1987) found that 84 percent of the rural households in Sri Lanka are net buyers of rice. A study on Thailand found that net buyers of rice represented 58 percent of rural households and 25 percent of rice farmers

(Trairatvorakul 1984). Poor families in Indonesia spend more than two-thirds of their incomes on food and more than one-third of their incomes on rice (Bappenas et al. 2003). An increase in rice prices therefore has an immediate impact on poverty (Bappenas et al. 2003).

The removal of subsidies and the liberalization of marketing can induce households to shift their production mix to better reflect their comparative advantage and the new regime. Abdulai and Huffman (2000) found that households make decisions regarding production and the allocation of inputs in response to price changes (see also Meerman 1997).¹⁵ The removal of input, credit, and mealie meal subsidies in Zambia has shifted agricultural production away from maize and toward other, higher-value and drought-resistant crops (McCulloch, Baulch, and Cherele-Robson 2000). Conversely, Fafchamps (1992) showed that poorer, more risk-averse households will allocate a greater share of their resources toward food crops as a means to self-insure against uncertainty in both price and production. These families will be less able to respond to a new regime, even if the relative price of tradable crops increases.

The supply response may be hindered by other factors. Many poor farmers are unable to exploit their agricultural potential because of feeble rural infrastructure and poorly functioning private markets for commodities, inputs, and services. Weak market institutions and inadequate physical infrastructure will limit the impact of liberalizing marketing boards, price controls, or other binding constraints. As long as other constraints exist, the supply response to prices will be low (Krueger, Schiff, and Valdés 1991; Poulton, Kydd, and Harvey 1999). This echoes Timmer's (1991) argument that, in the absence of other institutional and legal reforms, establishing accurate prices is not sufficient to guarantee greater private investment. This seems to have happened in Madagascar with coffee, in Mozambique with cashews, and in Nigeria with cocoa (Akiyama et al. 2003).

Investment and supply will be affected not only by the price level but also by the variance in prices. Domestic price variability is obviously caused by fluctuations in world prices, but it is also caused by the weather and other factors (for example, see Townsend 1999). In addition, production decisions are affected by volatility in consumer prices, and vice versa (Fafchamps 1992). Domestic market reforms are likely to result in lower domestic price volatility. Removing restrictions on the domestic movement of goods will improve spatial arbitrage and market integration. Improved temporal arbitrage to smooth out seasonal fluctuations will require greater storage capacity and probably greater access to credit (Badiane et al. 1997).

Price stabilization is often cited as the justification for intervention in domestic markets, but there is no guarantee that administered prices will be any more stable than world prices, nor that instability will be worse after the country's liberalization. Under the country's stabilization program, interyear rice price variability in Ecuador was an estimated 10 times higher than the world price variability (Krueger, Schiff, and Valdés 1988; Valdés 1996).

The supply response will be sensitive to the expectations of future policies and prices. If farmers believe that reforms could be reversed, they are unlikely to invest, and factor reallocation will be limited. The supply response of tree crops, by their physical nature, is slow (Akiyama et al. 2003). The aggregate agricultural supply response will be lower than the response for any individual crop, reflecting intrasectoral shifts in production.

This again suggests that the impact of reforms will differ across regions or according to other conditions such as distance to markets. Evidence from participatory research in Zambia suggests that reforms have had a negative impact on farmers in more remote areas who had benefited from the implicit subsidy in panterritorial prices. Conversely, farmers near rail or major roads are likely to have benefited (McCulloch, Baulch, and Cherel-Robson 2000).

Credit and interest rates

There is now considerable evidence showing that subsidized credit has been ineffective (for example, see Adams, Graham, and von Pischke 1984). The credit was captured mostly by elites; contracts were rarely enforced, and the repayment rates for loans were dismal. In addition, interest rates on publicly provided loans were often negative, which paved the way for regressive nonprice rationing (cronyism, for instance). Agricultural development banks rarely succeeded in targeting the poor. Eicher and Kupfuma (1997) report that, at its peak, Zimbabwe's Agricultural Finance Corporation made loans to fewer than 10 percent of the country's small farmers.

However, parastatals were often the only source of credit for smallholders, even if they performed this function at extremely high cost. There is evidence to suggest that publicly provided credit had positive direct and indirect benefits (Govereh, Jayne, and Nyoro 1999) and that its removal has had negative consequences for productivity (Bazaara 2001, for Uganda; Kherallah et al. 2002, for Madagascar and Mali). Access to credit also affects the ability of producers and traders to smooth incomes and consump-

tion. In Zambia, lack of consumption credit and storage forced smallholders to sell at harvest rather than store it on farms (Govereh, Jayne, and Nyoro 1999).

The collapse of credit markets may have significant impacts on productivity investments and resource allocation. For example, during peak periods of agricultural activity, smallholders in Malawi, who had access to credit, had to take work as casual (*Ganyu*) labor for cash or food. The cash obtained from wage employment was then used to purchase fertilizer and seed, often late in the planting season, delaying or preventing crucial activities of the smallholders on their own land (Alwang and Siegel 1999; Sen and Chinkunda 2002).

The public provision of credit was only partly supplanting credit from the private sector, and the removal of parastatals was not leading universally to increased private provision (Akiyama et al. 2003). Although credit markets have improved somewhat in Sub-Saharan Africa (Kherallah et al. 2002; Murshid n.d.), smallholders and traders in more remote areas report increasing difficulty in obtaining access to credit (Francis et al. 1997; McCulloch, Baulch, and Cherel-Robson 2000). To a large extent, rural economies depend on informal credit arrangements, but these are unlikely to provide credit on the scale necessary to fill the gap (World Bank 2001c).

Governments can design programs to encourage private financial intermediation. In Zambia, the Agricultural Credit Management Programme was launched in 1994 to provide credit for fertilizer and seed in the short term and strengthen the capacity of private traders to act as financial intermediaries (Copestake 1998). Intervention may also be necessary to mobilize local private savings, which will respond to positive real rates of return and the development of credible financial institutions and contracts. Many state-owned agricultural development banks have been successfully restructured as private rural financial institutions, providing opportunities for savings and lending. For example, the Unit Desa of the Bank Rakyat Indonesia provides banking services to millions of low-income rural families in Indonesia, maintaining financial self-sustainability and excellent outreach (Seibel 2001; Yaron and Charitonenko 1999).

To the extent that reforms impose increased market-based allocation mechanisms, such as positive real prices, those who received subsidized credit will suffer. However, experience argues against direct interest rate subsidies. First, subsidized (especially negative) lending rates severely discourage savings. Second, it is, arguably, more equitable to expand access to credit rather than to provide cheap credit to a few. Finally, many studies have shown that allocation is more efficient and credit is more productive

when positive real interest rates are charged (and offered) (see Fry 1988; King and Levine 1993).¹⁶

Employment and wages

Liberalization may involve changing the price of agriculture relative to the outputs of other sectors and changing relative prices within agriculture. This will have a direct impact on the allocation of labor within agriculture and across sectors. Raising the price of tradable commodities relative to nontradables—a common element of reform programs—will boost the demand for labor in the tradables sector, thereby pushing up the wage and encouraging a shift in the allocation of labor. Increasing the returns to agriculture, in general, may reduce the incentive for urban migration and may even promote back-migration from urban areas. In addition, agricultural market reforms will change the price of food and other commodities in urban areas. This will alter the real wages of urban dwellers and may lead to a reallocation of labor across urban sectors as well. A rise in the price of food, which puts upward pressure on real urban wages, may dissuade urban industrial investment.¹⁷

Removing restrictions on trade will most likely increase domestic market activity in domestically produced nontradable goods and in domestically produced or imported tradable goods through importation and exportation. This increased activity will affect the demand for labor, but, again, the impact will more likely be felt in areas with good communications. Remote regions, where the value of output is overwhelmed by transport costs, will not necessarily see greater activity or employment in trade.

In Bangladesh, the withdrawal of parastatals from input provision and commodity trade has had a significant effect on food security and growth, especially in nonfarm activities. This has raised the demand for labor (Murshid n.d.). At the same time, however, the parastatal food-for-work program has been expanded to provide employment for poor households. This suggests that the boost in employment did not occur among the poorest, although poverty diminished over the period.

Market structure and institutions

Although parastatals often attempted to monopolize trade, parallel markets existed even when private trade was officially forbidden or discouraged. If there was quantity rationing, the official price was generally lower than the free market price; as with credit markets, price constraints necessitated nonprice rationing. In Zimbabwe, where the parastatal Grain

Marketing Board reintroduced price controls in 1998, the board was selling maize for 20 to 35 percent below the price in the parallel market (Jayne et al. 1999). Paradoxically, in Malawi, an active parallel market existed for maize in the 1990s at prices 20 to 75 percent *below* the official ADMARC price. Access to ADMARC maize was restricted, however, by minimum purchase volumes, the distance to distribution centers, and other factors, which limited purchases by the poor (Sahn, Dorosh, and Younger 1998). Of course, if the parallel market is significantly larger than the official market, removing the marketing board will have little impact on prices or volumes.

The intention behind reforms, particularly those involving the withdrawal of marketing boards and other parastatal agencies, is to create the environment necessary to foster the development of private competitive markets in agriculture and marketing. This has happened in the majority of cases and to beneficial effect. One example is the deregulation of maize milling in Zambia. This has encouraged the widespread emergence of small, labor-intensive hammer mills, which has led to lower processing and marketing costs and cheaper maize for consumers (Jayne et al. 1996; McCulloch, Baulch, and Cherel-Robson 2000; World Bank 1994b). Small hammer mills now account for 60 to 70 percent of the milled maize available in urban areas (Mwanaumo 1999).

The reform process must be monitored to ensure that artificial barriers to entry are removed and to watch for the establishment of private monopolies or oligopolies and anticompetitive behavior. For example, after the coffee market reforms in Uganda, nearly 200 entrepreneurs entered the new export sector. Within two years, three-quarters had exited, and 80 percent of exports were being handled by 10 firms (Akiyama et al. 2003). These firms may be insufficient to create a competitive environment at the farmgate, particularly in remote areas.

Oligopsonistic or oligopolistic market power can persist even if barriers to entry into the sector are removed and there is evidence of substantial entry into the sector. A study in Madagascar revealed that there were distinct groups within rural food marketing channels, but that they were separated by intra-industry mobility barriers that limited entry to a few niches. Although there was free entry *into* the sector, the barriers prevented movement within the sector from one niche to another. An individual's position *within* the sector was defined largely by social identity, so the impact of market liberalization varied across socially distinct groups, which differed in their access to working capital, market information, bulk storage, transport, and reliable networks of customers and suppliers (Barrett 1997).

Minten and Kyle (2000) demonstrate that the transaction costs of search and negotiating can dominate over the transformation costs of assembly, processing, and transportation in agricultural markets. Smaller traders and smallholders may have little experience of contracting, therefore, while assembly and transportation costs fall, the cost of negotiating and enforcing contracts may rise (Temu and Winter-Nelson 2001). They rely to a greater extent on personalized contacts and networks (Fafchamps and Minten 1998) and thus miss the potential opportunities presented by the liberalized marketplace.

Observation of persistent noncompetitive market arrangements raises the obvious question of the manifest benefit of these arrangements to participants on both the demand and supply sides. Not only are there advantages to networks, but also the welfare and efficiency outcomes of interlinked transactions for inputs, products, and credit can be superior to those arising from atomistic spot markets (Nouve and Nyambane 2003). Additionally, there is increasing evidence that a greater number of market participants does not always lead to superior outcomes (Poulton et al. 2004). Agricultural markets are beset with vertical coordination failures, which impair the performance of input markets and output supply chains (Kydd and Dorward 2003).

Recent experience indicates that there is a tradeoff between competition and coordination. In their examination of cotton markets in six countries in Africa, Poulton and others (2004) found that, although the consequences of liberalization had been positive on the whole, the three systems in which market power was more concentrated had outperformed others. They found that the “concentrated, market-based” sectors have been better able to overcome common coordination problems than either the “local monopoly” or the “multiple small player” systems. In the former systems, the private sector supplies local public goods and coordinates inputs and ginning, while maintaining “reasonable” producer prices. In the absence of large private participants, it is the responsibility of the state to provide these public goods.

Private contract farming may be used to address some of these coordination problems. In the Punjab, contracting has led to higher farm incomes and expanded employment opportunities (Singh 2002). In Mozambique, farmers receive technical assistance, inputs, and credit and sell their products (cotton, tobacco, sunflowers) to joint venture companies or other private enterprises (Gemo and Rivera 2001). Relatively high transaction costs have meant that these arrangements have been made more often between processors and large farmers and less often with small farmers, at least not on an individual basis (Hazell 2004). Mechanisms to

reduce these transaction costs, such as voluntary producer organizations, may help to link small producers with processors. In Senegal, the private firm Novasen supplies credit and inputs to 32,000 large and small groundnut producers. Novasen uses local intermediaries to screen growers, monitor production, and enforce loan repayments (Warning and Key 2002).

Transfers and taxes

As remarked throughout this chapter, subsidies generally accrue to wealthier households in production and consumption. On the production side, the impact on the poor of the removal of explicit subsidies will be relatively small in general. However, if the marketing board provides inputs to rural households not served by private suppliers, the cost of the inefficient public provision of inputs to remote areas may be considered an implicit subsidy. In that case, removing the subsidy (ceasing to provide inputs) will entail a real welfare loss for the remote households. Therefore, the impact on smallholders will be partly a consequence of structural constraints, such as distance to roads and markets. The same can be said of panterritorial pricing schemes—these represent an implicit subsidy in the form of transfers from underpriced farms in areas with good communication to overpriced farms in more remote areas.

On the consumption side, poor households will be affected by the withdrawal of subsidies in proportion to the level of the subsidies they received before the withdrawal. The impact on welfare will be a function of the price elasticity of their consumption of the subsidized commodity; the cross-price elasticities with other commodities; and, for rural households, the extent to which they are net buyers of the commodity.

There will also be an impact on government revenue and expenditure. To the extent that the government obtained income from explicit or implicit taxes on domestic transactions or trade, liberalization will reduce revenue. If the government controlled markets through explicit monopsonistic marketing boards, and if those boards received operating profits, revenue will fall. However, it is usually assumed that marketing boards require heavy subsidization from central government budgets; thus, their elimination will improve the government's budget balance in the short term.

In the long term, a better fiscal stance and lower government expenditure are progressive. Revenue to fund government activities can come from operating profits, tax revenues, or debt. All three forms of revenue can lead to lower growth, and public sector debt may increase inflation; all of these are implicit forms of taxation, which burdens those without

the ability to shift assets, that is, the poor and middle classes. In addition, the interest from government debt accrues to bondholders (usually the wealthy) and is paid by taxpayers.

The elimination of marketing boards and other parastatal agencies can be expensive. It may require the extensive retraining of employees and other severance and retrenchment packages, such as compensation for the laid-off workers, that can continue for years. In some countries—for example, the case of Mali discussed by Dembélé and Staats (1999)—entirely new government agencies are created to manage the liberalization.

Liberalization may also require the payment of compensation to others who lose from the reforms. The best-known example is Mexico, which undertook sweeping reforms in the 1980s and 1990s. The Mexican government established a range of agencies to manage the transition and ensure food security. These efforts have had mixed success (see Box 4.1).

Finally, there are issues surrounding the method of disposal. If an agency is to be sold, what will be the sale price, and who will be permit-

BOX 4.1 Compensatory and Transition Programs in Mexico

The *Procampo* program was intended to compensate agricultural producers for the loss of revenue caused by the liberalization of agricultural trade and the removal of price supports in the grain sector. It is supposed to be phased out by 2008. In 1999, the expenditures for *Procampo* amounted to about US\$1 billion (or 0.25 percent of gross domestic product) and benefited some 3.2 million producers. It is estimated that *Procampo* contributed to about 8 percent of the incomes of *ejidatario* (collectivized system) households, although its contribution may amount to 40 percent for low-income families.

The *Alianza para el Campo* (Alliance for the Countryside) was intended to promote investments in sector productivity. Only 10 percent of *ejido* (collectivized) producers accessed the program even though it was specifically targeted at them. Among *ejidatarios*, those in relatively more developed communities with more land were more favored by participation in the program. The *ASERCA* program, which was established in 1991, aimed at developing and modernizing agricultural marketing channels in key grain markets. Until recently, the program relied on subsidies as a means of overcoming the deficiencies faced by producers in marketing their outputs. *ASERCA*'s marketing subsidies covered the difference between a reference price established during the previous year and the actual market price for these grains.

There is no evidence that these programs are igniting the increase in investment among smallholders that is essential for the reorientation of the sector. Recent studies of major output markets (grains and perishables) show that these markets are still subject to policy-induced distortions, are poorly integrated, and are characterized by high marketing margins and pervasive monopolistic and oligopolistic practices.

Source: World Bank 2001d.

ted to bid? Although the valuation of a government agency is extremely difficult, one can imagine a situation in which the parastatal is sold at below-market price, the difference representing a transfer from the government to the purchasers.

Public goods

Marketing boards, in addition to performing marketing activities, were often charged with the supply of certain important public services. In some cases, the elimination of government marketing agencies also threatened the provision of research, extension, infrastructure maintenance, quality control services, data collection, and information services. Examples include the termination of rural road maintenance in Cameroon and the demise of extension and research for coffee and cocoa in Togo. However, governments can arrange for the continued provision of these services. In Peru, the government specifically addressed the transfer of schools and health services from government-run plantations during sugar market reform (Akiyama et al. 2001).

For commodity research, the funding problems that have often prompted reforms have perhaps represented a greater difficulty than the reform process itself. In some cases, donors have stepped in to fund research; however, Rukuni, Blackie, and Eicher (1998) argued that donor funding removed incentives for researchers to respond to smallholder needs. Alston, Pardey, and Roseboom (1998) suggested that commodity levies be used to fund research specific to export crops. This approach was taken in Uganda to consolidate commodity-specific research programs within a central research organization. In Uganda, the National Agricultural Research Organization conducts basic research for several major commodities, and this is funded through general revenues. In the case of coffee, the Uganda Coffee Development Authority supplies additional money to target research topics funded by a small tax on exports (Akiyama et al. 2003).

Certain public services are necessary for markets to function, and these were often within the scope of marketing board responsibilities. They include infrastructure, market information, grades and standards, property rights, contract enforcement, and so on. Provided that institutions for functioning markets exist independently of the marketing board, the parastatal's dissolution will pose no threat to market performance or to the poor.

Conversely, although these services have public benefits (which are inexhaustible or unexcludable), they also entail private benefits for which

private markets will most likely develop. In that case, these services will be distributed according to ability to pay (or to borrow), and this likely will exclude the poor. It is important that the poor not be priced out of privatized markets for these public services.

METHODOLOGY

In this section, we discuss a variety of tools and indicators, that is, the things to look for and the ways to look for them. The first step is to understand the environment and the characteristics of the sector in a country: the farming system, consumption patterns, regional disaggregation, and the performance of private and public market institutions. As has been emphasized repeatedly, the impact of policy changes will differ between cash crops and food crops, between remote and well-connected areas, and between fertile and poor agroecological zones.

For instance, Minot and Goletti (2000) report that poverty in Vietnam is more widespread and more severe in rural areas than in urban areas and that it is concentrated in the more remote, hilly regions of the country. These observations motivate their analysis, which finds that the rice-surplus delta regions would gain from higher rice prices, while the other five regions, which are rice-deficit areas, would lose.

In addition, the analyst must understand the history of agricultural policy. How did the country get where it is? The characteristics and outcomes of reforms depend, to a great extent, on initial conditions (Akiyama et al. 2001). Rozelle and Swinnen (2000) found that the political environment, the “potential for agricultural growth,” and, more concretely, the initial level of price distortions influence both the choice and the impact of reform policies (see also Macours and Swinnen 2000). Swinnen and Beerlandt (2003) argued that the different experiences of China and Russia were caused by the fact that agriculture in China is larger and more labor intensive and that reforms proceeded more slowly there. In the former Soviet Union, by contrast, reforms were much more rapid and were undertaken in the absence of new institutions to enforce contracts, distribute information, and provide credit.

Finally, the characteristics of the commodities themselves may affect the design and impact of reforms. For instance, sugar cane is difficult to store; the milling capacity is fixed, and the scheduling of deliveries requires cooperative action. Similarly, grain storage losses in Sub-Saharan Africa are on the order of 10 to 40 percent per season.¹⁸ Simulations conducted by Arndt, Schiller, and Tarp (1998) suggest that, given the losses and transport costs, improved local rural storage is preferable to central urban storage.

Tools: functions, limitations, and data requirements

Under any circumstances, the best method for the examination of the impact of reforms is a combination of economic theory and common sense. There is no minimum standard for analysis. The scope and content of the analysis should be driven by the issues and characteristics that are important in each case. The analysis should always begin with a description of the sector to be affected and the sectors that interact with that sector in any significant way. How big are the sectors? Are the products traded or nontraded? Do they provide tax revenue to the government, or are they a drain on government resources? How and where does the state intervene in the sector: on the supply side or the demand side? Does it restrict quantities or prices? Does it tax or subsidize, or perhaps both? In addition, it is necessary to understand the stakeholders. In the first instance, these are the poor. Who and where are they? How do they connect with the sector? Do they earn income from it? Does it supply food or other goods and services to them? Who benefits from the current regime and in what way? Understanding this requires some examination of the benefit incidence, even casually, of current policies. What rents will be taken away and from whom? What benefits are expected in the short run and in the long run?

Beyond this basic description, the scope of analysis is up to the analysts and the resources at their disposal. The list of tools presented here is (somewhat) in the order of increasing complexity and cost (with the exception of the qualitative methods). However, even if one has unlimited resources available, the construction of a computable general equilibrium (CGE) model is not recommended unless the circumstances and policy changes require it. Household-level analysis requires detailed household surveys, which, thankfully, now exist in many countries; sectoral analysis requires aggregate data. There is less information available on firms and traders, especially survey-based data.

Qualitative studies

Qualitative techniques often reveal more detailed and nuanced information than that available through rigid quantitative surveys. Questions are open ended to allow for spontaneous revelations in the discussion within the broad limits set by the moderator. Qualitative techniques can contribute to the analysis by suggesting a set of variables and relationships for quantitative analysis, validating quantitative results and interpretations, and providing case studies to illustrate the quantitative results. Qualitative studies can be employed to improve the design and relevance of quantitative surveys. It is not necessarily the case, however, that qualitative analysis is only used as an input into quantitative research. Many variables and rela-

tionships cannot be accurately obtained with formal survey methods. Survey methods are inherently limited, explicitly forbidding discussion or case-specific selection of questions. Ideally, qualitative and quantitative methods would be coordinated or integrated in the analysis.

Qualitative analysis has been used to great effect in the assessment of policy reforms. The Structural Adjustment Participatory Review Initiative relied quite heavily on participatory appraisal, focus groups, and other qualitative methods to understand the impact of structural adjustment on welfare. In Bangladesh, the Structural Adjustment Participatory Review International Network combined qualitative and quantitative methods to examine reforms in agricultural input markets. That study revealed significant differences across agroecological zones, especially in the private sector response, and it found that the government was incapable of dealing with increasingly fraudulent business practices, especially in fertilizer marketing (Rahman et al. 2000).

A mixed qualitative-institutional investigation was conducted to clarify the impact of proposed reforms in the cotton markets in Chad (World Bank 2003b). Fieldwork was conducted by teams of social scientists over a period of 48 days. Individual teams spent five days in each of 27 villages. Separate discussions were conducted with producers who owned cattle and producers who did not own cattle. Separate focus groups were also held with non-cotton producers, women, youth, delegates of village associations, women's associations, and local political and religious authorities. Access to agricultural inputs (including credit), equipment, labor, and animal traction are the main determinants of the efficiency and productivity of cotton farmers in Chad. In general, Cotontchad, the cotton parastatal, is perceived as antagonistic and exploitative. In the relatively more structured societies of the western and some central parts, shared responsibility reinforces social cohesion. In these areas, the *marché autogéré* (shared market management) system implemented by Cotontchad introduced transparency and fairness in selling operations. In the relatively less-structured societies of the central and eastern regions, shared responsibility reinforces social fragmentation. The report highlights the areas in which the reforms are likely to have an impact, the stakeholders who will be affected, and the geographic differences in impact as a function of social relations and farming systems.

In Malawi, as part of the PSIA work on the reform of ADMARC, the interviewees were selected—in collaboration with local leaders and extension workers—and stratified with respect to social and economic situation, ethnic and livelihood diversity, and gender. The discussions focused on perceptions of and trends in well-being over the last five years, liveli-

hood strategies and cropping patterns, problem analysis, cause-effect diagrams, trend analysis, institutional analysis, and analysis of opportunities, coping, and survival strategies (World Bank 2003c).

Murshid (n.d.) reported the results of a mixed-methods study in Bangladesh, in which participatory (focus group) methods were combined with microeconomic data analysis. The discussions highlighted issues that the household surveys had missed, such as the importance of patron-client relations, especially for input use, the incidence of tied credit, and changes in land rents and shared tenancy arrangements over time.

Reduced-form econometric studies

Using household-level data is attractive for their relative simplicity. These models are normally based, at least implicitly, on a system of supply and demand equations, which are solved to derive an aggregate measure of welfare. They can be employed to estimate parameters (elasticities, for example) on the supply side, such as output and marketed surplus with respect to prices or technology, or on the demand side, such as consumption with respect to prices, income, or other characteristics. They generally require household-level datasets, with sufficient information to estimate demand systems and crop budgets. In general, these studies are limited to the examination of first-round effects only.

The parameter estimates may be used for simple *ceteris paribus* simulations, that is, simulations assuming that no structural changes arise from a policy. The simulations are conducted by exogenously applying new values of variables to estimated parameters. Dercon (2002) presented econometric estimates of the impact of a variety of policies, including producer price changes, on rural welfare in Ethiopia from 1989 to 1995. Owens (2003) used cross-sectional and limited panel data to show that the marketing board, ADMARC, was important to productivity and welfare among smallholders in remote areas of Malawi. Similarly, Alwang, Siegel, and Jorgensen (1996) found that remoteness and weak input markets precluded potential gains from market liberalization for many among the rural poor in Zambia.

An analysis of the impact of interventions on the consumption side can also be conducted as described in the preceding paragraph. The most common method is to compute partial equilibrium benefit incidence estimates, that is, calculating estimates of the subsidy's benefit by looking at average or marginal expenditures across income classes and levels of the subsidy. The impact of removing the subsidy is then simply the negative of the benefit received by each group. However, this method is likely to overestimate both the benefit of the subsidy and the cost of the removal of the subsidy.

Econometric estimation is also required for the estimation of marginal benefit incidence. This is a measure of the welfare impact of the next unit of public expenditure or subsidy (or tax).¹⁹ Analogous to incidence ratios, the net benefit ratio is defined as the value of the net sales of a commodity as a proportion of income. The net benefit ratio for a commodity can be interpreted as the “before-response” or the “impact” elasticity of real income with respect to the price of that commodity. The ratio is a very short-term measure in that it assumes no behavioral response from households and no change in labor markets or nonfarm income that might result from the price change (Barrett and Dorosh 1996; Budd 1993; Deaton 1989; Kherallah et al. 2002).

Farm-household-level analysis

One can examine the impact of reforms at the farm level, computing farm budgets for different classes of farms. The impact of changes in prices can then be calculated using farm-level production (or profit) functions. This is a strictly “nominal” analysis, because it looks only at the impact of changes on the income side and does not allow for changes on the consumption side. Similarly, examining only the impact of marketing policy on consumption ignores concomitant changes in resource allocation on the income side.

Barnum and Squire (1979) and Singh, Squire, and Strauss (1986) showed that market failures mean that the production and consumption decisions of the farm household are not separable. Production depends on consumption, and vice versa. This codependency implies that the marketed output of the household depends on the household’s income. Examining only the supply side tends to overestimate the response of households and of aggregate supply to price changes. As noted above, price rises increase the income of a net-supplier or net-seller household and may induce it to consume more leisure. If it does consume more leisure, then this will reduce the household’s labor input to production and the household’s marketed surplus. To understand and model these effects properly, one must use farm budgets in combination with household-level consumption data to construct agricultural household models. These models can be constructed econometrically or algebraically using, for example, linear programming methods (see Singh, Squire, and Strauss 1986; Taylor and Adelman 2003).

The alternative to the household model is to estimate consumption and production changes separately or iteratively. This is acceptable as long as the decisions truly *are* separable. If there is market failure or if the policy might induce the household to shift from net buyer to net seller (or vice versa), or withdraw from the market altogether, then the house-

hold approach is required to obtain an accurate picture of price and income effects and reallocations in consumption and production.

Subsector analysis

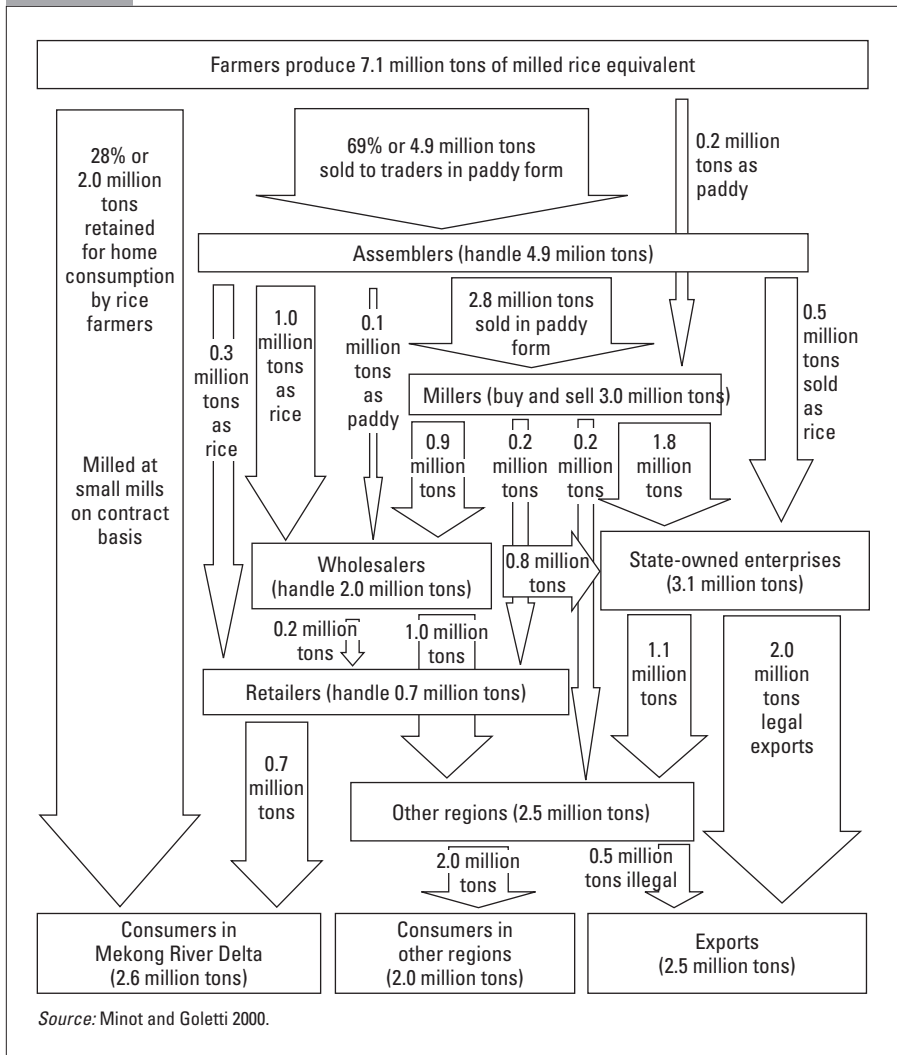
At a more aggregate level, one can conduct an analysis on an entire subsector, that is, tracing all factors and activities related to the production of one particular good. This involves computing budgets and the value added at each step, from the provision of seed and inputs to the final retail marketing. This method also enables the calculation of the real subsidies or taxes imposed at each stage of the process and the potential benefits of liberalization. This is the method used by Salinger and Almeida-Dominguez (1995) in their analysis of Mexican maize market reforms. Their model contains only two goods (yellow and white maize), but disaggregates consumption and production across regions.

Subsector analysis, which examines resource flows within (for example) commodity markets, can inform the discussion of policy, as well as guide more in-depth analysis. Figure 4.1 describes the flow of rice from production within the Mekong river delta of Vietnam, through the various marketing and processing channels, to final use. The figure shows that less than half the rice produced in the region passes through state-owned enterprises.

In many cases, subsector studies are perfectly adequate for examining the impact of market reforms. If the commodity in question is primarily exported, the consequences for domestic consumers are probably small. Conversely, the benefits of reform will include intrasectoral effects, which will not be captured by a strictly subsectoral perspective. It is anticipated that reforms will bring about long-term changes to investment and production decisions, so the full impact occurs only over time, and commodity market reforms are closely tied to events in specific international markets. In that case, a more comprehensive model should be used to disaggregate the impact of reforms from that of other events. For example, Dorosh and Lundberg (1996), using a CGE model, showed that the success of groundnut market reforms in the Gambia owed as much to better weather and donor inflows as to specific policy changes.

Aggregate sector studies. Analysis of agricultural market reforms has often been conducted using partial equilibrium models that simply examine the aggregate supply response to prices over time (for example, see Askari and Cummings 1977; Nerlove 1958). This is accomplished by simulating the impact of changes using parameter estimates obtained through econometric estimation of historic aggregate data. This method is only a

FIGURE 4.1 Rice Marketing Channels in the Mekong River Delta



crude first approximation, ignoring (most importantly) the reallocation of resources among outputs.

A more sophisticated method is that of Nicita, Olarreaga, and Soloaga (2002), who simulated the impact of different reforms on welfare in Cambodia and estimated consumption and income effects separately. They showed that reduced transaction costs in rural rice markets will progressively increase incomes in both urban and rural areas.

Multimarket models. A slightly more complex method is the joint examination of consumption and income effects using multimarket models to account for interactions among exported, imported, and nontradable goods. The models of Braverman and Hammer (1986) and others were developed specifically to examine agricultural price, tax, and trade policies. In general, they found support for reducing export taxes and input subsidies, although these policies may harm poor consumers in the short term. More recently, Srinivasan and Jha (2001) showed that market liberalization in India would lead to greater price stability.

Minot and Goletti (2000) constructed a spatial equilibrium multimarket model to examine rice market reforms in Vietnam. The model allows for differences in impact across regions. They found that reforms in rice markets would most likely lead to higher incomes for the majority of farmers, but that the impact would differ significantly by region. The rice-surplus delta regions would gain, but the more remote rice-deficit regions would suffer.²⁰

The Cornell Food and Nutrition Policy Program constructed a number of multimarket models to examine the impact of reforms in agriculture markets. Notable among these are the approaches of Dorosh, del Ninno, and Sahn (1996), who looked at the impact of food aid on food security in Mozambique; and Arulpragasam and del Ninno (1996), who looked at food markets in Guinea. More recently, Lundberg and Rich (2002) and Stifel and Randrianarisoa (2004) have constructed two prototypical multimarket models to look at agricultural market reforms in Malawi and Madagascar, respectively. The latter study found that reducing transport costs and storage costs would significantly improve the welfare of the rural poor. Liberalizing rice markets would also enhance rural welfare, even among rice growers, as they shift into the production of other commodities.

The study by Stifel and Randrianarisoa (2004) illustrated that multimarket models are useful when policy changes are expected to affect more than one subsector. Cross-price or broader sectoral effects, such as the impact of rice price changes on the consumption of coarse grain rice, cannot be examined through a model that looks only at the rice subsector. The net effect of a policy will be manifest only after households have had the chance to reallocate resources in response to the policy. So, while a producer price increase for one commodity will encourage greater production of that good, the increased output is obtained partly at the cost of decreased production of other goods. For example, Braverman and Hammer (1986) found that the removal of the fertilizer subsidy and an increase in the price of cotton to export parity would lead to a 150 per-

cent increase in cotton production, but a 15 to 30 percent drop in grain production and no change in groundnuts.

Social accounting matrix/semi input-output (SAM-SIO) models. The SAM is essentially an accounting tool. It permits the examination of links among sectors in a table that contains expenditures (in columns) and receipts (in rows). The SAM can track, for example, the link between the activity “rice production” and the wages paid to workers. The workers then “pay” their wages to their households, which consume goods and services, which they buy from firms, and which, in turn, purchase intermediate goods and services from other domestic sources and through imports. The firms pay taxes to the government, which can consume, save, or transfer the funds to firms or households in the form of subsidies, and so on. A SAM can be constructed from disaggregated household accounts representing different income classes, regions, or households with income from various sources (because, for instance, households that grow alluvial rice will differ from households that have tree crops as their main income source).

The SAM is used as the database for multimarket and CGE modeling. It can also be used by itself, as an SIO model, to examine policy changes. The links from one account to others can be summarized through the calculation of multipliers, that is, the total increase in activities and incomes derived from an exogenous increase in that one account. For example, the links could indicate how much income would accrue to different household classes if exports of cash crops exogenously increased by one unit, or if rice production increased by one unit.

SAM-SIO models are an important development over partial equilibrium models, because they permit the examination of cross-sectoral effects, links among different sectors in production, links from production to consumption, and vice versa. Partial equilibrium models, such as simple reduced-form econometric analysis, assume that the only impact is within the sector; multimarket models relax that assumption, but limit the analysis to a few sectors. Models that ignore the links from consumption will miss a significant portion of the impact of policy. Consumption links account for 75 to 90 percent of the total multiplier in Africa and 50 to 60 percent of the total multiplier in Asia (Sadoulet and de Janvry 1995).

There are many examples of SAM multiplier analyses of agricultural policy, ranging from technical change (Khan and Thorbecke 1988; Subramanian and Sadoulet 1990) to regional integration (Hazell, Ramasamy, and Rajagopalan 1991). SAMs have been used extensively to look at income distribution across regions and across household classes (see Thorbecke

1985). The International Food Policy Research Institute has constructed numerous SAM-SIO models to calculate agricultural multipliers in different countries.

The most notable limitation is that SAM-SIO models assume that relative prices are fixed, so they cannot be used to examine changes in exchange rates, wages, or the prices of other factors. They also assume fixed proportions in production and consumption and restrict elasticities to either 0 or 1.

CGE models. The relationship among prices, market structure, and welfare may be sufficiently complex to require CGE modeling. This is especially true if relative prices change, or if policies engender significant structural changes in an economy. In a sense, CGEs subsume all of the quantitative methods presented by the above tools and models. CGEs are used to conduct simulations based on data from a SAM, together with econometrically derived parameters.

CGEs have been used to look at oligopolistic and monopolistic behavior (Devarajan and Rodrik 1989) and the competition among agricultural activities for common fixed factors, such as land (Sadoulet and de Janvry 1992). The CGE simulations of food subsidies in five countries presented in Sahn, Dorosh, and Younger (1998) showed that subsidies caused overall income falls in three of the countries studied, but that the rural poor benefited in four of the countries. However, it appears that, in general, the impact of intervention on consumers is small, and the impact of reforms—the removal of subsidies—will also be small. Robilliard, Bourguignon, and Robinson (2001) constructed a powerful set of models that combine CGEs with household survey datasets. Instead of a few representative households, these models can measure the impact of policy changes on each household in the sample. Households can be seen to alter their resource allocation—land, labor, and other productive assets—in response to changes in the environment.

These models are extremely time-consuming and data intensive to construct because of the detail required to examine the specific policies under consideration. Models may contain dozens of sectors and activities, many household types, and so on, and can take a year or more to build. The simple 1-2-3 model of Devarajan and others (2000), while quite rigorous, contains only two goods—one tradable and one nontradable—and does not sufficiently disaggregate other accounts. There are also theoretical reasons not to use a CGE model. If the policies being examined do not lead to significant structural changes, or do not have large intersectoral or macroeconomic consequences, there is no reason to take the trouble.

RISKS AND ASSUMPTIONS

Concerning the reform process

The reform of marketing boards and other market institutions is intended to foster rational price signals to which actors can respond and make efficient resource allocation decisions, which, in turn, lead to more rapid growth and greater welfare. However, many poor farmers are unable to exploit their agricultural potential because of other binding constraints, such as poor infrastructure and thin or nonexistent markets. Poorly implemented reforms can have severe short-term costs. For long-term gains to be realized, investment in key public goods, including improvements in rural marketing, extension, and infrastructure, are required (McCulloch, Baulch, and ChereI-Robson 2000).

Akiyama and others (2001) present a list of conditions that must be met for reforms to have a good chance of succeeding. These are classified as initial conditions and have to do with the implementing process. These conditions are familiar and intuitive, including consistent trade and macropolicies, government commitment, and so on. In addition, there are a few conditions that are essential to the welfare of the poor: the capacity of voluntary organizations, such as farmer associations; strengthening property rights and enforcement; and stakeholder participation in the reform process, including the private sector, smallholders, government (implementing agencies and privatized agencies), and donors.

Reforms are sometimes incompletely implemented (Kherallah et al. 2002). The government may be ambivalent about the reforms. More accurately, the agencies that make and implement policy comprise diverse and conflicting interests, which leads to inadequate commitment to the process and an uncertain policy regime. Policies may sometimes be contradictory, such as the reduction of fertilizer subsidies without lifting producer price restrictions (Jayarajah and Branson 1995). Moreover, support from donor agencies may be inconsistent and contradictory, reflecting similar ambivalence across and within agencies. Because foreign financing is often required to implement reform programs, some coordination among donors is required.

Decentralization may complicate the reform process. Without strong central enforcement or a strong legal framework, the problems of implementation may be made more complex by the myriad state or local entities that possess any authority over markets. In Russia, in spite of reforms at the federal level, the state monopoly has been replaced by the monopolistic behavior of local processing entities and the dictates of regional officials. The regions have established a range of interventions to control

food trade and prices that are expressly forbidden under WTO rules. These include price controls, additional standards and certification requirements, monopoly purchasing, uneven enforcement of customs regulations, and other direct or indirect nontariff barriers to trade among regions or with the outside world (Csaki et al. 2002).

The sale of cereals in many regions is controlled by oblast administrations through “commodity credits.” In the spring, they allocate financial resources from their local budgets for sowing purposes (in most cases, providing in-kind inputs through barter deals); at harvest, they demand debt repayment using cereals and ban free sales outside the oblast. Regional (and, in fact, federal) food corporations that were set up as a vehicle for market regulations have, in effect, turned into oblast administration offices used for the signature of the contracts that create “hard bargains” for peasants. There are attempts to revive the commodity credit system at the federal level (Csaki et al. 2002).

If governments renege on their commitments or are unable to enforce reforms, the private sector will not trust the government’s commitment not to interfere in agricultural markets. Conversely, the government may not trust the capacity of the private sector to meet market demand for produce and inputs. Such mistrust and uncertainty have, in the past, almost always led policy makers toward more controls. Mixed signals in Zambian fertilizer marketing may have slowed the full participation of the private sector (Mwanaumo 1999). Similarly, there was an initial surge in private sector participation in Tanzania, followed by the reemergence of crop boards as major actors. In theory, these boards are responsible for regulation, licensing, ensuring competition, and quality control. In practice, the picture is much less clear. According to a bill passed in 2001, the coffee board may “perform any commercial activity . . . associated with the coffee industry” (Cooksey 2003).

Similarly, reforms of cashew marketing and trade in Mozambique were implemented and then rescinded. A ban on raw cashew exports enabled a small group of processors to purchase raw cashews at a price lower than the world price. This was, in effect, a transfer from poor farm households to the processors. Clear welfare and distributional gains were expected from the removal of the export ban and the gradual reduction of export tariffs so that farmers could receive the higher world price for their outputs. The policy experienced two fatal problems: (1) Processors exerted significant political influence to slow the reforms; and (2) The short-term supply response was lower than expected. This was due to a combination of falling world prices, large fixed costs in cashew production (the need to replace aging trees), and distrust of government policies. The distrust

proved correct. As Rodrik and McMillan (2002) put it, liberalization could have reinvigorated the rural sector by reversing the collapse in cashew tree planting, but the policy failed to establish a credible commitment to a new pricing regime that would have made it worthwhile for farmers, entrepreneurs, and workers to undertake costly investments.

Reforms may be frustrated by other environmental characteristics, which are ignored by reforms or not dealt with adequately. These include transport; credit for trade, investment, and consumption; storage; market information; and a functioning legal system that ensures rights and contracts. In addition are other exogenous factors, such as drought, war, and so on. In a study of cotton parastatal reforms in Mozambique and Zambia, Boughton and others (2003) concluded that “a simple policy choice between liberalization or regulated monopoly is not sufficient for either cotton sector to achieve [the] desired performance in the absence of rural input and credit markets.” Getting prices right in the agricultural and marketing sectors is not enough; removing inappropriate policies might be necessary but insufficient.

The impact of liberalization differs by region and location. Where infrastructure is poor, farmers receive a much lower price than the price farmers receive in more accessible areas. With liberalization, traders and exporters tend to concentrate their purchases in more accessible areas, where transport costs are lower. In the least accessible areas, there may be little or no competition among purchasers. This will be reflected in the share of the world price accruing to farmers. For example, coffee farmers in remote areas in Madagascar receive around 40 to 50 percent of the free-on-board price, while farmers in more accessible areas receive between 60 and 70 percent of this price (Akiyama et al. 2001). Liberalization will also tempt the marketing board to remain or reinsert itself in marketing activities. Following reforms in Tanzania, cotton farmers in the eastern part of the country found themselves without buyers, prompting the Cotton Board to intervene as the buyer of last resort (Baffes 2002). ADMARC in Malawi has experienced similar problems even as there were calls for its removal from marketing. Private traders have shown little interest in entering markets in remote regions of northern Malawi (Sen and Chinkunda 2002).

Groups that are vulnerable—that are likely to lose from reforms—may have ways to protect themselves against the worst vicissitudes of market reforms (Akiyama et al. 2003), or they may resist any changes. Some reforms are relatively painless and easy to conduct, while others are much more difficult, mainly because of strong vested interests, lobbying, and pressure groups, as well as political sensitivity. There may be relatively less opposition to agricultural reforms because farmers, as a group, are

not well organized and are less well equipped to resist policy changes compared with state-owned enterprises and other organizations with strong, vocal trade unions (Murshid n.d.). In Zambia during the mid-1980s, resistance to reforms spread to urban elites, including government workers; parastatal managers saw their rents threatened, and bureaucrats withdrew support from reforms. The reformers did not develop the political base necessary for reforms (Hawkins 1991).

Concerning the analysis

One major problem for predictive analysis is the fact that data are not yet available to determine what has happened. Any empirical work must be speculative in the sense that it is not based on actual records of events. As noted by Akiyama and others (2003), common sense, experience, and economic theory will drive the analysis, rather than direct observation; the task is to make the analysis as robust as possible.

The use of “comparators,” while intuitive, is insufficient and may be misleading. The choice of comparison countries is arbitrary, and comparisons should stress relevant differences in environment and initial conditions. Much of what makes countries differ will be invisible to the observer and can only be elicited with more careful analysis. Univariate comparisons to similar countries are illustrative, not explanatory. Casual comparisons cannot tell you how a country should or even could perform: some apparently obvious comparator countries are too similar (for example, Belarus and Ukraine), and some are too different (for example, Botswana and Zambia) to be of much use.

The analyst may be restricted in the time available for analysis. A CGE model can take a year to build; multimarket models may take many months. Simple regressions may take weeks, particularly if the analyst is working from a raw dataset. While there are no shortcuts to the analysis, the burden may be relieved by appealing to previous work. An existing SAM may be used as the basis for multiplier, multimarket, or CGE modeling. Previous poverty profiles or sector work may have calculated elasticities or demand systems. It is a common fault of policy and analysis, within the World Bank and elsewhere, to overlook both history and earlier research. Not only does the later work fail to benefit from the specific accumulated knowledge, it also wastes time and resources by dealing with issues that have already been covered.

Because of its speculative nature, the analysis must rely to a large degree on assumptions. These assumptions must be stated explicitly and clearly. If an assumption cannot be tested against the data, it must be jus-

tified by theory or experience with other situations. For example, say there are no empirically derived estimates of supply elasticities: The hypothesized impact of a price change must then be derived theoretically. In that case, however, the outcomes must be tested against equally plausible alternatives. What would happen if the assumptions were wrong? What is the worst-case scenario, and how likely are errors? In the example of Mozambique's cashew reforms (presented in the section on risks and assumptions in the reform process), the analysis vastly (and implicitly) overestimated the supply response to the policy change.

This leads to the issue of the counterfactual, that is, what is most likely to happen in the absence of reforms. The status quo ante is one alternative, but it is not the only, and maybe not even the best, one. An insolvent marketing board will not continue to provide services and marketing for very long. What will happen if the parastatal collapses suddenly, without having prepared the legal and institutional framework to encourage competitive private sector activity?

Finally, the analyst must decide on the level of and criteria for disaggregation in the analysis. Many of the studies cited above show that, in general, intervention reduces welfare, while reforms improve it, but there are differences across regions, classes, and other characteristics. Think of the definitions of stakeholders given above. Does it make sense to consider traders as a group? Clearly, the impact of reforms on importers is different from that on rural wholesalers, or on women operating market stalls in small towns. The correct unit of analysis is determined by the data, or at least by knowledge of the environment. Who are the key stakeholders, and how do they differ in ways that are analytically important? Are the major distinctions regional, wealth based, or activity based?

MONITORING AND EVALUATION

Both monitoring and evaluation are important to an understanding of the impact of reforms on the welfare of the poor. There is a distinction to be made, as usual, between monitoring the indicators of policy implementation and evaluating the impact of reforms on welfare. In addition, there is a distinction between indicators of successful implementation and indicators of impact on the poor.

Indicators

The analysis must encompass an understanding of initial (prereform) conditions: What is the nature of the intervention and how will it affect

The second set is “impact” indicators in that they measure the consequences of reforms on household welfare.

Markets are partly sources of information on demand and supply mediated through prices. Prices act as signals, to which households and firms respond; so it is important to monitor changes in price levels. In addition, price volatility will reduce the willingness of risk-averse smallholders to make irreversible investments, and this may exclude them from many of the benefits of the new market environment. This means that it is important to monitor the variability of prices over time and over space. The impact of price changes on household welfare can be measured in terms of employment and incomes or in terms of consumption and food security. Clearly, the composition of these factors will change in response to price signals; thus, it is important to look at total income, or total consumption, as well as changes to specific subsectors.

Commodity markets and input markets can be evaluated in terms of market structure, that is, how many actors are there? What are the barriers to entry, and for whom? How well does information flow, and do all agents have equal access to information? Few participants on one side or the other may permit collusion, that is, monopolistic or monopsonistic behavior. High marketing margins can reflect high real costs to the intermediary (because of long distances and poor communications) or excess profits and the existence of some barriers to competition. How do marketing margins change following reforms? Are farm households receiving a larger share of the world price, and how does this ratio vary across regions? A key performance indicator of reforms is “the extent to which it pays farmers a competitive share of the chain’s total value-added” (Boughton et al. 2003).

In efficient markets, prices reflect real fluctuations in supply and demand, and a price change in one market encourages movements of goods and services from other markets in response (Shively 1996). Thus, one measure of market efficiency is the cointegration of prices across markets. How well does information travel? How quickly do agents respond to price signals? Are some markets more isolated, and others more well integrated? Continued public intervention may be justified to build roads to improve communication and the flow of both goods and information.

Some evidence suggests that, when private actors move in, notably in Asia, marketing margins are lower and price transmission is higher. Dorward and Morrison (2000) found that price transmission was higher when a marketing board was not in place than when the state maintained a role in marketing output.

For farm households, the impact depends on the response of the private sector and the extent to which the households are hampered by other

constraints. For consumers, the impact depends on the extent to which they received subsidies and what happens to prices and supply following reforms. But PSIA requires more specific examination of the impact of reforms because outcomes vary across groups. “Farmers” are not a homogeneous group, nor, for that matter, are “smallholders.” Many smallholders are net buyers, so higher prices are detrimental in the short term, unless marketing margins also come down. The elimination of panterritorial pricing will hurt remote households, at least to the extent that they are connected to markets.²²

NOTES

1. Go to www.worldbank.org and select “Topics in Development.” Under “All Topics: Choose a topic,” select “Poverty and Social Impact Analysis.”
2. For example, the Edict of Diocletian in the year 301 fixed maximum prices for labor and a long list of commodities (see Garnsey 1998).
3. A notable exception was the former Soviet Union, in which agriculture was supported through heavy subsidies (Swinnen and Beerlandt 2003). As a consequence, liberalization caused real commodity prices to fall.
4. See Sadoulet and de Janvry (1995) for an excellent exposition of trade restrictions in agriculture.
5. See Gutner 1999; see also PovertyNet, at www.worldbank.org/poverty/safety/inkind/inkind2.htm.
6. See Subbarao and others (1997) for a discussion of food security and safety net programs.
7. Other distortions, such as trade barriers and overvalued exchange rates, eliminated many of the real benefits to producers that might have arisen from state intervention. Krueger, Schiff, and Valdés (1991) argued that the anti-agriculture bias during the prereform period was primarily caused by indirect taxation in the form of exchange rate and industrial policies, not commodity-specific agricultural policies.
8. World Bank Operational Directive OD 8.60 presented the rationale for sectoral reforms and guided lending operations throughout the 1990s. It was replaced by Operational Policies/Bank Procedures OP/BP 8.60 on August 9, 2004. For information, search for “OD 8.60” or “OP 8.60” at www.worldbank.org.
9. The International Monetary Fund finally eliminated its Buffer Stock Financing Facility in February 2000.
10. There is some evidence of the importance of sequencing in other sectors, notably public enterprise and utility reforms (see Lampietti 2004).
11. Dembélé and Staatz (1999) noted that absent from the program’s activities were any steps aimed directly at improving farm-level food production.
12. The table does not include nongovernmental organizations and donor agencies. These are important in that they can exert considerable influence on the

- reform process, but they are arguably not directly affected by the reforms. It is similarly necessary to obtain at least implicit consent for policy changes from the myriad agencies, because lack of coordination, whether intentional or accidental, can easily scuttle the best reforms.
13. Thanks to Dirk Bezemer for sharing this observation.
 14. Holding all else constant and under normal assumptions, a price increase for one good will raise the income of the households that produce it and decrease the real (consumption-denominated) income of the households that consume it. This will encourage greater production and discourage consumption. There will also be substitution effects on both sides, so that producing households will shift resources away from other activities, and consuming households will shift resources toward the consumption of other goods.
 15. Estimates of short-term supply price elasticities range from 0.1 to 0.8, and, over the long term, from 0.1 to 0.5 (Binswanger 1989; Bond 1983; Chhibber 1989).
 16. There is an important, although theoretical, caveat to this conclusion. Lenders respond to signals, such as the amount borrowers commit from their own resources to a project. Thus, a poor project by a wealthy borrower might receive more lender support than would a good project by a poor borrower (see Bardhan, Bowles, and Gintis 1998).
 17. This is known as Ricardo's food bottleneck. It more properly assumes a closed economy.
 18. The United States National Academy of Sciences Bureau of Science and Technology estimates that 25 percent of cereals are lost or rendered unfit (BOSTID 1996).
 19. See van de Walle (1998) for an excellent explanation of benefit incidence.
 20. Minot and Goletti (2000) hold labor demand and wages fixed, arguing that labor markets are unimportant in Vietnam. This is in stark contrast to the microsimulation models of Robilliard, Bourguignon, and Robinson (2001), in which the income effects dominate and are determined primarily through changes in wages and labor allocation.
 21. See Sadoulet and de Janvry (1995) for a good discussion of these issues.
 22. It could be argued that panterritorial pricing is necessary to improve the welfare of remote households; that is, it is a transfer—a means of income support—to remote households. However, it is easy to show that the income support might be accomplished more effectively through other means.

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