



Analyzing the Distributional Impact of Reforms

A practitioner's guide to trade, monetary
and exchange rate policy, utility provision,
agricultural markets, land policy,
and education

EDITED BY

Aline Coudouel

Stefano Paternostro



THE WORLD BANK

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VOLUME ONE

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FOREWORD

Common sense and observation of history suggest that policy makers should be well aware of the potential economic, political, and institutional effects of the reforms they wish to pursue. Understanding who the winners and losers from reforms are likely to be, as well as the magnitude of the stakes involved, can allow reformers to hold a more informed policy debate and can help them create coalitions that can overcome resistance to change.

Along these lines, the World Bank is increasingly emphasizing the analysis of distributional impacts of reform as a key element of the design of reforms supported by Bank activities. To share its experience in this endeavor, the World Bank has already produced guidance and good practice notes, including the User's Guide to PSIA and a set of tools for the estimation of distributional impacts presented in *The Impact of Economic Policies on Poverty and Income Distribution: Evaluation Techniques and Tools*. These publications focus on the overall approach for the analysis of poverty and social impacts, and on the tools and techniques available for their estimation.

As a complement to the materials already issued, this volume focuses on issues likely to be encountered in selected reforms or reform packages. Each of these reforms is likely to affect different groups of stakeholders in different ways, thus calling for tailor-made sets of tools, techniques, and approaches of analysis. This volume provides practical guidance in this respect, building on recent experience in the World Bank. We are delighted to be able to share the lessons we have learned from our own experience over the past few years, and we trust the material in this book will be helpful to practitioners and policy makers alike.

Luca Barbone
Director
Poverty Reduction Group

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INTRODUCTION

The analysis of the distributional impact of policy reforms¹ on the well-being or welfare of different stakeholder groups, particularly the poor and vulnerable, has an important role in the elaboration and implementation of poverty reduction strategies in developing countries. In recent years, this type of work has been labeled as Poverty and Social Impact Analysis (PSIA) and, increasingly, it is implemented to promote evidence-based policy choices and foster debate on policy reform options. PSIA helps to achieve the following:

- Analyze the link between policy reforms and their poverty and social impacts
- Consider trade-offs among reforms on the basis of their distributional impacts
- Enhance the positive impacts of reforms and minimize their adverse impacts
- Design mitigating measures and risk management systems
- Assess policy reform risks
- Build country ownership and capacity for analysis

PSIA is not a product in itself. Rather, PSIA is an analytic approach that can guide the analysis of distributional impacts. The process begins with an ex ante analysis of expected poverty and social impacts of policy reforms to help design the reforms. It then advocates monitoring results during implementation. Finally, where possible, PSIA suggests evaluating ex post the poverty and social impacts of reforms.

PSIA is an important step in the design of reforms that are expected to have large distributional impacts, are prominent in governments' policy agenda, and are likely to involve significant debates.

RESOURCES AVAILABLE²

The World Bank has developed a series of resources over the past few years to help practitioners analyze the poverty and social impacts of reforms:

First, the *User's Guide to PSIA*³ introduces the main concepts underlying PSIA, presents key elements of good practice approaches to PSIA, and highlights some of the main constraints and operational principles of PSIA. The guide highlights key tools that practitioners may find useful to undertake the PSIA of policy reforms, but it does not aim to be comprehensive in coverage.

Second, as a complement to the User's Guide, the World Bank has developed guidance on selected **tools and techniques**. In terms of economic tools, a first volume, *The Impact of Economic Policies on Poverty and Income Distribution: Evaluation Techniques and Tools*,⁴ presents a compendium of existing techniques, the principles on which they are built, and illustrative applications. The techniques range from incidence analysis to tools linking microeconomic distribution to macroeconomic frameworks or models. Currently, a second volume, *Evaluating the Impact of Macroeconomic Policies on Poverty and Income Distribution Using Micro-Macro Linkages Models*, is being prepared. This volume will present five approaches through which macro-counterfactual experiments can be modeled and linked to microeconomic data. Additional guidance is also being provided by the World Bank and the Department for International Development (DFID) for a sourcebook about *Tools for Institutional, Political, and Social Analysis (TIPS) in Poverty and Social Impact Analysis (PSIA)*.⁵

Third, the World Bank has produced a **Good Practice Note**,⁶ which provides advice to World Bank staff and their counterparts on promoting PSIA in-country and integrating it within development policy support operations as envisaged by the World Bank's Operational Policy on Development Policy Lending (OP 8.60).

Finally, a forthcoming book of **case studies** will provide a detailed account of the experience to date in implementing the PSIA approach in several countries. These case studies highlight the challenges faced and the lessons learned in carrying out this work on the ground.⁷

THE NEED FOR SECTOR-SPECIFIC GUIDANCE

While information is available on the general approach, techniques, and tools for distributional analysis, each sector displays a series of specific characteristics. These characteristics have implications for the analysis of distributional impacts, including the types of impacts and transmission channels that warrant particular attention, the tools and techniques that are most appropriate, the data sources typically required, and the range of political economy factors most likely to affect the reform process.

Hence, as a complement to the resources listed above, each chapter provides an overview of the specific issues arising in the analysis of the distributional impacts of selected categories of policy and institutional reforms. Each chapter then offers guidance on the selection of tools and techniques most appropriate to the reforms under scrutiny as well as examples of applications of these approaches.

The individual chapters are meant to be indicative only and do not attempt to cover issues for each selected type of reform in an exhaustive fashion. In addition, the chapters currently focus on economic analysis. They will be complemented with more details on social and institutional analysis after the sourcebook on social tools becomes available.

OUTLINE OF THE VOLUME

Each chapter is organized around the different transmission channels through which policy reforms can be expected to affect the population. The chapters provide an overview of the typical direction and magnitude of the expected impacts; the implementation mechanisms through which reforms are typically carried out; the stakeholders that are likely to be affected by the reform, positively or negatively, or that are likely to affect the reform; and the methodologies typically used to analyze the distributional impact. Each chapter illustrates these points with a series of examples, applications, references, and sources, and includes a bibliography.

This volume covers six key areas of policy reform that are likely to have significant effects on distribution and poverty: trade policy, monetary and exchange rate policy, utility provision, agricultural markets, land policy, and education policy. A forthcoming companion volume will cover additional topics, including decentralization, pension, labor markets, public sector downsizing, taxation, transport, and health. Following is a short synopsis of the most salient features discussed in the individual chapters.⁸

Trade Policy Reforms

The links between trade policy reforms and poverty are complex and case specific. Indeed, similar trade policies may have widely varying impacts on poverty in different countries. Maurizio Bussolo and Alessandro Nicita provide practitioners with thorough background information on the different techniques available to understand and analyze these links.

Often, the effects of a trade policy reform are not transmitted directly to households, or there are numerous shocks affecting households dur-

ing the period of reform. The first step in reform impact analysis should therefore be to focus on understanding the detailed pathways through which trade reform can affect poverty.

The literature has concentrated on three pathways, namely, the changes policy reform induces in (1) the prices of goods; (2) returns to factors of production, particularly returns to labor earnings; and (3) government revenues and expenditures.

In practice, the analysis of the effects of trade liberalization on poverty is regularly carried out in three steps. The first step is the estimation of the changes in the prices of goods and labor returns resulting from trade liberalization. In the second step, the income sources and consumption baskets of each household are analyzed to construct budget and income shares. During the last step, the changes in the prices of goods and factors are mapped into each household's budget and income shares to produce an estimate of the changes in the welfare of the households.

Cross-country econometric analyses and in-depth single-country case studies have generated a large body of evidence showing that trade liberalization has an overall positive impact on growth. Indeed, the argument that trade liberalization can enhance growth has been a key reason for undertaking trade policy reform. However, most studies find that the benefits are distributed unevenly across households. The poverty effects are dependent on the heterogeneous characteristics of poor households in terms of endowments, consumption behavior, the employment sector, and so on. For example, trade liberalization may disproportionately benefit urban areas relative to rural areas. Because such reforms are likely to have large indirect effects, microeconomic analysis should be complemented by macroeconomic approaches whereby these indirect effects are included and in which macroeconomic impacts, such as changes in the balance of government and external accounts, can be accurately gauged.

Monetary and Exchange Rate Policy Reforms

In this chapter, Patrick Conway considers the impact of three related groups of reforms on poverty and income distribution: exchange rate adjustments, money supply adjustments, and adjustments to controls on foreign capital flows. These are combined under the heading "monetary policy" because of their shared conceptual links. The chapter first highlights the ties among these policies and then outlines the techniques available to assess the impact of related reforms on the poor.

Four steps are typically followed. First, a complete description of the reform and its macroeconomic consequences is necessary. Because a

reform affecting one macroeconomic aggregate typically affects other dimensions, the analysis should consider the joint effects of the direct monetary policy reform and all collateral macroeconomic changes. The second stage identifies the relevant channels through which monetary changes have distributional effects—both direct and indirect and in the short and long run. The third stage is the measurement of the impact of the policy reform on wages, relative prices, incomes, and employment. The final stage involves tracking the effect of the reform on the welfare of households. The chapter describes the various approaches available, underlining their specific data requirements and providing numerous practical examples.

Before closing, the chapter proposes two detailed sections on the efforts of researchers to derive the impact of exchange rate reform on poverty and income inequality and to identify the impact that reforms on interest-rate-targeting or money growth rules have on poverty.

Utility Provision Reforms

Vivien Foster, Erwin Tiongson, and Caterina Ruggeri Laderchi examine reforms in utility services: water, electricity, gas, and telecommunications. These services have been grouped because they present common economic and political issues. The chapter characterizes the main types of utility reforms—public sector reform, private sector participation, regulatory reform, utility restructuring, and market liberalization.

There are different rationales for utility reforms, which may sometimes conflict; for example, from a macroeconomic perspective, utility reform may represent a means to improve public finances, while from a microeconomic perspective, reform may be a means to enhance utility performance. For the first, the objective of maximizing fiscal flows can generate pressure to reduce competition, keep regulation light, and minimize investment obligations. For the second, the central aim to improve efficiency requires a much stronger focus on restructuring, regulatory reform, and market liberalization.

The various types of utility reform have important distributional implications. These key dimensions are employment and wages, service prices, service quality, service access, fiscal flows, asset ownership, and entry conditions. The chapter summarizes the extent to which each of the components can influence these channels.

The authors identify the critical stakeholders in utility reform, including workers, consumers (current or potential, legitimate or clandestine, urban or rural, and residential or nonresidential), owners, com-

petitors, and the state. The balancing of interests among the stakeholder groups is ultimately a political choice and depends on the design of the reform and its subsequent implementation. The mitigating measures that can be adopted to attenuate negative impacts of reform on any of these stakeholder groups are described.

The appendixes to the chapter provide a comprehensive overview of the literature on these impacts. They cover 50 country studies and 13 cross-country studies.

They indicate the channels of impact covered in each of the studies and summarize the methodology employed. They demonstrate the difficulty of making generalizations about the magnitude and direction of the impacts of any particular type of reform.

Agricultural Market Reforms

This chapter begins with a brief discussion of the theoretical reasons for government intervention in agricultural markets. Mattias Lundberg then lists the major types of interventions, which include price interventions, quantity restrictions on imports, exports, domestic supply, or domestic demand, and direct market interventions. The chapter focuses on the reforms of the marketing boards and other parastatal or quasi-government entities that undertake direct interventions.

The author supplies an extensive summary and analysis of the reforms implemented in agriculture, particularly among the marketing boards. The types of reforms undertaken in the first wave of structural adjustment (mainly during the 1980s) were generally large, including the removal of trade restrictions and the devolution or dissolution of parastatal agencies. The agricultural market reforms were designed to reduce or eliminate distortions in the sector and introduce market forces in agriculture. The second wave of reforms is focusing on issues of governance and performance, that is, on deregulation, support for the private sector, and risk management through insurance rather than direct intervention. The chapter takes the view that state intervention in agricultural markets has often provided opportunities for rent-seeking and capture, and has rarely been able to achieve even limited goals.

The best method for examination of the impact of reforms is a combination of economic theory and common sense. The analysis should always begin with a description of the sector that has been or will be affected and the sectors that interact with the affected sector in any significant way. The analyst must understand the history of agricultural policy in the country. Furthermore, the characteristics of the commodities

themselves may influence the design and impact of reforms. Are the products traded or nontraded? Do they provide tax revenue to the government, or are they a drain on government resources? In addition, it is necessary to understand the stakeholders. 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?

Land Policy Reforms

Klaus Deininger reviews the approaches to the analysis of distributional impacts of key land policy issues. Land reforms typically have far-reaching distributional implications. Moreover, because land policy reform often is politically controversial and usually must be sustained beyond the term of governments that introduce the reform, information from the analysis can be used to build a consensus and establish and monitor clear performance indicators to limit the scope for corruption in the reform process. Examples from individual countries demonstrate the scope for using this approach to evaluate the position of various stakeholders toward reform options, identify policy interventions for the benefit of the poor, determine the most appropriate sequence of initiatives, and reduce the potential for capture of the benefits by elites.

Major areas of land reform include the improvement of the security of land tenure and efforts to facilitate broad-based access to land. The section on securing land tenure highlights ways to enhance tenure security and the positive impact of greater tenure security on investment, conflicts over land, and land market participation.

The section on access to land covers important principles and policies, including ways to develop land rental and land sales markets, as well as direct interventions to render land use more productive, such as reforms involving land redistribution.

Land reform analysis typically depends on quantitative information that is often not available through standard household surveys. For this reason, the chapter addresses practical questions about sampling and questionnaire design, which would allow household and community surveys to be useful in the analysis of land policies. The analysis will invariably require qualitative methods to complement the quantitative data. Focus group discussions, personal interviews, and other types of qualitative methods will be essential in plumbing the views of actual and potential beneficiaries to formulate or confirm hypotheses on the impacts of specific interventions. Finally, the work must be conducted and the

results of the analysis communicated in a transparent and credible way that likely will contribute to a broader public policy discussion.

Education Policy Reforms

Erwin Tiongson reviews some of the experiences of developing countries with large education reforms over the last decade. The chapter draws on country case studies and recent findings to identify some of the poverty and social impacts of education reforms, the principal transmission channels through which stakeholders are affected by or influence the reforms, and the standard tools for analysis in education.

The chapter provides an overview of reform efforts aimed at rapidly expanding the supply of education, achieving equity in the provision of education, and significantly improving the delivery of services. These reforms—including expenditure restructuring, the elimination of user fees, the introduction of a voucher system, the decentralization of education, and others—may be classified under three broad categories of reform, although there may be significant overlap among these categories: expenditure reform, financing reform, and management or institutional reform.

Through their impact on prices, income, employment, and wages, education policy reforms redistribute resources, access to education, and the quality of the services provided. They also redistribute authority and the relationships of accountability.

The chapter reviews such effects of reforms on distribution. It presents an analytical scheme for understanding these distributional effects, noting how they vary and how they are spread over time, mentioning specific features of each reform and documenting the transmission channels through which stakeholder groups are affected. A survey of empirical tools is provided for both qualitative and quantitative poverty and social impact analyses, while singling out valuable empirical studies on each tool. Finally, some risks to the reforms are noted and options for monitoring and evaluation are discussed.

NOTES

1. Here and throughout this book reforms are meant to encompass both policy and institutional changes.
2. Please refer to www.worldbank.org/psia for further information. An electronic learning program (providing a self-paced introduction to the approach, and the tools and methods available) and a series of case studies that illustrate

good practice are available online and included in the CD ROM in the back cover.

3. Available for download at www.worldbank.org/psia and included in the CD ROM in the back cover.
4. Published by the World Bank and Oxford University Press in 2003, and edited by F. Bourguignon and L. Pereira da Silva. The volume is available at <http://www1.worldbank.org/prem/poverty/psia/tools.htm>. Check also www.worldbank.org/psia for additional information on other tools and training material.
5. Forthcoming in 2005. Please check at www.worldbank.org/psia for an update on this publication.
6. Available at www.worldbank.org/psia.
7. Forthcoming in 2005. Please check at www.worldbank.org/psia for an update on this publication.
8. These chapters, updates, and further reference material are available at www.worldbank.org/psia.

Trade Policy Reforms

Maurizio Bussolo and Alessandro Nicita

During the last two decades, the policy advice of bilateral and multi-lateral donors to developing countries has been centered on favoring greater market openness and better integration into the global economy. Two major assumptions underpin this advice: (1) that outward-oriented economies appear to have performed better in terms of economic growth and (2) that raising average incomes generally benefits all groups of people, including the poor.

However, these assumptions are now being challenged, and there are doubts and uncertainties about the effects of trade reforms on poverty. In a way, the discussion on trade policy is part of the larger debate on the role of markets and government in development. Indeed, as Kanbur (2001, 1,084) recently put it, “trade and openness is the archetypal, emblematic area around which there are deep divisions, and where certainly the rhetoric is fiercest.”

Aside from the rhetoric and the wider policy choices, assessing the effects of trade reforms on poverty is a complicated task. Measuring the initial levels of trade protection and poverty, and the extent to which these change across time and countries, is not trivial. Moreover, changes in

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trade flows affect poverty through numerous channels. Some links are positive and some are negative so that qualitative analyses are not enough and quantitative assessments (that is, formal numerical models) are needed to establish the final outcome. Meanwhile, trade expansion and growth are essentially macroeconomic phenomena, whereas poverty is fundamentally a microeconomic phenomenon. Analysts need to master techniques developed separately in two specialized areas of the profession. Finally, trade policy itself has become more complex.

Regarding the last point, consider the following example. A trade negotiator of the Caribbean Regional Negotiating Machinery may, in the current environment, have to discuss the implementation of the Cotonou partnership agreement with the European Union, the Everything But Arms Initiative, the Free Trade Agreement of the Americas, and various trade negotiations within the region. At the same time, the negotiator may also have to prepare serious proposals for the World Trade Organization multilateral trade agreements *and* be concerned with the potential poverty effects of each of the alternatives so that he or she can inform the finance minister's counterparts who are preparing Poverty Reduction Strategy Papers for the donor community.

Demand for sound technical assistance in all these matters is increasing. This chapter therefore provides practitioners with thorough background information on the different techniques available to understand and analyze the links between trade reform and poverty. A special effort has been made in this chapter to clarify the general context of trade reforms and their rationale, the different types of trade reforms, and the many channels of transmission between trade liberalization and poverty. Information is supplied on alternative modeling options, from simple data-parsimonious calculations to more complex, data-intensive frontier techniques, and the advantages and disadvantages of each option are emphasized. The political economy issues behind this type of reform are also summarized. Analysis of the links between global trade reforms and global poverty is not included in this chapter. However, some of the methods and results shown here may be applied to assess the country-specific poverty impacts of external shocks, such as those arising from global trade agreements.

In the analysis of trade reforms and poverty, as rightly pointed out by McCulloch, Winters, and Cicera (2001) in their excellent handbook, two major lessons have been learned. First, trade-induced poverty effects are eminently country specific and dependent on the heterogeneous characteristics of poor households. Thus, no easy generalization is emerging, and no universal one-size-fits-all policy should be embraced.

Second, although transmission channels can be multiple and effects can produce opposite signs, one should be able, through careful examination, to identify and measure reasonably well the most important effects in any given country, so that policy makers can be advised how to implement suitable responses to ensure that trade reforms include a pro-poor perspective.

This chapter is structured as follows. The first section considers the context of trade reforms, the various types of reform, and the different rationales behind reform, before briefly reviewing the trade-growth-poverty debate. The second section explores the various channels through which trade reforms affect poverty and the empirical methods used to study the relationships between the two. The third section appraises the policy-making process in trade by surveying the ways institutions, stakeholders, and other factors shape final policy outcomes. The fourth section concludes and summarizes the chapter.

CONTEXT OF REFORM

Types of trade liberalization

Trade policy liberalization includes efforts to reduce the level of protection against foreign goods and services, so that, within a national market, their prices (or availability) are closer to the prices of analogous goods and services produced domestically.

Although apparently simple under this definition, trade policy can involve various complex types of actions, such as the elimination of quantitative restrictions (quotas) or the reduction of tariffs. According to a geographic dimension, there is unilateral, bilateral, regional, and multilateral liberalization. According to the depth of a bilateral or regional reform, there may be free trade areas (wherein partners eliminate trade barriers with respect to each other), custom unions (whereby partners eliminate reciprocal barriers and agree on a common level of barriers against nonpartners), and free economic areas (or deep integration as in, for example, the European Union, where not only trade but also the movement of factors has been liberalized, where a common currency has been instituted, and where other forms of integration and harmonization have been established).

For historic and political economy reasons, trade protection is not uniformly distributed across types of commodities, and certain sectors, particularly agriculture, textiles, and services, have been exempted from previous waves of multilateral liberalization. Thus, trade policy reforms in these sectors may be more complicated, and specific key issues need to be

tackled. In agriculture, for instance, the Uruguay Round Agreement on Agriculture required the transformation of the existing quota restrictions into tariffs. However, it also allowed the creation of more than 1,300 tariff-quotas for various agricultural commodities. Tariff-quota liberalization can be more problematic than straightforward tariff reduction because, depending on the way access to the quota is granted or renegotiated, inefficient and not necessarily least-cost firms can enter the market.

In contrast to merchandise trade, international transactions in services frequently are invisible or may require movement by the consumer or the producer. Four modes of supply are normally identified:

- Mode 1—cross-border supply, similar to the trade in goods.
- Mode 2—consumption of a service abroad.
- Mode 3—commercial presence, whereby the producer, through foreign direct investment, establishes a base in a foreign country.
- Mode 4—the movement of individuals.

Clearly, each of these modes faces different potential barriers, and liberalization can have different consequences depending on the mode.

All of the above mentioned types of reforms are countrywide; however, there is an additional type of import liberalization that is applied only to a specific limited geographic area of a country. This is the discriminatory import regime within an export processing zone. Firms located inside such a zone are allowed preferential access (that is, at lower or zero tariffs) to the imports used in their production activities. At best, this policy has generated additional employment and higher foreign earnings, and, because of the strong backward links, benefits have been transferred outside the zone to the rest of the economy. In general though, this policy should always be considered a less attractive alternative to a countrywide liberalization.¹

A key component of any analysis of the effects of trade liberalization on poverty includes the estimation of the direction and magnitude of trade-induced price changes in goods and factor markets. Obviously, the types of trade policies described above do not affect prices uniformly, and their sectoral, regional, partial, or countrywide characteristics need to be considered in any estimation of their effects. Furthermore, these various types of trade reform present different implementation challenges. Some require straightforward unilateral actions, others imply lengthy and difficult negotiations among numerous sovereign countries, and still others rely on complex administrative procedures and controls. At times, the full or incomplete implementation of the reforms, rather than their typology, is the key determinant of the final price effects.

Rationales for undertaking trade reform: The trade-growth-poverty debate

Global Economic Prospects 2002 (World Bank 2001) suggests that developing countries could increase their incomes by a cumulative \$1.5 trillion between 2005 and 2015 if all countries would progressively enact encompassing trade reforms and, as a consequence, lift an additional 300 million people out of poverty by 2015. The argument that trade liberalization can enhance growth has been a key rationale for undertaking trade policy reform. Greater trade openness, the argument goes, generates two types of gains. It raises *static* allocative efficiency and average incomes. In the medium run, this resembles growth, and, in the long run, a liberal trade regime is the source of *dynamic* gains, principally in terms of higher productivity and more rapid growth.

Static income gains were a positive consequence of the large import liberalization undertaken by developing countries beginning in the mid-1980s. Undisputedly, this import liberalization reduced the prices of intermediate inputs for domestic industries and thus boosted the returns to primary factors.

In the long run, a more open economy should achieve higher growth rates because it offers easier access to new technology, provides benefits derived from increased competition and economies of scale, and may more effectively restrain the corruption and incompetence of the public administration.

Some of these dynamic gains have not been unequivocally confirmed by empirical analyses.² However, cross-country econometric analyses and in-depth single-country case studies have generated a large body of evidence supporting the positive link between liberal trade policies and growth. In either case, a key ingredient in the long-run eradication of absolute poverty is economic growth. Thus, understanding how trade-induced growth (or growth in general) affects poverty deserves a brief digression.

Many recent studies—for example, de Janvry and Sadoulet (1995, 2001), Chen and Ravallion (2000), and Dollar and Kraay (2002)—have focused on the statistical relationship between growth and poverty across countries and time periods. Unsurprisingly, the conclusion from these studies is that growth reduces poverty substantially. Chen and Ravallion found an elasticity close to 3, which means that a 1 percent increase in mean income or consumption expenditure reduces the proportion of people living below the \$1 per day poverty line by 3 percent.

Taken at face value, these estimates may support a rather strong policy implication, namely, that poverty reduction strategies should be based

on growth. There is the key problem of validating such strategies through cross-country evidence. As pointed out by Bourguignon (2003), the heterogeneity of the poverty changes caused by income growth is very large across countries. It is possible to find cases of rapidly growing countries that record no poverty reduction, as well as cases of countries that show considerable poverty improvement that is associated, however, with unsatisfactory economic growth rates. Indeed, only a small share (26 percent in Bourguignon's calculations) of the total variance of poverty effects is explained by differences in growth rates.

Intuitively, accounting for the large, unexplained share of this variance requires an understanding that the same growth rate may, in one country, benefit the urban affluent portion of the population, whereas, in another country, it may help poor rural farmers. Bourguignon (and others) formalizes this intuition by linking poverty reductions to growth in mean income and changes in the distribution of relative incomes, that is, inequality changes.

The link among poverty, growth, and changes in inequality can be employed to reformulate the regression model used to estimate the growth elasticity of poverty. Doing this, Bourguignon obtains two interesting results. First, the introduction of inequality into the regression model doubles its explanatory power, which means that growth and inequality have the same weight when explaining the variance of changes in poverty across countries. Second, by adding the initial level of development, the initial inequality, and the interaction terms of growth to these variables, the estimate of the growth elasticity of poverty becomes more precise. The elasticity depends positively on the level of development and negatively on the initial inequality.

Important implications follow from this work. Although redistribution can be very effective in reducing poverty, in fact, as effective as growth, a usual objection is that a strategy based on redistribution is not sustainable in the long run; therefore, growth is the only viable option. However, Bourguignon (2003) shows that redistribution has a dual effect. It immediately reduces poverty, which is the direct effect, but also it increases permanently the growth elasticity of poverty, making a given growth rate more effective in achieving poverty reductions.

In sum, as Bourguignon puts it, "to achieve the goal of rapidly reducing absolute poverty requires strong, country-specific combinations of growth and distribution policies" (2004, 1).

The following sections outline methods to establish whether trade liberalization can be an element in any of these combinations of pro-poor policies.

TRADE AND POVERTY: TRANSMISSION CHANNELS

If trade liberalization and poverty were both easily measured, and if there were many historical instances in which liberalization could be identified as the main economic shock, it might be easy to derive simple empirical regularities linking the two. Unfortunately, these conditions do not hold.

—Winters, McCulloch, and McKay (2004, 72).

To identify the relationships between trade and poverty is not an easy task. The first difficulties arise in the measurement of poverty and trade openness. Poverty itself is not particularly susceptible to consistent measurement across time. Similarly, trade barriers are not readily quantifiable, particularly when countries rely heavily on nontariff barriers. After poverty and trade openness have been quantified, further complications emerge in the analysis of the different channels (and their relative importance) through which trade affects social welfare and poverty.

Although the links among trade, growth, and poverty may be most important in the long run, trade policies have strong redistributive impacts in the short and medium run. This is a key point because redistributive effects imply that, even if the overall impact of the trade policy is to enhance welfare, some segments of the population may be hurt, with possible negative repercussions on poverty. From a policy perspective, identifying the winners and the losers that result from the policy can assist the design of complementary policies aimed at smoothing negative effects to maximize poverty reduction. (See the “Institutions, Stakeholders, and the Political Economy of Trade Policy Reform” section.)

Trade policies have an impact on household welfare (and subsequently poverty) through the changes they induce in the prices of goods, in factor returns, and in government revenues. A useful way of thinking about how poor households are affected by trade policies is in terms of the farm household. A farm household produces goods and services, sells its labor, and consumes. In this system, an increase in the price of an item of which the household is a net seller increases the household’s real income, while a decrease in this price reduces the income.

It follows that, in the short run, if households cannot modify their production and consumption decisions, trade liberalization will not necessarily reduce poverty. Moreover, many variables influence the effectiveness of trade reforms and the broad-reaching benefits that openness to trade can contribute to social welfare and development. Domestic public policies, institutions, geography, market competitiveness, infrastructures,

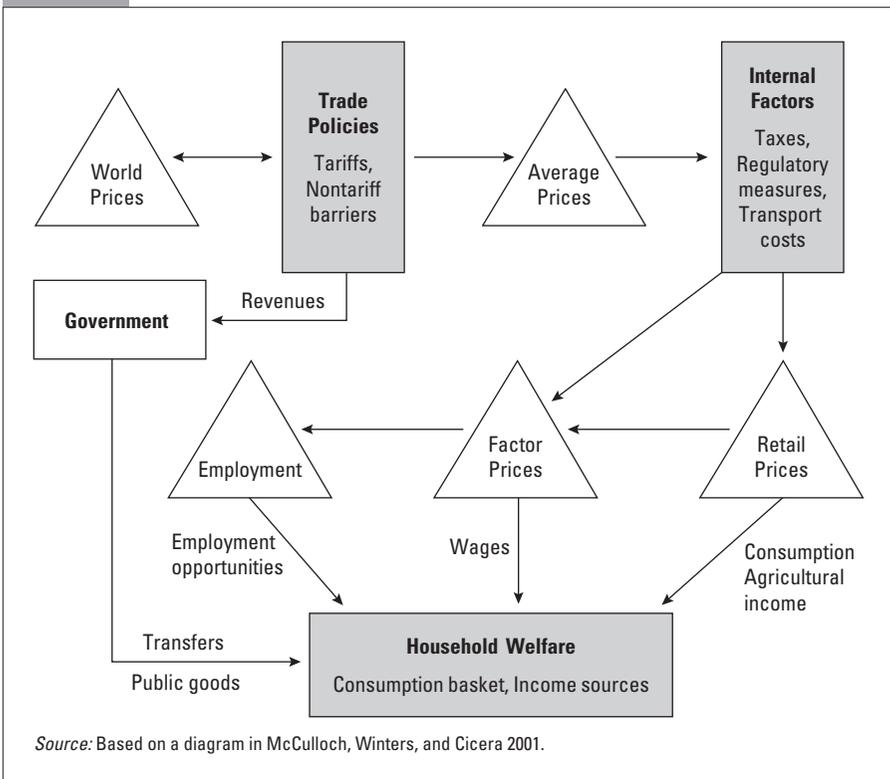
and, ultimately, the composition of the expenditure basket and the sources of income of poor households all have an important role in the success of trade policies. Because these are specific to each country, similar trade policies are likely to produce dissimilar outcomes in different countries. In-depth country-specific investigations are therefore needed to estimate the potential poverty consequences of trade policy interventions.

The investigation of the effect of trade policies on poverty is a lengthy exercise. A first step in the analysis is an exploration of the links between trade policies and household welfare. These links are illustrated in Figure 1.1 and discussed below.

Prices

The most immediate link between trade policies and poverty is through the price channel. Trade policies affect the relative prices of the goods con-

FIGURE 1.1 Trade Policy and Household Welfare



Source: Based on a diagram in McCulloch, Winters, and Cicera 2001.

sumed and produced by households. Consequently, they have an impact on household welfare and, in the end, poverty as well. Trade policies act as a filter between the international price and the border price of a good. Once the good is inside a country, its price is influenced by internal factors such as trade costs, institutions, and local competition (Frankel, Parsley, and Wei 2005). These factors soften (or amplify) the effects trade policies have on households. This is the reason movements in border prices caused by international price fluctuations or changes in trade policies are not usually passed through to households one to one.

The effect of a trade policy therefore varies depending on a series of phenomena influencing the transmission of prices from world markets to local markets. For example, the existence of an administrative price for a particular product is likely to isolate that product from any external shock. Similarly, if infrastructure is weak (implying high transportation costs), price transmission may be insignificant or even nonexistent in some areas of a country. Also, the presence of import-competing products and local preferences toward domestically produced products may reduce the extent to which local prices reflect changes in trade policy. Finally, in the case of poorly competitive markets, movements in the prices of goods at the border are likely to be absorbed by traders instead of being more directly transmitted to households. These considerations about imported goods can also apply to exportable goods. In this case, the price paid to households (the farmgate price) is merely a function of the world price filtered by a series of factors such as trade costs (from the farm to the border) and the markups of the various agents involved.

An empirical estimation of the extent to which trade reforms (or international prices) affect the prices faced by households requires time-series data on prices to reckon pass-through price elasticities. According to the empirical literature,³ pass-through elasticities are different across countries and across products. On average, these elasticities have been found to vary by product and geographic area, with averages around 50 percent. In other words, only about 50 percent of a change in tariffs is transmitted to domestic prices.

Labor markets

Another important link between trade and poverty is trade-induced changes in returns to factors of production, in particular, returns to labor. Consequent to trade liberalization, one would expect an increase in labor earnings to occur in developing countries where labor is abundant, because trade theory predicts that protection lowers the real wage of a country's

most abundant factor.⁴ However, this prediction crucially depends on several considerable assumptions, such as full employment and perfect competition in factor markets, and, thus, is seldom confirmed by empirical observations. In practice, the effect of trade liberalization on labor earnings has been ambiguous and therefore needs to be econometrically estimated case by case. Trade policy has been occasionally blamed for increases in unemployment, changes in wage distribution, and a “race to the bottom,” which manifests itself through lower labor market standards, more extensive use of temporary labor, and a decline in job quality. Empirically, trade openness has been associated with a rise in the skill premium, changes in industry wage premiums, and increases in the employment opportunities of individuals. Depending on the structure of the labor market, all these effects are likely to have an impact on poverty.

The labor market in developing countries is often characterized by high unemployment (or underemployment) and a large informal sector. Any upward pressure on wages (especially of unskilled workers) because of trade reforms is likely to be muted in such a situation. This functioning of the labor market can be summarized (and analyzed) according to two different approaches: (1) the trade approach, through which growth in a specific industry will produce an increase in the remuneration of the factor used more intensively by that industry; and (2) the development approach, through which growth in an industry is fueled by a rise in employment at a constant wage.

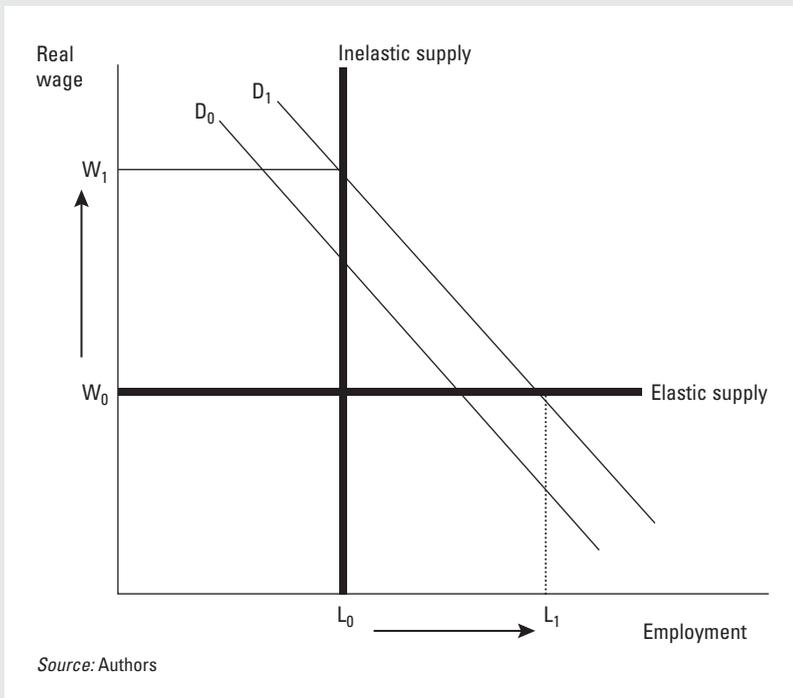
The trade approach and the development approach represent two extremes of the labor market specification: a very tight labor market at one extreme and a wholly flexible labor market at the other (see Box 1.1). Generally, reality falls somewhere in the middle. Furthermore, especially in the poorest developing countries, labor markets are often segmented by skill, gender, and location; wage and employment responses to trade shocks may differ in each segment. For example, given that skilled labor is in limited supply in most developing countries, while unskilled labor is abundant, the trade-induced expansion of a sector employing a mix of skilled and unskilled labor will reasonably be fueled by an increase in skilled wages and unskilled employment. In this environment, the contribution of the labor market to a reduction in poverty would be realized through the expansion in the size of the formal sector rather than the rise in the real wage.

The extent to which trade-related changes in prices influence factor returns (especially wages) has been at the center of an extensive literature, and more sophisticated analyses have been developed that go beyond the two extremes cited above. For example, many studies rationalize wage responses that are in contrast with the above standard-theory explanations

BOX 1.1 The Labor Market: Two Extremes

One of the links between international trade and poverty operates through the labor market. The figure below considers two extreme assumptions: a perfectly inelastic labor supply and a perfectly elastic one. In the case of an inelastic labor supply, when the demand for labor shifts out from D_0 to D_1 , employment cannot increase, and the market must be brought back to equilibrium by an increase in wages from W_0 to W_1 . If some of the workers in this market are poor or belong to poor families, the resulting increase in wages will have a direct and beneficial impact on poverty.

In the other extreme case (a perfectly elastic labor supply), a rise in labor demand results in an increase in employment to L_1 , with no change in wages. The effect on poverty depends heavily on what the additional workers were doing before taking these new jobs. If they were poorly employed or engaged in subsistence activities and earning a wage lower than W_0 , then the impact on welfare would depend on the wage differential between the old and new jobs.



by considering the role of skill-biased technological change.⁵ Other studies introduce more sophisticated labor market specifications.⁶

As in the case of the prices of goods, these aggregate changes in wages and employment need to be translated into microeconomic effects at the household and individual levels, and their ultimate impact on poverty depends on household factor endowments and participation decisions. For instance, some households may experience an increase or decrease in real wages, while others may be able to raise their incomes through new employment or experience a decline in incomes when overall employment is contracting.

Government revenues and public spending

A third channel through which trade policy has an impact on social welfare is government revenues. Because a change in trade policy influences trade flows, trade tax revenues are affected, and, consequently, either compensatory taxes should be levied, or government expenditure in the form of public goods and public transfers should be reduced. As usual, this simple relationship needs to be quantified. Trade tax revenues may even increase if the initial level of tariffs exceeds the revenue-maximizing level⁷ or if quantitative restrictions are replaced by tariffs (and the initial rents were not appropriated by the government). Additionally, reforms simplifying tariff collection (by establishing fewer rates and exceptions) and streamlining customs procedures are likely to boost revenues (and may reduce corruption). Thus, compensating for losses in trade tax revenues may not be a problem at all for certain countries and may be a temporary issue for others.

In a subsequent step, losses or gains caused by variations in government expenditure or compensatory tax payments need to be assessed household by household to measure the impact on household welfare and, ultimately, on poverty. Detailed data on government spending or tax incidence by household often are not available. However, empirical evidence suggests that the influence on poverty may depend on the type of replacement tax.⁸

In summary, empirical studies have found that the price and the labor market channels have the greatest relative importance among all the links between trade and poverty. Nonetheless, because the functioning of markets and institutions is different in each country, it is difficult without closer examination to judge the precise importance of these channels in transmitting the effect of trade policies to household welfare in country-specific instances. Survey data often provide insights on the principal

sources of household incomes, the functioning of labor markets, the abundance of skilled or unskilled labor, and the receipt of government transfers. The analysis of microeconomic data helps to identify the key channels in each case study. For example, in a rural agricultural economy in which households obtain their incomes from the sale of agricultural products, the impact of trade policy on household welfare would occur through movements in the prices of goods, while the link through labor earnings would likely be negligible. Conversely, in urban areas, household welfare would be affected mostly by the labor market and possibly by government spending.

Other issues

Market failures and transaction costs

One of the advantages of greater openness is the creation of new markets.⁹ This advantage is reflected in wider product availability and new production opportunities. However, openness can also have the opposite effect. As a consequence of more significant import competition, markets may be destroyed. In an extreme example, domestically produced goods might be substituted by cheaper imports, so that importers would replace domestic agricultural regions as the suppliers of urban markets. This issue is more crucial if domestic transaction costs are high. If these costs render a product unprofitable, the market for the product may dry up. While consumers in urban areas may benefit greatly from such market substitutions, it is likely that local agrarian regions would be confronted by substantial declines in demand, with enormous repercussions for regional poverty. This is an important reason to analyze the structure of a domestic market and its associated costs in order to anticipate the effect of trade policies on poverty. Thus, for some households, trade policies could increase remoteness (that is, distance from markets). Because poverty is often associated with remoteness and subsistence production, the possibility that some markets may be destroyed by trade policies should be taken seriously.

Subsistence households

Another issue in analyzing the effect of economic policy on household welfare is linked to the fact that many rural households in developing countries may be living in a subsistence environment, that is, a large part of household income and expenditure may be self-produced and self-consumed. The issue here is one largely related to missing markets and poor infrastructure, and the practical effect is to isolate a large share of

household incomes and expenditures from trade policies. When a household's production and consumption are not purchased or sold on the market, movements in the market prices of the goods the household produces or consumes have no direct impact on its income. From an economic perspective, subsistence farming represents a suboptimal outcome that is often associated with high poverty rates. The analysis of household surveys helps to identify the households that are isolated from markets. This information is important in the effort to shape policies aimed at raising the market participation of households, thereby allowing them to be affected by trade policies.

Vulnerability and risks

It is often claimed that trade liberalization increases the risks faced by poor households and the vulnerability of these households to external shocks. Trade liberalization affects household vulnerability in several ways. First, it may narrow or widen the portfolio of activities undertaken by households. A household might, for example, concentrate on the production of a single export crop that is more remunerative than others. Second, trade liberalization may alter the predictability of existing sources of income. Thus, the price of an export crop may be subject to more variance than other crops, even if the mean price is higher. Third, trade liberalization can create poverty traps so that negative shocks are much more difficult to bear. In general, most of the causes of vulnerability in developing countries have little direct connection with trade policies. However, to understand more accurately the overall impact of trade policies on households, one should consider the extent to which these policies affect household vulnerability.

Price volatility

Macroeconomic volatility is one of the most important sources of risk among households. The presumption that open economies are less stable is not always confirmed empirically. In many cases, price volatility on domestic markets is much greater than that on international markets. Openness to trade therefore can stabilize prices and smooth the impact of economic shocks and significant natural events.

Private transfers

Since trade policies are income redistributive, they will likely produce an effect on private transfers among households. It is also often the case that trade policies lead to the national and international migration of workers. These phenomena have an impact on remittances and therefore on

household incomes and social welfare. In empirical work, private transfers are usually modeled as a function of labor earnings. However, the data available through household surveys may sometimes identify any change trade policies produce in the transfers across households.

Distribution within households

Trade policies also may have an effect on the distribution of incomes within households. When several members of a household sell labor (or goods), it is possible that each individual's share in the total household income will change, altering the relative power of the various members of the household. In particular, there is evidence that, relative to income earned by men, income earned by women is spent more altruistically (thereby enhancing the welfare of other household members). This implies that trade policies can have a greater welfare impact if they tend proportionally to increase employment and income among women relative to men.

METHODS TO INVESTIGATE THE LINKS BETWEEN TRADE AND POVERTY

The remaining task is to describe the methodologies available to estimate the magnitude of the links between trade policy and poverty. This section offers an overview of individual country analysis. (It does not cover multicountry regression studies.) Additionally, the techniques outlined below are normally applied to produce predictive assessments rather than ex post evaluations. It is important to recognize that no perfect technique is available for all circumstances; therefore, the attempt is to summarize the main advantages and drawbacks of each approach.

Although new methods are often developed to overcome the limitations of old ones, the freshest practice almost always introduces new limitations as well.

Kanbur (2001) identifies three broad areas of disagreement in the current discourse on economic policy, distribution, and poverty, and the same tripartite classification can be applied to contrast methodologies. The first disagreement is on the level of aggregation. Poverty experts, as well as activists in nongovernmental organizations, focus on high levels of disaggregation and thus consider the well-being of individual households or, at least, of many groups. They differentiate these by rural or urban area or other regional classifications and by gender, employment status, sector of activity, age, ethnicity, and so on. Conversely, macroeconomic or trade economists focus on average levels of income and, perhaps, on aggregate poverty indicators.

The second disagreement is on the time horizon of analysis. Most trade economists would probably assess the consequences of trade reform over a medium-term time horizon. According to Kanbur (2001, 1,089), “[a] five to ten year time horizon . . . is implicit in the equilibrium theory which underlies much of the reasoning behind the impact of policy on growth and distribution.” In contrast, other analysts emphasize the short- or long-term time horizon in their analyses. Some focus on the effects of pulling children out of school, selling assets at fire sale prices, or falling into starvation in the immediate aftermath of a shock. Others worry, as environmental analysts do, about developments in the far future, 50 or 100 years down the road. Although they are not always explicit, methodologies frequently suppose different time frames, which may not be suitable for concurrently analyzing short-term adjustment problems, with their associated rationing and regime-switching issues, and medium- or long-term problems.

The third area of disagreement is market structure and market power. The conclusion of the Heckscher-Ohlin model that trade openness is good for the poor is based not only on the accepted fact that unskilled labor is normally abundant in developing countries, but also on the more disputed assumption that goods and factor markets are competitive. Many claim and provide empirical evidence showing that distributive channels, capital ownership, institutional settings, foreign interventions, and other public or private practices may dramatically change the nature of the interactions on markets. Different analyses may or may not take into account these potential distortions, and analysts need to be aware of the country-specific market structures and power issues that inform their investigations.

The main approaches and the basic data requirements for assessments of the poverty effects of trade policy reform are described below.

Microeconomic studies

The econometric analysis of household surveys aimed at assessing the impact of policy reforms at the microeconomic level originated in the early 1990s.¹⁰ A great advantage of microeconomic studies is that they rely on econometric measurement and therefore require few restrictions on parameters. Moreover, a key feature of microeconomic analysis is the focus on the characteristics and behavior of real world individuals or households as opposed to representative households. This is an essential element in the analysis of a microeconomic, multifaceted phenomenon such as poverty. That the approach ignores general equilibrium effects is

an obvious limitation, but its appeal lies in its transparency and its flexibility in testing diverse hypothetical links between trade and poverty.

Microeconomic studies often focus on the impact of trade policy on employment opportunities and the prices of goods and factors. They frequently involve implementation of variations on the “farm household” approach discussed in “Trade and Poverty: Transmission Channels.”

In practice, the analysis of the effects that trade liberalization has on poverty is regularly carried out in three steps. The first step is the estimation of the changes in the prices of goods and labor returns resulting from trade liberalization. In the second step, the income sources and consumption baskets of each household are carefully disaggregated to construct budget and income shares. During the last step, the changes in the prices of goods and factors are mapped into each household’s budget and income shares to produce an estimate of the changes in the welfare of the households.

Early microeconomic analyses concentrated mostly on the consumption effect of trade policy (for example, Levinsohn, Berry, and Friedman 2003). More recent studies estimate the effect that trade reforms have on poverty, including the effects on income and consumption.

Among the most recent examples is Porto (2003a), who developed a general equilibrium approach to study the impact of trade on poverty in Argentina. In this work, Porto links trade reforms to the observed change in prices. He then links the change in prices to the response in the labor incomes of households. Finally, he links the change in incomes to changes in the poverty level. His findings suggest that trade reforms and improved access to foreign markets have produced a decline in poverty (measured as a percentage of the population considered poor) of about 1.7 percent and 4.6 percent, respectively.

Similarly, Nicita (2004) estimates the effect on poverty of the Mexican trade liberalization that occurred in the 1990s. The major distinction of the work is its account of the heterogeneity of the effects of trade liberalization on prices at the regional level rather than the assumption that changes were equal across all households. Nicita’s findings suggest that northern states in Mexico have benefited substantially more than have states in the central region. The welfare improvement was minimal in the southern states of the country.

Other *ex post* studies emphasize other reasons for the ineffective transmission of tariff reductions to price changes and thus to reductions in poverty.¹¹ Three studies on Sub-Saharan Africa primarily blame high transaction costs for this failure in transmission. Goetz (1992) discussed high transport costs; International Fund for Agricultural Development

(IFAD 2001) considered poor infrastructure, and Minot (1998) reported that, in Rwanda in the early 1980s, poor rural households consisted mainly of subsistence farmers disconnected from markets. The monopolistic power of marketing intermediaries, both public and private, may also hinder price signal transmission, as shown for Zambia and Zimbabwe by Oxfam and Institute of Development Studies (Oxfam and IDS 1999) and Winters (2000).

Given their emphasis on econometric measurement, microeconomic studies are particularly well suited to the investigation of the more subtle effects of trade policies. One example of this is the analysis of the impact of trade reform on child labor in Vietnam (Edmonds and Pavcnik 2005). Other studies include those of Goldberg and Pavcnik (2003), who investigated the effect of trade reform on the informal sector of the economy, and Porto (forthcoming), who examined the impact of informal barriers to trade.

While most microeconomic studies analyze the effect of trade policies *ex post*, predictive microeconomic analyses of the effect of hypothetical trade reforms at the household level have also been performed recently. This type of analysis has been attempted by Nicita and Olarreaga (2003) in the context of Ethiopia. In this work, the authors simulated the effects of trade liberalization in developed countries and the impact on poverty of the resulting improvements in market access for Ethiopian products. Their methodology allows for heterogeneous effects of trade across geographic areas. Their findings suggest that Ethiopia's rural areas (and most of the poor) are nearly completely isolated from the impacts of trade policies.

A different approach in the predictive estimation of the effects of trade on poverty has been pursued in Nicita and Razzaz (2003), who explored the extent to which the poor benefit from the export-led growth of the textile sector in Madagascar. Their methodology combines matching methods (to identify the individuals most likely to fill the new jobs in the expanding sectors) with the industry wage premium literature (to quantify the gains realized by these individuals). Their results suggest that benefits are unequally distributed. Unskilled women workers, in particular, receive minimal gains.

The data needs of microeconomic studies are frequently filled through surveys (for example, household surveys, labor surveys, and firm-level surveys). More survey datasets are being created on developing countries, but survey designs are often improved from year to year, which make comparisons across time difficult. A majority of the surveys collect the sort of information required for household-level trade policy analysis. How-

ever, not all household surveys are suited for this purpose, and, in many cases, the type of analysis depends very much on the richness and quality of the data.

To be appropriate for the analysis of the effects of trade policy on household welfare, a survey should include, at a minimum, information on the income shares each household derives from the sale of labor and the sale of agricultural products. The most preferable surveys allow a detailed disaggregation of income sources and collect information on sources of income by, for example, employment sector (various services and manufacturing), agricultural activity (food crops, import-competing crops, exportable crops, livestock), and types of remittances (national or international), as well as data on public transfers. Many older surveys do not contain any information on income, and, in such cases, it would be more difficult to proceed beyond a cost-of-living analysis.

Detailed consumption data are also extremely useful, and most household surveys constructed for poverty analysis include these data. Empirical observations, however, suggest that households display less heterogeneity in consumption behavior than in income generation. Consumption baskets seem to be similar across households, allowing these baskets, in the extreme, to be approximated by way of a national or regional consumer price index, whereas the composition of incomes differs more markedly. In estimating the effects of trade on poverty, it is therefore more important to obtain precise information on income rather than on consumption.

Household surveys frequently also collect data on other topics valuable for an investigation into the links among trade, poverty, and the mechanisms that transmit price signals between the borders and local markets. For example, with some caution, data on regional prices can be inferred from household surveys. Similarly, household surveys sometimes gather data on the infrastructure and the functioning of the markets in the households' locations. Moreover, surveys often collect data on important features of poverty, such as child labor, health, subsistence, school dropout statistics, household risk management, and so on. These data are useful for investigations into poverty from a nonmonetary perspective.

In summary, microeconomic analyses have the advantage of requiring fewer assumptions, being more tractable, and producing more plausible results. In addition, the fact that these studies focus on the characteristics of poor households rather than on representative households and potential microeconomic mechanisms that may hinder the transmission of prices (rather than assuming perfect transmission) makes them powerful instruments for addressing multifaceted, heterogeneous phenomena such as poverty.

The key disadvantage of this approach is that price changes are normally estimated through a partial equilibrium model. Important indirect effects therefore may be overlooked. In addition, microeconomic studies rarely consider household behavioral responses.¹² Some studies have introduced substitution effects, and some have tried explicitly to model quantity responses. However, the data requirements and analytical complexity increase considerably in these instances, while the results may not be qualitatively different.¹³

A group of partial equilibrium multimarket analyses exists that takes seriously the limitation represented by the exclusion of indirect effects, but these analyses do not adopt the full general equilibrium approach. These studies examine the direct and indirect effects of policy changes on a small set of commodities (or factors) that exhibit strong links between supply and demand. Thus, the procedure is preferable to a simpler partial equilibrium analysis—

when the good directly affected by the reform is a close substitute or complement, on either the demand or supply side, with other goods [and] the transmission of the effects of the policy through these other markets is then an important component of policy evaluation (Arulpragasam and Conway 2003, 273).¹⁴

Macroeconomic techniques: Computable general equilibrium models

Computable general equilibrium (CGE) models capture macroeconomic features and the interdependence among agents in an economic system, such as households, government, and other domestic institutions, as well as the external sector.¹⁵ The core of a real-side static CGE model is the representation of the markets for products and factors and the equilibrating mechanisms of adjustments in relative prices on these markets.

CGE models may be generally regarded as a class of macro-meso model. CGE models are firmly rooted within a macroeconomic framework. Macroeconomic variables are an integral part of the model and are conditioned by macroeconomic closures (the rules that determine how external, capital, and government accounts are brought into balance). Similarly, on the meso side, the models explicitly focus on markets and depict the ways in which these markets close, with some degree of attention to the institutional structure of the economy.

The extent to which the key features of the meso economy are adequately captured by the model is important. This depends on three key

elements: (1) on the macro-meso framework underpinning the model, (2) on whether the model specification is representative of technology and behavior in the economy, and (3) on the quality and detail of the benchmark dataset used to calibrate the model. The benchmark dataset consists of a social accounting matrix (SAM), including other data on elasticities, population, the labor force, and household survey statistics.

To assess trade (and other) policy effects on individuals or household groups and, ultimately, on poverty, a further meso-micro interface must be introduced. The simplest approach is to assume a fixed variance among representative household groups. For each group, poverty changes are based exclusively on changes in the average income of the representative household, while income distribution variations are based uniquely on changes in average incomes among groups.

This approach was first suggested by Adelman and Robinson (1978) in a model for South Korea, later discussed by Dervis, de Melo, and Robinson (1982) and used in many subsequent applications.¹⁶ The methodology relies on defining parametrically a representation of the distribution of income for each household group in the model. In this representation, a shift in the group mean income arising from an exogenous shock is translated into a shift in the whole distribution.

A recent example of the approach is offered in Harrison, Rutherford, Tarr, and Gurgel (2003). They analyzed regional, unilateral, and global trade policy options for Brazil and their effects on poverty. From the policies considered, the authors concluded that the poorest households typically gain roughly three to four times the average gain for Brazil. This gain is due to the fact that tariff liberalization in Brazil shifts production toward labor-intensive manufacturing and agriculture. The wage rate of unskilled labor increases, and the primary determinant of the impact on the poor from trade liberalization is the wage rate of unskilled labor.

The main strength of the CGE-based approach is that the changes in prices likely to affect poor people are estimated within a consistent general equilibrium framework. Furthermore, trade-induced price changes can be perfectly identified when they are simulated in a CGE model, where specific shocks can be simulated one at a time. The CGE approach supplies the opportunity to experiment with different trade reform shocks, and this is a major advantage over *ex post* microeconomic analyses, which are applied to data that incorporate a lot of noise from a multitude of simultaneous shocks.¹⁷

The approach, however, presents several limitations. Results on poverty and income distribution depend critically on the choice of the household and factor classifications, the appropriateness of the macro-

economic closure rules selected, and the neglect of important variations within household groups. If the average behavior of households is not truly representative of all the households within a group, then the performance of the model is undermined. The issue is most clearly seen in the rural sector, in which subgroups of households may have quite different degrees of exposure to agricultural export markets. Some agricultural households produce and sell export crops, or the household members work on farms producing for export, while other households are composed of small landowners who are mainly subsistence farmers or net purchasers of food. Rural nonfarm economic activity also varies across households and household groups. Obviously, this variation means that each subgroup may be affected differently by exogenous shocks, and aggregating them likely leads to errors in the measurement of the effects of a particular shock.

Regarding the data requirements of the CGE models, SAMs provide a consistent framework that meets most of the sectoral and institutional information needs; supplementary parameters and elasticities are normally borrowed from econometric studies. SAMs present numerous advantages in addition to their role as a key ingredient in the CGE exercise. In Round's words—

A SAM is a particular representation of the macro and meso economic accounts of a socio-economic system, which capture the transactions and transfers between all economic agents in the system. . . . The main features of a SAM are threefold. First, the accounts are represented as a square matrix; where the incomings and outgoings for each account are shown as a corresponding row and column of the matrix. . . . Second, it is comprehensive, in the sense that it portrays all the economic activities of the system (consumption, production, accumulation and distribution), although not necessarily in equivalent detail. Thirdly, the SAM is flexible, in that . . . there is a large measure of flexibility both in the degree of disaggregation and in the emphasis placed on different parts of the economic system (2003, 303).

SAMs can readily be used to connect data from disparate sources, such as national accounts and household surveys, and, by highlighting data inconsistencies, they help to evaluate data validity and data gaps. The simple accounting framework for SAMs is also useful in displaying in an easy, direct way the interdependencies among sectors, factors, households, and other agents in an economy.

Combined micro-macro approaches

The major contribution of recent literature is to combine the details on household behavior offered by household surveys with the consistency and controlled experimental mode of the CGE model to form a new approach. Two main methodological developments can be distinguished in this new approach. The first is a direct development on the CGE model. The household survey is embedded into the model, that is, the number of household groups is expanded so that it equals the number of households in the survey. The second development links a fairly disaggregated CGE model and a microeconomic model in a sequence or adds a feedback loop. Each of these developments is now examined in turn.

Because of the greater computing power and improved efficiency in solution algorithms allowed by technical advances, large models can now be easily solved. CGE models based on thousands of households have thus become viable tools of analysis. Recent examples include Decaluwé, Patry, Savard, and Thorbecke (1999) on artificial data, Cockburn (2001) on Nepal, and Boccanfuso, Decaluwé, and Savard (2003) on Senegal. These models avoid the problem of reliance on a fixed variance among group incomes and leave the modeler free of the selection of groupings based on rather arbitrary criteria. Any group can be created based on accurate socioeconomic, demographic, or geographic criteria and employed with the relevant endogenous variables (income, consumption) before and after a shock to perform any decomposition of poverty and income distribution analysis.

As Savard points out, however—

The main disadvantages of this approach are the limits it imposes in terms of microeconomic household behaviors. As a matter of fact, the size of the model can quickly become a constraint and data reconciliation can be relatively difficult. On the first point, CGE modeling imposes that behavioral function respects certain conditions. [Furthermore], modeling that introduces switching regimes are not easily modeled with standard CGE modeling software. . . . Micro-econometric modeling provides much more flexibility in terms of the modeling structure used. . . . The data reconciliation process leads to changes in structure of either the income or expenditure of the households. This comes from the fact that both accounts need to be balanced as well as leveled to the national accounts' data found in the SAM. You will often find some under or over reporting for items in the household survey (2003, 4).

The second line of attack in the new literature is an extension of microsimulation methods initially developed by Orcutt in the 1960s. The extended method links key price variables and additional aggregates derived from a CGE model (or other macroeconomic model) with a household model that has been estimated microeconometrically. Examples of this approach are found in Bourguignon, Robilliard, and Robinson (2003) in an analysis of the financial crisis in Indonesia, Bussolo and Lay (2003) on trade policy in Colombia, and Ferreira and Leite (2003) on Brazil.

The advantage of the method is that the micromodel can incorporate fairly complex household behaviors, including discontinuities and regime-shifting that are normally not well-handled within a CGE framework. However, simple microaccounting models also can be used. In the latter case, some of the microeconomic techniques outlined above can be readily linked to general equilibrium price shocks. Thus, Ianchovichina, Nicita, and Soloaga (2001) estimate the impact of full trade liberalization in Mexico; Chen and Ravallion (2003) do a similar exercise for China; Ravallion and Lokshin (2004) apply the method to Morocco; and Bussolo and van der Mensbrugge (2003) estimate the poverty effects of the Free Trade Area of the Americas on Brazil, Chile, Colombia, and Mexico. A slightly more complex microaccounting model is found in Hertel and others (2002), who consider the effects of multilateral liberalization on seven countries and find reductions in poverty in four of them (Indonesia, the Philippines, Uganda, and Zambia) and increases in the other three (Brazil, Chile, and Thailand).

The main disadvantage of the combined approach is that full consistency between the macroeconomic and the microeconomic models is not guaranteed.

INSTITUTIONS, STAKEHOLDERS, AND THE POLITICAL ECONOMY OF TRADE POLICY REFORM

Why do countries choose to reduce their welfare (and potentially increase their poverty incidence) by imposing trade restrictions? This is one of the key questions in the vast literature on the political economy of trade policy. Among the various answers, two common themes emerge. First, trade policy is highly redistributive and can easily be captured by stakeholders and lobbies, who then normally favor a protectionist status quo. Second, governments have historically raised significant revenues by taxing trade, and policy makers have important stakes in the reform process.

This section considers these two themes in detail. It offers guidance for an analysis on the ways stakeholders and institutions interact to shape the poverty and social impacts of trade policy reform.

The redistributive outcomes of trade liberalization are much larger than the (static) efficiency gains. This results in an unfavorable cost benefit ratio for any policy maker. Rodrik (1997) provides a clear example of this ratio by showing the magnitudes of the effects of trade liberalization in a typical poor (African) developing country. In his scenario—

Trade restrictions are reduced from a tariff equivalent of 40 percent to a tariff equivalent of 10 percent. In this [case], urban employers incur a real income loss of 35 percent while recipients of trade rents suffer a loss of 41 percent! The gain to farmers is 20 percent. The net gain to the economy is 2.5 percent, which is an order of magnitude smaller than these distributional impacts (1997, 35).

The pie is, indeed, bigger after the liberalization; however, managing the severe redistribution involved in the policy is tricky. Implementing a set of transfers so that, after the shock, everyone is in a better or equal position is more an economist's thought experiment than a realistically applicable compensatory system.

The difficulty in dealing with these distributional consequences is one of the key reasons for the many incomplete implementations or reversals of trade policy reforms in developing countries, particularly in Africa. As reported in a World Bank study that focused on this region—

Reversal of reform has been frequent. In seven of the countries examined, either restrictions which were removed were reinstated, or some existing barriers were strengthened to offset reductions in others. Nigeria, though it eliminated most quantitative restrictions (quotas and licensing) increased dramatically the number of import bans. Ghana, which was the only country to make great strides in cutting formal tariffs, reversed this with the implementation of large special taxes on imports. Côte d'Ivoire raised tariffs significantly, after having reduced QRs [quantitative restrictions]. In some cases the motive for reversal appears to be pressure from import-competing industries as they begin to experience competition from abroad (e.g., Côte d'Ivoire, Ghana). In others, resurgence of foreign exchange shortages [has] slowed the liberalization of tariffs (Madagascar), or reversed the foreign exchange market reform itself (Kenya) (Dean, Desai, and Riedel 1994, 50).

Given these risks in the implementation and sustainability of trade policy reform, predictive analysis of the distributional effects is crucial, as

is the identification of winners and losers. The political economy literature offers two broad frameworks helpful in this context. In the first, political cleavages in trade policy are formed along factor lines and, in the second, along industry of employment. The first predicts that the distributional effects of tariff changes exclusively depend on the type of factor ownership, and these effects are a direct consequence of perfect factor mobility across sectors (the factor endowments model). In the second case, factors are considered immobile across industries so that their real return is linked directly to the sector-specific consequences of trade policy (the sector-specific factors model). Empirical evidence does not discard either of these two views, and the apparently contrasting findings can be rationalized by considering the time frame of the analyses. In the long term, individuals view themselves as more mobile and, thus, may express preferences consistent with the factor endowments model; in a short-term analysis, people perceive their chances to find other employment quite low, and thus their behavior is more in line with the sector-specific factors model.

More important than the resolution of the issue of the best model is the use of both models to isolate a set of economic and sociodemographic determinants that can be used to identify the potential supporters (winners) and detractors (losers) of trade policy reform. The following group of variables is usually significant in explaining the attitudes of individuals toward trade policy reform: (1) the levels of individual human capital relative to the national average (in an economy well endowed with skilled labor, skilled individuals would be pro-trade and unskilled individuals antitrade); (2) the trade exposure of the sector in which the individuals are employed (individuals in nontraded sectors are pro-trade, whereas those in import-competing industries are protectionists); and (3) noneconomic indicators normally included by researchers, such as age, gender, citizenship, years of education, area of residence (rural versus urban), self-reported social class, political party affiliation, trade union membership, and real income.

Household surveys may facilitate the grouping of individuals according to these variables. With the addition of information about the trade policy stance of industry associations, for example, this grouping may often be sufficient to characterize the *demand* side, namely, who will be for and who will be against trade policy reform. A complete political economy analysis of the reform should also consider the *supply* side and thus undertake an examination of preferences among policy makers and the institutional structure of the government (see Rodrik 1995).

It may often be the case that the supply side rather than the demand side is the major obstacle to a pro-poor policy reform and that the institutional setting may hinder the implementation of the reform.

Two authors, among others cited in Rodrik (1998), describe the disappointing situation in Africa. Bates (1981) was one of the first to argue that the purpose of the anti-export bias imposed on African agricultural exporters was to transfer wealth from politically unorganized rural groups to vocal urban groups. Bienen (1991) criticizes policy makers more openly:

Trade liberalization policies are often extremely hard to formulate and implement in Africa precisely because it is powerful officials (civilian and military) who benefit from the controls that have been established over imports and exports. It is government officials who ration and distribute scarce imports, including foreign exchange. They realize the rents which accrue from the systems they construct and control (76–77).

Edwards (2001) provides, through the situation in Colombia, an excellent analysis of the economics and politics of the transition to an open market economy. The Colombian case is particularly interesting because of the magnitude and the speed of the liberalization—Edwards qualifies it as “one of the most dramatic ever undertaken in a Latin American country” (72)—and the fact that several important institutions were involved, including the presidency (the executive branch), the congress (the legislative branch), and the central bank.

Partly to overcome the opposition of protected industries (the demand side), President Gaviria’s initial idea was to implement the reform through gradual tariff reductions and compensate for this lifting of protective measures through exchange rate depreciation. However, subsequent developments required a drastic change in the pace and size of the reform. Because the peso was already depreciated at historic levels and the central bank could not sustain a sterilization scheme aimed at offsetting speculative capital inflows, and because the timid initial tariff reductions were not credible and imports were not increasing, the government decided to eliminate import licensing and cut tariffs by more than 50 percent overnight. The political landscape and the sequence of the events that allowed this daring reform to occur may be peculiar to Colombia, but some important lessons can be learned from the case and generalizations can be made about other countries. According to Edwards, these lessons, which should help in devising strategies to minimize a distributional conflict, are as follows:

- Compensation schemes can help reduce the opposition to the reform effort. The reforms have profound effects on income distribution. Nat-

urally those groups hurt by the reform will oppose them. The use of broadly defined compensation schemes, that usually go beyond the economic sphere, can effectively help deflect this opposition.

- Sequencing matters. The order in which reforms are undertaken has economic and political consequences. It affects the nature of the distributive conflict, and the authorities' ability to implement effective compensation schemes.
- Speed matters. The speed at which the reforms are implemented has important political effects. There usually is, however, a trade-off between credibility and adjustment costs. Gradual reforms will have lower adjustment costs, but will tend to have a low degree of credibility. To the extent that there is a "honeymoon period" a more rapid reform during the initial months may be effective.
- Political institutions are important. The nature of political institutions matters. Some of the most important aspects are the degree of decentralization, the strength of the executive, and the degree of independence of the judiciary and the central bank.
- External support may be important at certain junctures. Support from the multilaterals . . . may help launch the reforms. In some cases technical advice can also be useful.
- Coalition building can ease the political costs of the transition. Forging a broad coalition—or a national project—around the reform effort will greatly reduce the political opposition and facilitate the transition. By their own nature, however, broad political coalitions are fragile and may break easily. This suggests that an effort should be made to make progress while the coalition holds in place (2001, 23).

The literature on the political economy of trade policy reform makes strong arguments that economically irrational distortions may play a key role in clearing political markets. Viewed through this lens, these distortions assume new meanings. More effective strategies for their successful removal, reduction, or replacement in favor of the poor can be devised.

CONCLUSIONS

The links between trade reform and poverty are complex and case specific. Indeed, similar trade policies may have widely varying results in different countries in terms of poverty. Because of this, the first step in reform impact analysis should be to focus on understanding the detailed pathways through which trade liberalization can affect poverty. The literature has

concentrated mainly on three pathways: price transmission, earnings, and government revenues and expenditure.

Often, the effects of a trade policy reform are not transmitted directly to households, or there are numerous shocks affecting households during the period of reform. This complicates the analysis. The peculiarities of the local and regional economies—the significance of the infrastructures involved, the quality of the institutions, the level of the development of markets, the competitiveness of markets, and the participation of households in market—can soften or amplify these effects. Therefore, in an empirical analysis of the impact of trade reform on poverty, it is important to identify the extent to which domestic markets are able to transmit the effects of trade reform, as well as associated policy changes (such as the steps required to replace lost tariff revenues) that may accompany the reform.

Empirical evidence shows that trade liberalization has an overall positive impact on household welfare, although most studies find that the benefits are distributed unevenly across households. Some household groups may be harmed. Furthermore, trade liberalization may disproportionately benefit urban areas relative to poorer rural areas, thereby increasing income inequality.

No bulletproof methodology exists, and, in a first-best situation, researchers should attempt to amass evidence on at least two fronts. On the one hand, microeconomic studies on households are valuable because poverty is ultimately measured at the household level, and the heterogeneity of households in terms of endowments, consumption behavior, location, employment sector, and other characteristics influences the final outcomes of reforms. On the other hand, these detailed studies should be complemented by macroeconomic approaches through which the indirect effects of a reform caused by the interactions of the supply and demand on all markets may be included and where real macroeconomic impacts, such as changes in the balance of government and external accounts, may be accurately gauged. This combination of microeconomic and macroeconomic approaches fosters a more precise picture of the consequences of reform. Finally, the addition of an analysis of the political economy of the reform will assist in identifying the stakeholders and gauging the political feasibility of the proposed changes. This may be the key ingredient in a complete poverty and social impact analysis exercise.

NOTES

1. See Rhee, Katterbach, and White (1990) and World Bank (1992) for early references. See also Madani (1999).

2. Rodríguez and Rodrik (2001) supply a careful review of these issues.
3. See Goldberg and Knetter (1997) for a review and Nicita (2004) for an application to trade liberalization.
4. The theory linking prices and factor returns is based on the Stolper-Samuelson theorem (Stolper and Samuelson 1941), which is a proposition of the Heckscher-Ohlin model. It states that a rise in the relative price of a good (1) raises the real wage of the factor used intensively in that industry and (2) lowers the real wage of the other factor.
5. Increased relative wages for skilled labor are observed in many developing countries abundantly endowed with unskilled labor. Slaughter and Swagel (1997) cited evidence for Mexico; Meller and Tokman (1996) studied the Chilean case; and Sanchez and Nuñez (1998) examined the Colombian case. See Davis (1992) and Wood (1997) for multicountry studies covering this issue.
6. For example, see Bussolo, Mizala, and Romaguera (2002) for a case study of Chile; see also Devarajan, Ghanem, and Thierfelder (1997) on Bangladesh.
7. Ebrill, Stotsky, and Gropp (1999), cited in Winters, McCulloch, and McKay (2004).
8. For a trade application, see Konan and Maskus (2000) and Harrison, Rutherford, and Tarr (2003). For a more general approach to tax incidence on the poor, see Bussolo and Round (forthcoming).
9. See Winters, McCulloch, and McKay (2004) for a thoughtful discussion of the issues raised in this section.
10. The technique is described by Deaton (1997).
11. The studies are cited in Winters, McCulloch, and McKay (2004).
12. The exceptions being Deaton (1989); Levinsohn, Berry, and Friedman (2003); and Nicita (2004), who take into account second-order effects in consumption.
13. Often, changes in the composition of the consumption basket can be overlooked or approximated without substantially altering the results. More important is the issue of the adjustment costs resulting from trade policies. This involves consideration of the changes in the composition of income sources and the movement of workers across sectors of employment. However, given the complexity of the estimation and the frequent paucity of the data, few studies have been attempted along these lines.
14. See Arulpragasam and Conway (2003) for empirical applications of this technique.
15. This section draws partly on Bussolo and Round (forthcoming).
16. See, for example, de Janvry, Fafchamps, and Sadoulet (1991); Chia, Wahba, and Whalley (1994); Decaluwé and others (1999); Bussolo and Round (forthcoming); and Agénor, Izquierdo, and Fofack (2003).
17. Winters, McCulloch, and McKay (2004) highlight these identification problems; see the citation recorded at the beginning of the section entitled "Trade and poverty: Transmission channels."

BIBLIOGRAPHY

- Adelman, Irma, and Sherman Robinson. 1978. *Income Distribution Policy: A Computable General Equilibrium Model of South Korea*. Stanford, CA: Stanford University Press.
- . 1988. “Macroeconomic Adjustment and Income Distribution: Alternative Models Applied to Two Economies.” *Journal of Development Economics* 29 (1): 23–24.
- Agénor, Pierre-Richard, Alejandro Izquierdo, and Hippolyte Fofack. 2003. “The Integrated Macroeconomic Model for Poverty Analysis: A Quantitative Macroeconomic Framework for the Analysis of Poverty Reduction Strategies.” Policy Research Working Paper 3092, World Bank, Washington, DC.
- Agénor, Pierre-Richard, Reynaldo Fernandes, Eduardo Haddad, and Dominique van der Mensbrugge. 2003. “Analyzing the Impact of Adjustment Policies on the Poor: An IMMPA Framework for Brazil.” World Bank, Washington, DC. Mimeo.
- Arndt, Channing, Henning Tarp Jensen, Sherman Robinson, and Finn Tarp. 2000. “Marketing Margins and Agricultural Technology in Mozambique.” *Journal of Development Studies* 37 (1): 121–37.
- Arulpragasam, Jehan, and Patrick Conway. 2003. “Partial Equilibrium Multi-market Analysis.” In François Bourguignon and Luiz A. Pereira da Silva, eds., *The Impact of Economic Policies on Poverty and Income Distribution: Evaluation Techniques and Tools*, 261–77. New York: World Bank and Oxford University Press.
- Ballard, C., D. Fullerton, J. Shoven, and J. Whalley. 1985. *A General Equilibrium Model for Tax Policy Evaluation*. Chicago: University of Chicago Press.
- Bates, Robert. 1981. *Markets and States in Tropical Africa*. Berkeley, CA: University of California Press.
- Bautista, Romeo M., and Marcelle Thomas. 1997. “Income Effects of Alternative Trade Policy Adjustments on Philippine Rural Households: A General Equilibrium Analysis.” IFPRI TMD Discussion Paper 22, International Food Policy Research Institute, Trade and Macroeconomics Division, Washington, DC.
- Bienen, Henry. 1991. “The Politics of Trade Liberalization.” In J. H. Frimpong-Ansah, S. M. R. Kanbur, and P. Svedberg, eds., *Trade and Development in Sub-Saharan Africa*. New York: Manchester University Press.
- Boccanfuso, Dorothée, Bernard Decaluwé, and Luc Savard. 2003. “Poverty, Income Distribution and CGE Modeling: Does the Functional Form of Distribution Matter?” CIRPEE Working Paper 03–32, Interuniversity Center on Risk, Economic Policy, and Employment, Montreal.
- Boccanfuso, Dorothée, F. Cabral, F. Cissé, A. Diagne, and Luc Savard. 2003. “Paupvreté et Distribution de Revenus au Sénégal: Une Approche par la Modélisation en Equilibre Général Calculable Micro-Simulé.” CIRPEE Working Paper 03–33, Interuniversity Center on Risk, Economic Policy, and Employment, Montreal.

- Bourguignon, François. 2003. "The Growth Elasticity of Poverty Reduction." In T. Eicher and S. Turnovsky, eds., *Inequality of Growth*. Cambridge, MA: MIT Press.
- . 2004. "The Poverty-Growth-Inequality Triangle." Paper prepared for the Indian Council for Research on International Economic Relations—World Bank Lecture, India Habitat Center, New Delhi, February 4.
- Bourguignon, François, and Christian Morrisson. 1989. *External Trade and Income Distribution*. Paris: Organisation for Economic Co-operation and Development.
- . 1992. *Adjustment and Equity in Developing Countries: A New Approach*. Paris: Organisation for Economic Co-operation and Development.
- Bourguignon, François, and Luiz A. Pereira da Silva, eds. 2003. *The Impact of Economic Policies on Poverty and Income Distribution: Evaluation Techniques and Tools*. New York: World Bank and Oxford University Press.
- Bourguignon, François, Jaime de Melo, and Christian Morrisson. 1991. "Poverty and Income Distribution during Adjustment: Issues and Evidence from the OECD Project." *World Development* 19 (11): 1,485–508.
- Bourguignon, François, Jaime de Melo, and Akiko Suwa. 1991. "Distributional Effects of Adjustment Policies: Simulations for Archetype Economies in Africa and Latin America." *World Bank Economic Review* 5 (2): 339–66.
- Bourguignon, François, Anne-Sophie Robilliard, and Sherman Robinson. 2003. "Representative Versus Real Households in the Macroeconomic Modeling of Inequality." Delta Working Papers 2003–05, Paris.
- . 2003. "Representative Versus Real Households in the Macroeconomic Modeling of Inequality." DIAL Working Paper DT2003-10, Développement et Insertion Internationale, Unité de Recherche Croissance, Inégalités, Population et Rôle de l'Etat, Paris.
- Bussolo, Maurizio, and Jann Lay. 2003. "Globalization and Poverty Changes in Colombia." Paper presented at the Annual Bank Conference on Development Economics in Europe, World Bank, Paris, May 15.
- Bussolo, Maurizio, and Jeffrey Round, eds. Forthcoming. *Globalization and Poverty: Channels and Policy Responses*. London: Routledge.
- Bussolo, Maurizio, and Dominique van der Mensbrugge. 2003. "A Preliminary Assessment of the Economic and Poverty Impacts of the Doha Agenda for Latin America." Paper presented at the Second Centre d'Etudes Prospectives et d'Informations Internationales—Inter-American Development Bank Conference, Economic Implications of the Doha Development Agenda for Latin America and the Caribbean, Washington, DC, October 6–7.
- Bussolo, Maurizio, Alejandra Mizala, and Pilar Romaguera. 2002. "Beyond Heckscher-Ohlin: Trade and Labour Market Interactions in a Case Study for Chile." *Journal of Policy Modeling* 24 (7–8): 639–66.
- Chen, Shaohua, and Martin Ravallion. 2000. "How Did the World's Poorest Fare in the 1990s?" Policy Research Working Paper 2409, World Bank, Development Research Group, Poverty and Human Resources, Washington, DC.

- . 2003. “Household Welfare Impacts of China’s Accession to the WTO.” In Deepak Bhattasali, Shantong Li, and Will Martin, eds., *China and the WTO: Accession, Policy Reform, and Poverty Reduction Strategies*. New York: Oxford University Press.
- Chia, Ngee-Choon, Sadek Wahba, and John Whalley. 1994. “Poverty Reduction Targeting Programmes: A General Equilibrium Approach.” *Journal of African Economies* 3 (2): 309–38.
- Cloutier, Marie-Hélène, John Cockburn, and Bernard Decaluwé. 2004. “Welfare, Poverty and Distributional Effects of Trade Liberalization: A Review of the CGE Literature.” CREFA, unpublished, Laval University, Department of Economics, Montreal.
- Cockburn, John. 2001. “Trade Liberalization and Poverty in Nepal: A Computable General Equilibrium Micro Simulation Analysis.” CREFA Working Paper 01–18, Laval University, Department of Economics, Research Center in Applied Economics and Finance, Montreal.
- Cogneau, Denis, and Anne-Sophie Robilliard. 2000. “Income Distribution, Poverty and Growth in Madagascar: Micro-Simulations in a General Equilibrium Framework.” IFPRI TMD Discussion Paper 61, International Food Policy Research Institute, Trade and Macroeconomics Division, Washington, DC.
- Davis, S. 1992. “Cross-Country Patterns of Changes in Relative Wages.” *NBER Macroeconomics Annual* 1992 7: 239–91. National Bureau of Economic Research, Cambridge, MA.
- Dean, Judith M., Seema Desai, and James Riedel. 1994. “Trade Policy Reform in Developing Countries since 1985: A Review of the Evidence.” World Bank Discussion Paper 267, World Bank, Washington, DC.
- Deaton, Angus. 1989. “Rice Prices and Income Distribution in Thailand: A Non-parametric Analysis.” *Economic Journal* 99 (395): 1–37.
- . 1997. *The Analysis of Household Surveys: A Microeconometric Approach to Development Policy*. Baltimore: Johns Hopkins University Press.
- . 2003. “Prices and Poverty in India, 1987–2000.” *Economic and Political Weekly* 25 (January): 362–68.
- Decaluwé, Bernard, Jean-Christophe Dumont, and Luc Savard. 1999. “Measuring Poverty and Inequality in a Computable General Equilibrium Model.” CREFA Working Paper 99–20, Laval University, Department of Economics, Research Center in Applied Economics and Finance, Montreal.
- Decaluwé, Bernard, A. Martens, and Luc Savard. 2001. *La Politique Economique du Développement et les Modèles d’Equilibre Général Calculable*. Montreal: Université Francophone–Presses de l’Université de Montréal.
- Decaluwé, Bernard, André Patry, Luc Savard, and Erik Thorbecke. 1999. “Poverty Analysis within a General Equilibrium Framework.” CREFA Working Paper 99–09, Laval University, Department of Economics, Research Center in Applied Economics and Finance, Montreal.
- de Janvry, Alain, and Elisabeth Sadoulet. 1995. “Poverty Alleviation, Income Redistribution and Growth during Adjustment.” In Nora Lustig, ed., *Coping*

- with *Austerity: Poverty and Inequality in Latin America*. Washington, DC: Brookings Institution.
- . 2001. "Growth, Poverty and Inequality in Latin America: A Causal Analysis, 1970–94." *Review of Income and Wealth* 46 (3): 267–87.
- de Janvry, Alain, Marcel Fafchamps, and Elisabeth Sadoulet. 1991. "Peasant Household Behavior with Missing Markets: Some Paradoxes Explained." *Economic Journal* 101 (409): 1,400–17.
- de Janvry, Alain, Marcel Fafchamps, Mohamed Raki, and Elisabeth Sadoulet. 1992. "Structural Adjustment and the Peasantry in Morocco: A Computable Household Model." *European Review of Agricultural Economics* 19 (4): 427–53.
- Dercon, Stephan. 2001. *The Impact of Economic Reforms on Households in Rural Ethiopia, 1989–1995*. New York: Oxford University Press.
- Dervis, Kemal, Jaime de Melo, and Sherman Robinson. 1982. *General Equilibrium Models for Development Policy*. Cambridge, UK: Cambridge University Press.
- Devarajan, Shantayanan, and Dominique van der Mensbrugge. 2000. "Trade Reform in South Africa: Impacts on Households." Paper presented at the Conference on Poverty and the International Economy, World Bank and Parliament of Sweden, Commission on Policy for Global Development, Stockholm, October 20–21.
- Devarajan, Shantayanan, Hafez Ghanem, and Karen Thierfelder. 1997. "Economic Reform and Labor Unions: A General-Equilibrium Analysis Applied to Bangladesh and Indonesia." *World Bank Economic Review* 11 (1): 145–70.
- . 1998. "Labor Market Regulations and Trade Liberalization: A General-Equilibrium Analysis of Bangladesh." *Journal of Policy Reform* 3 (1): 1–28.
- Dimaranan, Betina, Thomas W. Hertel, and Roman Keeney. 2003. "OECD Domestic Support and the Developing Countries." WIDER Discussion Paper 2003/32, United Nations University—World Institute for Development Economics Research, Helsinki.
- Dollar, David, and Aart Kraay. 2001. "Trade, Growth, and Poverty." *Finance and Development* 38 (3): 16–19.
- . 2002. "Growth is Good for the Poor." *Journal of Economic Growth* 7 (3): 195–225.
- Ebrill, Liam, Janet Stotsky, and Reint Gropp. 1999. "Revenue Implications of Trade Liberalization." IMF Occasional Paper 180. International Monetary Fund, Washington, DC.
- Edmonds, Eric V., and Nina Pavcnik. 2005. "The Effect of Trade Liberalization on Child Labor." *Journal of International Economics*. 65(2): 401–19.
- Edwards, Sebastian. 2001. "The Economics and Politics of Transition to an Open Market Economy: Colombia." *Development Centre Studies*. Paris: Organisation for Economic Co-operation and Development.
- Ferreira, Francisco H. G., and Phillippe G. Leite. 2003. "Policy Options for Meeting the Millennium Development Goals in Brazil: Can Micro-Simulations Help?" Policy Research Working Paper 2975, World Bank, Development Research Group, Poverty, Washington, DC.

- Frankel, Jeffrey A., David Parsley, and Shang-Jin Wei. 2005. "Slow Pass-Through around the World: A New Import for Developing Countries?" NBER Working Paper 11199, National Bureau of Economic Research, Cambridge, MA.
- Friedman, Jed, and James Levinsohn. 2002. "The Distributional Impacts of Indonesia's Financial Crisis on Household Welfare: A 'Rapid Response' Methodology." *World Bank Economic Review* 16 (3): 397–423.
- Goetz, Stephan J. 1992. "A Selectivity Model of Household Food Marketing Behavior in Sub-Saharan Africa." *American Journal of Agricultural Economics* 74 (2): 444–52.
- Goldberg, Pinolopi Koujianou, and Michael M. Knetter. 1997. "Goods Prices and Exchange Rates: What Have We Learned?" *Journal of Economic Literature* 35 (3): 1,243–72.
- Goldberg, Pinolopi Koujianou, and Nina Pavcnik. 2003. "The Response of the Informal Sector to Trade Liberalization." *Journal of Development Economics* 72 (2): 463–96.
- . 2004. "Trade, Inequality, and Poverty, What Do We Know? Evidence from Recent Trade Liberalization Episodes in Developing Countries." NBER Working Paper 10593, National Bureau of Economic Research, Cambridge, MA.
- Harrison, Glenn W., Thomas F. Rutherford, and David G. Tarr. 2003. "Trade Liberalization, Poverty and Efficient Equity." *Journal of Development Economics* 71 (1): 97–128.
- Harrison, Glenn W., Thomas F. Rutherford, David G. Tarr, and Angelo Gurgel. 2003. "Regional, Multilateral and Unilateral Trade Policies of Mercosur for Growth and Poverty Reduction in Brazil." Policy Research Working Paper 3051, World Bank, Development Economics Research Group, Trade, Washington, DC.
- Hertel, Thomas W., ed. 1997. *Global Trade Analysis: Modeling and Applications*. New York: Cambridge University Press.
- Hertel, Thomas W., and Will Martin. 2000. "Liberalizing Agriculture and Manufactures in a Millennium Round: Implications for Developing Countries." *The World Economy* 23 (4): 455–70.
- Hertel, Thomas W., Maros Ivanic, Paul V. Preckel, and John A. L. Cranfield. 2002. "Poverty Impacts of Multilateral Trade Liberalization." GTAP Working Paper 16, Center for Global Trade Analysis, Department of Agricultural Economics, Purdue University, Indiana.
- Hoekman, Bernard M., Aaditya Mattoo, and Philip English, eds. 2002. *Development, Trade, and the WTO: A Handbook*. Washington, DC: World Bank.
- Ianchovichina, Elena, Alessandro Nicita, and Isidro Soloaga. 2001. "Trade Reform and Poverty: The Case of Mexico." *The World Economy* 25 (7): 945–72.
- IFAD (International Fund for Agricultural Development). 2001. *Rural Poverty Report 2001: The Challenge of Ending Rural Poverty*. New York: Oxford University Press.
- Kanbur, Ravi. 2001. "Economic Policy, Distribution and Poverty: The Nature of Disagreements." *World Development* 29 (6): 1,083–94.

- Konan, Denise Eby, and Keith. E. Maskus. 2000. "Joint Trade Liberalization and Tax Reform in a Small Open Economy: The Case of Egypt." *Journal of Development Economics* 61 (2): 365–92.
- Levinsohn, James, Steven Berry, and Jed Friedman. 2003. "Impacts of the Indonesian Economic Crisis: Price Changes and the Poor." In Michael P. Dooley and Jeffrey A. Frankel, eds., *Managing Currency Crises in Emerging Markets*. Chicago: University of Chicago Press.
- Madani, Dorsati. 1999. "A Review of the Role and Impact of Export Processing Zones." Policy Research Working Paper 2238, World Bank, Development Economics Research Group, Trade, Washington, DC.
- McCulloch, Neil, and Michele Calandrino. 2003. "Vulnerability and Chronic Poverty in Rural Sichuan." *World Development* 31 (3): 611–28.
- McCulloch, Neil, L. Alan Winters, and Xavier Cicera. 2001. *Trade Liberalization and Poverty: A Handbook*. London: Center for Economic Policy Research.
- Meller, P., and A. Tokman. 1996. "Apertura Comercial y Diferencial Salarial en Chile." In P. Meller, ed., *El Modelo Exportador Chileno*. Santiago, Chile: Economic Research Corporation for Latin America.
- Minot, Nicholas W. 1998. "Distributional and Nutritional Impact of Devaluation in Rwanda." *Economic Development and Cultural Change* 46 (2): 379–402.
- Minot, Nicholas W., and Francesco Goletti. 2000. "Rice Market Liberalization and Poverty in Viet Nam." IFPRI Research Report 114, International Food Policy Research Institute, Washington, DC.
- Nicita, Alessandro. 2004. "Who Benefited from Trade Liberalization in Mexico? Measuring the Effects on Household Welfare." Policy Research Working Paper 3265, World Bank, Development Economics Research Group, Trade, Washington, DC.
- Nicita, Alessandro, and M. Olarreaga. 2003. "Trade and Poverty in Ethiopia." Background paper for the Ethiopia: Diagnostic Trade Integration Study. World Bank, Washington, DC. Mimeo.
- Nicita, Alessandro, and Susan Razzaz. 2003. "Who Benefits and How Much? How Gender Affects Welfare Impacts of a Booming Textile Industry." Policy Research Working Paper 3029, World Bank, Development Economics Research Group, Trade, Washington, DC.
- Oxfam and IDS (Institute of Development Studies). 1999. "Liberalization and Poverty." Final Report on an Oxfam—IDS Research Project, August. Department for International Development, London.
- Porto, Guido G. 2003a. "Trade Reforms, Market Access, and Poverty in Argentina." Policy Research Working Paper 3135, World Bank, Development Economics Research Group, Trade, Washington, DC.
- . 2003b. "Using Survey Data to Assess the Distributional Effects of Trade Policy." Policy Research Working Paper 3135, World Bank, Development Economics Research Group, Trade, Washington, DC.
- . Forthcoming. "Informal Export Barriers and Poverty." *Journal of International Economics*.

- Ravallion, Martin. 1990. "Rural Welfare Effects of Food Price Changes under Induced Wage Responses: Theory and Evidence for Bangladesh." *Oxford Economic Papers* 42 (3): 574–85.
- . 2001. "Growth, Inequality and Poverty: Looking beyond Averages." *World Development* 29 (11): 1,803–15.
- Ravallion, Martin, and Michael Lokshin. 2004. "Gainers and Losers from Trade Reform in Morocco." Policy Research Working Paper 3368, World Bank, Development Research Group, Poverty, Washington, DC.
- Ravallion, Martin, and Dominique van de Walle. 1991. "The Impact on Poverty of Food Pricing Reforms: A Welfare Analysis for Indonesia." *Journal of Policy Modeling* 13 (2): 281–99.
- Reimer, Jeffrey J. 2002. "Estimating the Poverty Impacts of Trade Liberalization." Policy Research Working Paper 2790, World Bank, Development Economics Research Group, Trade, Washington, DC.
- Rhee, Yung-Whee, Katharina Katterbach, and Janette White. 1990. "Free Trade Zones in Export Strategies." Industry Series Paper 36, World Bank, Industry and Energy Department, Washington, DC.
- Robilliard, Anne-Sophie, and Sherman Robinson. 2003. "Reconciling Household Surveys and National Accounts Data Using a Cross-Entropy Estimation Method." *Review of Income and Wealth* 49 (3): 395–406.
- Rodríguez, Francisco, and Dani Rodrik. 2001. "Trade Policy and Economic Growth: A Skeptic's Guide to the Cross-National Evidence." In Ben S. Bernanke and Kenneth S. Rogoff, eds., *NBER Macroeconomics Annual 2000*. Cambridge, MA: MIT Press.
- Rodrik, Dani. 1995. "The Political Economy of Trade Policy." Vol. 3 of Gene M. Grossman and Kenneth Rogoff, eds., *Handbook of International Economics*. Amsterdam: North-Holland.
- . 1997. "Trade Policy and Economic Performance in Sub-Saharan Africa." Paper prepared for the Ministry of Foreign Affairs, Department for International Development Cooperation, Expert Group on Development Issues, Stockholm. Mimeo.
- . 1998. "Trade Policy and Economic Performance in Sub-Saharan Africa." NBER Working Paper 6562, National Bureau of Economic Research, Cambridge, MA.
- Rodrik, Dani, and Anna Maria Mayda. Forthcoming. "Why Are Some Individuals (and Countries) More Protectionist than Others?" *European Economic Review*.
- Round, Jeffery. 2003. "Social Accounting Matrices and SAM-Based Multiplier Analysis." In François Bourguignon and Luiz A. Pereira da Silva, eds., *The Impact of Economic Policies on Poverty and Income Distribution: Evaluation Techniques and Tools*, 261–276. New York: World Bank and Oxford University Press.
- Sanchez, F., and J. Nuñez. 1998. "Educación y Salarios Relativos en Colombia, 1976–1995: Determinantes, Evolución e Implicaciones para la Distribución del Ingreso." In *La distribución del ingreso en Colombia: tendencias recientes y retos de la política pública*, Bogotá, Tercer Mundo Editores. *Archivo de Macroeconomía* 74.

- Savard, Luc. 2003. "Poverty and Income Distribution in a CGE-Household Micro-Simulation Model: A Top-Down/Bottom-Up Approach." CIRPEE Working Paper 03-43, Interuniversity Center on Risk, Economic Policy, and Employment, Montreal.
- Singh, I., L. Squire, and J. Strauss, eds. 1986. *Agricultural Household Models, Extensions, Applications, and Policy*. Baltimore: Johns Hopkins University Press.
- Slaughter, Matthew J. 1999. "Globalization and Wages: A Tale of Two Perspectives." *World Economy* 22 (5): 609-30.
- Slaughter, Matthew J., and Phillip Swagel. 1997. "The Effects of Globalization on Wages in Advanced Economies." IMF Working Paper 97/43, International Monetary Fund, Research Department, Washington, DC.
- Stolper, Wolfgang F., and Paul A. Samuelson. 1941. "Protection and Real Wages." *Review of Economic Studies* 9: 58-73.
- Winters, L. Alan. 2000. "Trade and Poverty: Is There a Connection?" In D. Ben-David, Håkan Nordström, and L. Alan Winters, "Trade, Income Disparity and Poverty." *WTO Special Study* 5. Geneva: World Trade Organization.
- Winters, L. Alan, Neil McCulloch, and Andrew McKay. 2004. "Trade Liberalization and Poverty: The Evidence So Far." *Journal of Economic Literature* 42 (1): 72-115.
- Wood, Adrian. 1995. "How Trade Hurt Unskilled Workers." *Journal of Economic Perspectives* 9 (3): 57-80.
- . 1997. "Openness and Wage Inequality in Developing Countries: The Latin American Challenge to Conventional Wisdom." *World Bank Economic Review* 11 (1): 33-57.
- World Bank. 1992. "Export Processing Zones." Policy and Research Series Paper 20, Industry and Energy Department, Washington, DC.
- . 2001. *Global Economic Prospects 2002: Making Trade Work for the World's Poor*. Washington, DC: Development Prospects Group.
- . 2003. *Global Economic Prospects 2004: Realizing the Development Promise of the Doha Agenda*. Washington, DC: Development Prospects Group.

Monetary and Exchange Rate Policy Reforms

Patrick Conway

This chapter considers the impact of three related groups of reforms on poverty and income distribution. The three groups of reforms are exchange rate adjustments, money supply adjustments, and adjustments to controls on foreign capital flows. These reforms are combined under the heading “monetary policy” because of the conceptual links among them.

The chapter first highlights the ties among these policies and then outlines the techniques available to assess the impact of the reforms on the poor.

MONETARY POLICY AS A WHOLE

Impossible trifecta

Obstfeld and Rogoff (1996) make a compelling case for the “impossible trifecta” of monetary policy. As they describe the term, it is impossible in the long run and costly in the short run for the government of a small, open economy to sustain three independent macroeconomic policies concurrently: (1) a fixed exchange rate, (2) an autonomous policy of money supply adjustments, and (3) unregulated international flows of financial capital. The proof is a simple application of the covered interest parity

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condition: With fixed exchange rates and perfect capital mobility, arbitrage activity will force equality in nominal interest rates across countries. Autonomous monetary policy is then impossible because it must function through adjustments to the nominal interest rate, and this interest rate cannot adjust.

The implication is straightforward: Of the three potential policies (exchange rate, money supply, and capital controls), at most two can be set independently. The third will not be a true policy choice, but it will accommodate the first two.

Reforms to monetary policy must acknowledge and incorporate this interdependence. When developing countries consider monetary reforms, they usually begin from a combination of a managed exchange rate, controls on capital flows, and an overly expansionary monetary policy. Given the links among the three, it is important that these reforms be considered as complementary and that they be examined in combination.

Acting globally, thinking locally

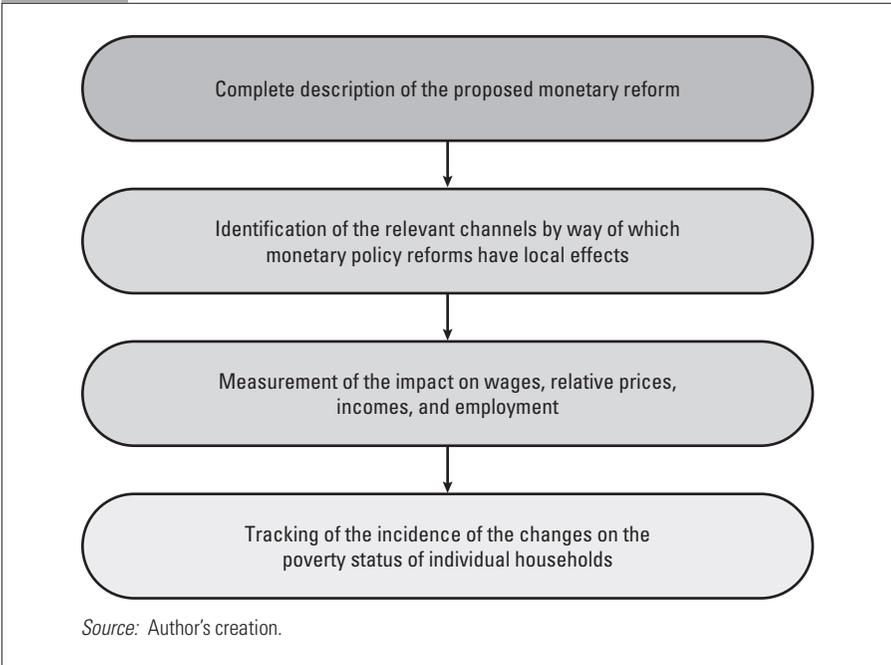
Monetary reforms are quintessentially macroeconomic policies, while the incidence of poverty must be measured at the microeconomic household level. To measure the complete impact of policy reform on poverty, it is necessary to use four sets of tools. Each tool is associated with one of the four stages in the schema illustrated in Figure 2.1.

Complete description of the proposed monetary reform

The impossible trilemma illustrates a fundamental point about macroeconomic reforms: They cannot generally be considered in isolation. A reform in one macroeconomic aggregate will work through the budget and balance of payments to bring about collateral changes in other policy instruments. The discussion of the impact on poverty should therefore consider the joint impact of the direct monetary policy reform and all collateral macroeconomic changes. Two examples illustrate this phenomenon.

First, the removal of controls on international financial capital could lead to financial inflows to the reforming country that would, all else being equal, have an adverse effect on the balance of payments. The central bank must then purchase foreign currency and place it in foreign reserves to maintain the balance at a constant exchange rate. This accumulation in foreign reserves would cause an expansion in the money supply.

Second, a reduction in the growth of the money supply cannot be considered in isolation from the government's fiscal budget. If the initial growth in the money supply was necessary to finance a budget deficit, then

FIGURE 2.1 Analytic Schema: Monetary Policy Reforms

a reduction in the growth of the money supply must be accompanied by expenditure cuts, tax revenue increases, or more government borrowing.

In the calculation of the impact of a policy reform, it is crucial to include a complete (direct, plus collateral) statement of the policy changes implied by the proposed reform. The analytic tool required to complete this stage is a financial flow-of-funds model.

Identification of the relevant channels by way of which monetary changes have local results

Macroeconomic policy has direct and indirect effects, as Agénor (2002) demonstrates quite clearly. The direct effects can be separated into short- and long-term effects.

The short-term effects of monetary policy are typically expansionary or contractionary through the policy's impact on the nominal interest rate. Expansion follows from falling interest rates, while contraction follows from rising interest rates.¹ An expansionary effect will lead to growth in real product, income, and employment, while a contractionary effect will produce opposite results. Economic expansion typically favors the poor.

Monetary policy also can have a short-term effect through its impact on the exchange rate. Reforms can change the price of traded goods in the economy relative to the price of nontraded goods, which can result in substitution effects in the supply and the demand for the goods and in altered returns to factors of production. Devaluing the exchange rate, for example, will increase the price of traded goods relative to the price of nontraded goods in the short term.

Monetary policy will have long-term effects through its impact on consumer inflation. Agénor (2002) concluded that the poor are more vulnerable to inflation. Their incomes often are defined in nominal terms (that is, not indexed for inflation), they typically have fewer inflation hedges, and they tend (more than the nonpoor) to hold cash balances that lose value through the inflation tax. Thus, expansionary monetary policy that does not bring about a permanent increase in output will raise the number and reduce the welfare of the poor in the long term through its induced inflation.

It will be necessary to account for all these channels when tracking the impact of a policy reform. The analytic tool to complete this stage is a macroeconomic model.

Measurement of the impact on wages, relative prices, incomes, and employment

After the policy reform is in place, after other policies have adjusted to provide consistency, and after the effects have filtered through the channels described above, the policy reform will lead to adjustments in equilibrium prices and quantities on labor, commodity, and foreign exchange markets. The analytic tool appropriate at this stage is a computable general equilibrium (CGE) model of the relevant markets: market clearing will ensure that the endogenous variables truly reflect the impact of the policy reform.

Tracking the incidence of reform on the poverty status of individual households

The induced changes in market outcomes have immediate implications for the incomes of individual households within the economy. The analytic tool accompanying this stage is a household-level model of income generation.

Implementing the analytic schema: various approaches

The analytic schema (Figure 2.1) identifies logically distinct features of an impact analysis for policy reform, but, in practice, the efforts to measure the impact of policy reform on poverty and income inequality com-

bine one or more of the stages. In the literature on policy reform, there are five separate approaches to completing the economic impact analysis: (1) the before-and-after, (2) cross-country, (3) reduced form, (4) structural, and (5) full package approaches. For each of these, there are specific techniques and data requirements, which are outlined below, along with practical examples where available.

The before-and-after approach

In the before-and-after approach, analysts identify the date of the monetary reform in a single country. They then scrutinize household surveys collected shortly before and shortly after that date. They use these surveys to measure the incidence and depth of poverty and the degree of inequality before and after the reform. A comparison of the results of the two surveys provides indicators of the impact of monetary reform on poverty and income inequality.

This approach has the virtue of simplicity. It provides an excellent retrospective indicator of the impact of shocks to the economy during the period between the two surveys. However, it will be less useful in predicting the effects of future reforms for two reasons. First, the size of the monetary reform has not been quantified. Unless this is done, connecting the impact on poverty to a specific magnitude of reform will be difficult. Second, the before-and-after approach combines all shocks to the economy between the dates of the two surveys and attributes all changes and effects to the macroeconomic reform, even in instances in which a monetary reform coincides with external shocks or independent reforms elsewhere in the economy. For example, before-and-after studies in Mexico in the mid-1990s lumped together the impacts of trade liberalization through the North American Free Trade Agreement and the impacts of exchange rate devaluation. As a result, only the combined effect of the two sets of impacts were derivable from the data.

In implementing this approach, all four stages of the analytic schema are approximated by one comparison over time.

Sahn (1987) provides an early example of this approach. He considered the evolution of poverty in Sri Lanka from 1969 through 1982. He examined four expenditure surveys and two nutritional-status surveys over this period to track the changes in nutrition, consumption, and poverty. The primary monetary reform Sahn cites is a 40 percent currency devaluation in November 1977, but, as he says,

In 1977, the government brought about a myriad of changes in policies. . . . The most visible were devaluation of the currency,

reduction in the value of food subsidies, interest rate reform, lifting of most price controls, liberalizing import restrictions, establishing a free trade zone to promote exports, and reducing public-sector monopolies (1987, 823).

His primary poverty comparisons are between the expenditure survey results of 1969/70 and the results of fiscal years 1978/79, 1980/81, and 1981/82. Sahn concludes—

Despite the [positive] economic performance in the aggregate between 1978 and 1982, there has been increasing inequality in levels of consumption, and the benefits of economic growth have not trickled down to the poor (1987, 824).

While his analysis is compelling, it illustrates as well the drawbacks of before-and-after analyses. Unfortunately, there is often no set of household surveys that can serve as bookends to a monetary reform. Thus, Sahn is obliged to go back to 1969/70 to obtain a “before” survey for the reform of 1977. Furthermore, monetary reform is not taken in isolation. Sahn’s conclusions can be attributed only to the entire set of reforms and, in the absence of additional study, cannot be attached to the devaluation alone.

There have been many recent applications of the before-and-after approach. Glewwe and Hall (1998) examined the combined impact of macroeconomic instability in Peru in the late 1980s through the use of Living Standards Measurement Studies in 1985 and 1990. While they focused on “vulnerability to shocks” instead of descent into (or rising out of) poverty, the methodology replicated Sahn’s approach. The cumulative impact of all policy changes and economic shocks during the intervening period is evident in the sample, but it is impossible to attribute a decomposition of the effects to one specific reform or another, or parts thereof.

Another good example is Frankenberg, Smith, and Thomas (2003) on the impact of the massive economic shock in Indonesia in 1997. In this case, household surveys furnished a tight before-and-after window for the impact of the crisis. However, while the major feature of the crisis was a massive devaluation of the rupiah relative to the U.S. dollar, the study did not measure the independent contribution of monetary reform to the economic outcome.

The before-and-after approach alone does not offer an opportunity to distinguish monetary policy from other sources of impact, but it is possible, through the use of control groups, to supply some statistical power against nonmonetary alternatives. Consider, for example, the case of

Indonesia's 1997 crisis. The forecast is that the impact of a change in the exchange rate on poverty status is different among people whose incomes derive from producing nontraded goods than among people whose incomes derive from producing traded goods. By contrast, the forecast is that the effect of inflation on poverty will not depend on the sector in which an income is earned. A distinction should then be possible between the two sets of effects through a difference-in-difference estimator. In such a research design, the data are divided into two time categories (before and after) and two source-of-income categories (traded goods and nontraded goods).

Consider an example in which the population is divided along these lines, and poverty headcounts (P) are calculated for each combination (Table 2.1).

$(P_{T1} - P_{T0})$ is the before-and-after indicator of the increase in poverty for people with traded-good incomes, while $(P_{N1} - P_{N0})$ is the before-and-after indicator of the increase in poverty for people with nontraded-good incomes. The distinction between these differences is a measure of the impact of exchange rate devaluation on the incidence of poverty. By establishing a control group of people with nontraded-good incomes, one can measure the differential impact of exchange rate devaluation more precisely.

Another extension of the before-and-after analysis combines information from the "before" survey with a systematic identification of household differences according to their expenditure or asset-holding patterns. This variant permits a calculation for each household of a more accurate measure of loss in real purchasing power. It uses ex post information, but only about readily available commodity or financial prices; the method does not require an "after" household survey to be effective. Incidence analysis, as recommended by Hossain (2003), falls into this category. So also does the rapid response framework of Friedman and Levinsohn (2002). Their goal is to predict the distributional impact of financial crises. They augment the use of household income data with a detailed examination of expenditure shares for each household and demonstrate how to match the

TABLE 2.1 Time

<i>Source of Income</i>	<i>Before</i>	<i>After</i>
Traded-good incomes	P_{T0}	P_{T1}
Nontraded-good incomes	P_{N0}	P_{N1}

Source: Author.

expenditure shares with detailed price-inflation information to derive the impact of the crisis in terms of real household purchasing power.

The cross-country approach

In the cross-country approach, analysts collect comparable measures of aggregate poverty or income inequality from a large number of countries. They also collect indicators of monetary policy, as well as other potential determinants of aggregate poverty. They then run a cross-sectional regression of the poverty indicator on the monetary variable and other variables; the coefficient on the monetary variable is a quantification of the impact of monetary reform.

Like the before-and-after approach, this is a simple approach that does provide a framework for the prediction of the impact of monetary reform on poverty. It has serious drawbacks, however, as follows:

- Because there is no modeling of structure, the economic structure is assumed to be identical across countries. If it were not, then the estimated coefficients would not be appropriate for any one country, but rather only for an average, virtual country.
- The methods for creating indicators of poverty and inequality (for example, headcount, Gini coefficients, the income share of the lowest income decile) may differ from country to country. If different methodologies are used in constructing these indicators, an additional source of error (and perhaps bias) will be introduced.
- The spillover effects of one monetary reform on other macroeconomic policy variables (as indicated above) are not incorporated into the analysis.

All four stages of the analytic schema (Figure 2.1) are approximated in this case by a single cross-country regression.

Baldacci, de Mello, and Inchauste (2002) supply an example of the cross-country approach. The goal of their research was to provide an indicator of the impact of financial crisis on poverty. They collected measures of poverty (headcount, poverty gap) and income inequality (the Gini coefficient, quintile income shares) for 65 countries they identified as having experienced a financial crisis.² They calculated the change in these indicators for each country from the year before the crisis to the year after the onset of the crisis. They then took the sample mean as an indicator of the impact of the crisis.

Their equation (Equation 2.1) is reproduced here. The symbol Δ represents the change from the precrisis period to the postcrisis period, t . $F_i(t)$

is the vector of indicators of the channels through which the financial crisis in country i is expected to affect poverty, while $X_i(t)$ is the indicator of the initial conditions in country i that affect the incidence of poverty. Country j is the control group and is proxied in their estimation by the record of the countries of the Organisation for Economic Co-operation and Development. The sample used is cross-sectional and includes between 21 and 62 countries (depending on the poverty indicator).

$$\begin{aligned} \text{Equation 2.1} \quad \Delta P_i(t) - \Delta P_j(t) &= a_0 + a_1[\Delta F_i(t) - \Delta F_j(t)] \\ &+ a_2[\Delta X_i(t) - \Delta X_j(t)] + u_i(t) \end{aligned}$$

For all poverty indicators, the sample mean indicates an increase in poverty, but the estimate is insignificantly different from zero in all cases. The authors also undertake ordinary least squares regressions to test the effects of an exogenous financial crisis on changes in poverty using a cross-sectional sample of country-years in financial crisis. They separately perform these regressions on the change in gross domestic product per capita, inflation, and unemployment. The results are statistically insignificant in almost all cases for the measures of poverty, although the signs of the coefficients are as expected (for example, a more severe financial crisis leads to an increase in the poverty measure). The results for income shares by quintiles are significant more often than for poverty measures, but these results are also difficult to interpret.

The paper illustrates the advantages and the drawbacks of the cross-country approach. On the plus side, the approach is relatively easy to implement, requiring only aggregate indicators of poverty and income distribution across countries. On the minus side, the number of observations are necessarily low. Obtaining statistically significant results from equality-of-means tests becomes difficult. Equations do not regress indicators of poverty on the monetary reform variables directly, but rather on intermediate instruments (in this case, gross domestic product per capita, inflation, and unemployment), and the movements of these are assumed to be defined totally by the monetary shock.

The cross-country approach begins as well with a troubling assumption: that the income-generating (and thus poverty-generating) process in each country is identical. In this estimation procedure, differences in institutions and economic structure will be confounded with the differences in potential channels modeled in equation 2.1. It is unlikely that cross-country regression will pick up the true reduced-form parameters for each country in the sample at this level of aggregation.

A variant of the cross-country approach is proposed by Datt and Ravallion (2002) for India. Rather than using cross-country data, the authors employ cross-state data from India. They also have a substantial time series for each state, so the resulting panel data set is quite extensive. While they do not examine monetary policy (because there is only one monetary policy for all states within India), their analysis and econometric techniques provide a good example for those wishing to implement this methodology in a cross-country framework.

The reduced-form approach

A reduced-form analysis begins with time-series data (panel or pseudo-panel) on households in a single country. Each household i is characterized by geographic (the matrix G_i) and demographic (matrix H_{it}) data. The members of each household can be ranked by an unobserved continuous poverty metric (p^*_{it}) that is a function of geographic and demographic variables, as well as a random variable (ϵ_{it}). Poverty is also modeled to depend systematically on macroeconomic policy indicators (the matrix M_t). The calculated poverty line for the country in period t allows an observed categorization of either “being in poverty” ($p_{it} = 1$), or “not in poverty” ($p_{it} = 0$). If the observed poverty indicator is an informative proxy for the unobserved p^*_{it} , then the following set of equations can be estimated through limited-dependent variable techniques (for example, logit or probit estimation).

Equation 2.2 $p^*_{it} = G_i\alpha + H_{it}\beta + M_t\gamma + \epsilon_{it}$

Equation 2.3
$$\begin{cases} p_{it} = 1 & \text{if } p^*_{it} \geq 1 \\ 0 & \text{otherwise} \end{cases}$$

This estimation defines the probability of being in poverty in terms of household-specific and place-specific factors and also identifies the independent effects of various macroeconomic policy indicators that are included in M_t . After the analysts have identified the complex policy changes associated with the monetary reform, they can insert the predicted changes in the policy indicators that are associated with the monetary reform into the estimating equation. This enables them to determine the complete impact of the reform on the average probability that a household will be in poverty.

This approach combines the last three stages of the analytic schema and thus avoids the specification of the structural links between the complex of linked changes and the relative prices, wages, and incomes of the

households. This decision greatly simplifies the analysis. However, the approach accomplishes this simplification at a cost: In the absence of structural modeling, it becomes impossible to ensure that the measured policy impacts are the desired effects and not simply spurious correlations with omitted variables.

Baldacci, de Mello, and Inchauste (2002) implement an adaptation of this reduced-form model for Mexico. Rather than a continuous variable of macroeconomic policy (M_t), they use a binary variable indicating whether the observation is pre- or postcrisis (that is, before or after 1994). The coefficient γ is then the indicator of the impact of financial crisis on the incidence of poverty.

The structural approach

Structural analysis combines a study of the panel data on households with an economic model that defines the changes in relative prices, wages, employment, and incomes, which are the result of the complex of linked changes associated with monetary reform. This economic model takes, as inputs, the policy changes derived through the first step and provides, as output, the changes in relative prices, wages, employment, and incomes that result from the policy reform. The data on household choices are then used to derive statistically the impact of all these variables on the incidence of poverty. The equation from that estimation then is combined with the predicted changes in relative prices, wages, and other variables from the economic model. Each household can be evaluated before and after for incidence of poverty, and the effect of the reform can be derived in aggregate or for subgroups among the households. For logical completeness, the reform's microeconomic effects on employment and consumption can be aggregated to compare them with the predictions of the economic model; if there are differences, an iteration algorithm can be introduced to align the aggregated and disaggregated data.

This approach separately focuses on the second, third, and fourth stages of the analytic schema. There are three advantages to this approach. First, the channels through which a monetary reform passes in order to affect household choices are clearly defined, and the impact of each is measured separately. Second, these separate channels supply a richer view of the impact of the reform on the individual household and thus make possible a more nuanced interpretation of the impact of reform on poverty. Third, the resulting model can be used to make predictions about the impact of monetary reforms and an "after" household survey is not needed.

The approach has substantial data requirements. Not only is it necessary to possess household survey data, but analysts must also create the eco-

conomic model. If they do this through an estimation of structural equations, the data requirement is tremendous. If, instead, they use a CGE model to approximate the economic structure, they must face the risk that the model reflects only imperfectly the actual transmission channels in the economy under study. In contrast to before-and-after analyses, however, this method can be calibrated with consistent data for one year alone. Moreover, the household poverty profiles can be estimated from a single household survey.

Robilliard, Bourguignon, and Robinson (2001) examined the impact of the economic crisis of 1997 in Indonesia using a structural model. Their model has three parts. The “top” is a CGE model for 1995 with 38 sectors and 15 factors of production. The “bottom” is a set of income- and employment-generating equations estimated from Indonesia’s 1996 SUSENAS household survey. The “middle” of the model is a set of iterative constraints that ensure the equality of the values generated in the CGE model and the aggregated employment and income responses of households from the household-survey simulations.

Through a series of simulations, the authors concluded that the real depreciation was but one of the causes for the sharp increase in poverty in Indonesia after the crisis. They found that the credit crunch among firms during the same period generated rises in poverty in the model that were roughly equivalent to the effects of the real depreciation taken alone.

The model supplies a coherent analysis of the second, third, and fourth stages of the analytic schema, but the CGE framework is not ideal for the analysis of macroeconomic reform. The financial crisis was simulated by three exogenous shifts in the model: a real devaluation of 20 percent, a 25 percent rise in the cost of marketing food, and a 25 percent decrease in the availability of working capital. Other factors affecting poverty (the El Nino effect) were modeled with the assumption that total factor productivity in agriculture fell by 5 percent. These percentages were chosen so that the model would mimic the actual macroeconomic evolution: The credit crunch generates a large reduction in gross domestic product in the model, while devaluation and food processing costs generate a rise in food prices relative to non-food prices. However, there was no estimation or examination of financial markets to check whether this set of shocks was, in fact, most likely responsible for generating these outcomes.

Early efforts at the structural approach depended exclusively on CGE models to generate the implications of poverty. In terms of the analytical schema, these analyses relied on the CGE model to undertake the second and third stages of the schema. Rather than complete the fourth stage of the schema, the authors typically created “representative households”

within the context of the CGE model. This provided a consistent, but necessarily quite aggregated, prediction of the effects of the policy reforms on poverty.

Robilliard, Bourguignon, and Robinson (2001) investigated the loss in accuracy that occurs if one employs representative-household analyses using CGE constructs instead of the income distribution derived from survey information on individual households. The exploitation of information on individual households apparently captures income-distributional effects more precisely, while the representative-household approach underestimates the impact of policy reform on poverty and income inequality.

The full package approach

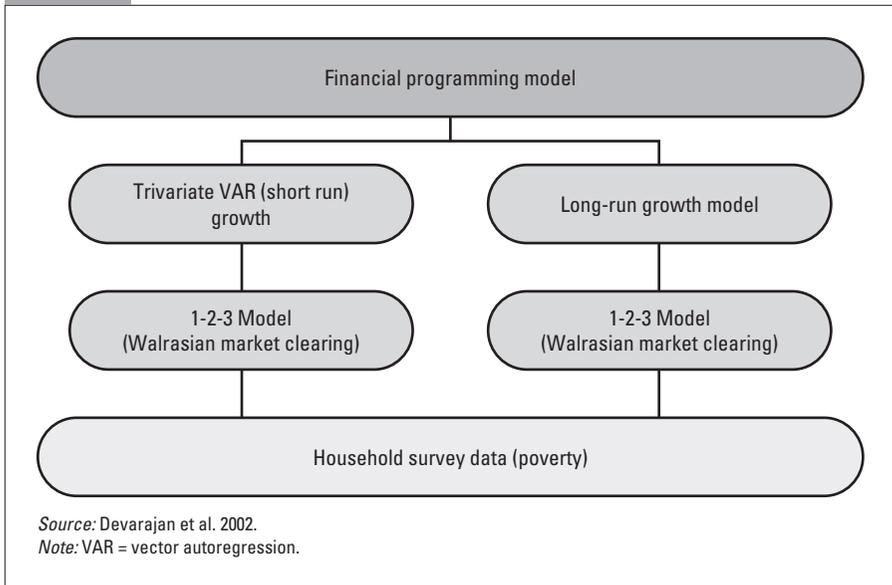
The full package approach separately completes each of the four stages of the analytic schema. It extends the structural approach by adding a financial model of the links in government monetary policy (think of this as a variant of the structural approach in which the CGE model is replaced by a financial CGE model). Its strengths and weaknesses are magnifications of those in the structural model. With this approach, analysts can perform counterfactual simulations that identify the precise contribution of specific monetary reforms to the depth and incidence of poverty in a specific country. However, the data requirements (or the dangers of approximation error) are magnified because the entire financial system is a necessary addition to the modeling exercise.

Devarajan, Go, and others (2002) present a parsimonious framework for linking macroeconomic policy variables to the incidence of poverty. The schematic of the framework illustrates nicely the nature of the links involved in a three-step analysis (Figure 2.2).

The top layer of the modeling framework is the financial programming model. This model links monetary and macroeconomic variables through national income and product account identities so that, in the adjustments of other macroeconomic aggregates, there is a consistent accounting of any macroeconomic imbalance caused by the policy reforms. For example, income tax reduction is a single policy reform. However, if it leads to a government budget deficit, it will also bring about monetary expansion, increased domestic borrowing, or increased foreign borrowing. The financial programming model ensures that these macroeconomic implications are all recognized.

The second layer includes a simple growth model that links the policy reforms to economic growth. For a long-term analysis, the authors suggest using Easterly's (2001) endogenous growth model estimated on the basis of a cross-section of developing countries. The coefficients from

FIGURE 2.2 Macro-Micro Schematic



that model are combined with the policy reforms from the top layer to provide a prediction of the change in economic growth over the long term (that is, five years or more).

For a short-term analysis, the authors suggest a simple vector autoregression (VAR) for the country under study, which links the policy reforms to economic growth and the real exchange rate. This VAR is estimated for time-series data from the country, and its coefficients are used to predict the impact of the policy reforms on economic growth and the real exchange rate in the short run (that is, one to five years).

The third layer is a static Walrasian model that assumes, as givens, the growth and real exchange rate evolution of the second layer and computes the relative prices and wages of a multisector economy.

The bottom layer is an analysis of poverty in terms of relative prices and wages as derived from econometric work with household consumption surveys. The changes in relative prices and wages derived in the third layer are inserted into the estimated equations to derive the impact of the policy reforms on the number of households falling below (or being pulled above) the poverty line.

Devarajan, Go, and others (2002) illustrated the use of this model through the case of Zambia. They did not examine monetary policy

reform but focused on the impacts of government expenditure increases and the deterioration in terms of trade. While the model is quite simple, it does generate plausible results for the evolution of poverty in response to each shock.

Ferreira and others (2003) applied a full package approach to the explanation of the changes in poverty and income inequality observed following the Brazilian devaluation of 1999. They undertook the first step through construction of an investment savings–liquidity money (IS-LM) model of the macroeconomy. The second step involved expansion of this IS-LM framework to include sectoral decompositions and an expanded financial sector. This augmented IS-LM model was then estimated using Brazilian data from 1980–2000. The outcome of the second step was a vector of 48 price, wage, and employment values generated by the augmented IS-LM model. In the third step, the authors used the 1998 National Household Sample Survey to generate a prediction of occupational choice and income by individuals and then aggregated the individuals into households.

To predict the impact of the devaluation, the authors first resolved the augmented IS-LM model for the new value of the exchange rate. They then generated the vector of the wages, prices, and employment values consistent with this. They passed the wage and price values to the equations for the household sector and then iterated to a convergence that the disaggregated occupational choices aggregated to the employment values from the IS-LM model. This represented a prediction of the impact of the devaluation.

The authors reported the results of their predictions side by side with the actual poverty and inequality figures from the 1999 National Household Sample Survey in Brazil. They found that the model predicts well for occupational shifts, but, as they noted, “the predictive performance of the model is much worse for earnings” (Ferreira et al. 2003, 25). However, on average, the predicted results for the changes in poverty and inequality were close to those actually observed.

Agénor, Izquierdo, and Fofack (2003a) offered another example of the full package approach. The authors constructed a financial CGE with a great deal of disaggregation in labor-market choices. They calibrated this to a “virtual country,” not to data for a specific country (although they presumably could have recalibrated as appropriate for work on specific economies). They proposed two ways of examining poverty: (1) by generating poverty statistics from the virtual households of the simulation model, or (2) by creating representative-household equations from a household survey for a specific country. In their paper, they took the vir-

tual country approach. This structure provides a good framework for decomposing the various conceptual channels through which monetary reform affects poverty and income inequality. It is not clear from the paper how difficult it will be to calibrate the model to a specific country, and this last step will be necessary to make the model fully comparable to the preceding references.

REFORM BRIEF: EXCHANGE RATE REFORMS

The following sections provide reform briefs for two parts of the impossible trilemma. The first brief is a report on the efforts of various researchers to derive the impact of exchange rate reform on poverty and income inequality. The second brief is a report on the efforts of researchers to identify the impact on poverty of reforms to money-growth rules or interest-rate-targeting rules. The third part of the trilemma—the removal of capital controls—is not given separate treatment. While there have been studies on the macroeconomic consequences of the removal (or introduction) of capital controls, it has not been possible to identify any research on the quantitative impact of capital account liberalization on poverty and income inequality.³

Alterations to the exchange rate regime or to the parity of the home currency with a foreign currency in a fixed exchange rate regime are illustrations of monetary reform. Any such reform will be subject to the impossible trilemma, as outlined in the introduction of this chapter. In many theoretical models of speculative attack (for example, Flood and Garber 1984, or as summarized in Agénor and Montiel 1996), the changes in the fixed exchange rate are in fact the product of this trilemma: Given an independent money-growth policy and free capital movements, the fixed exchange rate at the given parity is unsustainable.

What are the types of reform encompassed in this family of reforms?

There are three changes to exchange rate policy typically included in this category of reforms. First, a country may choose to change from a regime with multiple exchange rates to a regime with a unified exchange rate. Second, a country may choose to replace a fixed exchange rate regime with a flexible exchange rate regime or with a regime characterized by periodic auctions. Third, a country with a fixed exchange rate regime may choose to replace its current parity with a new parity. If the new parity involves increasing the exchange rate, this represents a policy of devaluation.

What is the typical rationale?

The typical rationale for the removal of multiple exchange rates is that this will eliminate the inefficiencies and corruption that follow from such rates. This is a standard recommendation of the International Monetary Fund (IMF) to developing countries (see Krueger 2002 on Argentina). The reform will cause a shift in the relative prices of the goods sold under the multiple rates; it will also change the allocations of income among producers.

The typical rationale for doing away with a fixed regime or for devaluing the currency is to avoid the shortage in foreign-exchange reserves or the speculative attack that can arise from inconsistency between the fixed exchange rate and the country's monetary policy (see Obstfeld and Rogoff 1996, section 8.4). If the exchange rate and monetary policy are inconsistent, then there will be substantial growth (positive or negative) in the stocks of official reserves; if these decline to zero, the exchange rate regime can no longer be supported. This reform (to the extent that the nominal exchange rate changes relative to nominal wages and prices) will alter the relative price of traded goods and will reduce the purchasing power of consumers in terms of traded goods.

There are many variants of the exchange rate regime available to open economies, including dollarization, currency boards, managed floating, crawling pegs, basket pegs, and pure floating. Reform may include moving from any one of these to any of the others. Detailed discussion of the costs and benefits of these regimes is beyond the scope of this brief (see Caramazza and Aziz 1998 for an accessible overview).

How are the reforms typically implemented? What issues emerge?

These reforms are typically under the purview of the central bank. A dual exchange rate regime requires that the central bank stand ready to exchange foreign currency for home currency at two different exchange rates, depending on the nature of the transactions. Reform entails the unification of the exchange rates by the central bank to a single parity. Suspension of a fixed exchange rate regime is characterized by the central bank's decision to "close its window," that is, no longer to stand ready to exchange foreign currency for home currency at the preexisting parity. The central bank can then stay out of the foreign exchange market entirely, it can establish a new parity at which it will trade currencies, or it can establish a regular sequence of auctions at which actors (including the central bank) can trade foreign for domestic currency.

Reforms to the exchange rate regime have wide-ranging effects and typically are not undertaken lightly. They are often implemented in response to a foreign-exchange crisis and are frequently paired with reforms in trade policy and reforms to address budgetary imbalance. The traditional view of the advice of the IMF to countries with balance-of-payments deficits illustrates this “jointness”: The Fund was expected to call for expenditure switching (through a devaluation) and expenditure reduction (through a cut in government expenditure).⁴ During the recent Asian crisis, it was recognized that devaluation can have balance-sheet effects in a country’s domestic financial sector (because assets are denominated in local currency, while liabilities are denominated in foreign currency). These effects on credit markets should be considered as if they were determined along with exchange rate reform.

Which stakeholders will be affected by the reform positively or negatively?

Exchange rate reform is a macroeconomic reform. Those having a say in the size and timing of the reform are typically linked with the central government and the central bank. If we consider those affected by the reform, all citizens become stakeholders. Whether we can single out groups for special attention depends on the degree of the pass-through of exchange rate change to the prices of domestic goods.

- If there is a substantial degree of pass-through to local prices, then there will be few relative-price effects of a devaluation (for example). In that case, the key stakeholders will be those individuals holding financial assets denominated in the local currency. These stakeholders will lose because of the reform caused by the loss in the purchasing power of the assets. People holding foreign-currency assets will be winners because of the increase in their purchasing power.
- If there is little pass-through, then the devaluation will be felt because of its impact on the relative price of traded and nontraded goods. Producers of traded goods (both import substitutes and exports) will benefit from the switch of expenditure to their products, while consumers of traded goods will suffer because of the higher prices for imports in local currency. Producers of nontraded goods will be relatively disadvantaged.
- For intermediate degrees of pass-through, both effects will be important and both sets of stakeholders should be monitored.

Following Pangestu (2001), we can speak in more concrete fashion of stakeholders and the benefits they receive. With a devaluation—

- Rural workers benefit relative to urban workers, because their products are often traded goods.
- Residents of agricultural regions benefit, while residents of nonagricultural regions suffer.
- Ethnic groups face differing impacts: Those dependent on international trade (for example, ethnic Chinese) will be advantaged relative to others.
- Younger, less-educated, and informal-sector employees may be disproportionately disadvantaged.
- Urban residents with family ties in rural areas will be affected less because of the opportunity to relocate temporarily.

What is the principal transmission channel through which each stakeholder is affected by the reform? What is the direction and magnitude of impacts, and how do they evolve over time? What are the assumptions?

We can identify four transmission channels that carry the impact of the changes in the exchange rate regime to households.

The relative prices of commodities will change. This will affect the consumption choices of households. In a general devaluation, traded goods will become more costly relative to nontraded goods. This will reduce the purchasing power of every household, all else being equal, but will, in turn, raise the incomes of those households that supply traded goods. When multiple exchange rates are removed, this same effect on producers and consumers is observed for the subsets of traded goods subject to the appreciated exchange rate.

Household incomes will change. The shift in production patterns toward traded goods will create excess demands for labor in some sectors, pushing up the nominal wages of hired labor. The rise in wages will be centered on the traded-goods sector, and people in the service sector should observe a more moderate increase in nominal wages.

Employment patterns will change. The shift in demand toward traded goods should pull workers out of the informal and service sectors and into the traded-goods sectors. The new jobs will have different wage and

benefit streams and, thus, will alter the standard of living of the households to which the workers are attached.

A balance-sheet effect in the banking sector could lead to a credit shortage in response to the devaluation. As the banks call in their outstanding credit, formal-sector firms cut back their scale of operations. This will lead to a lowering of profits, employment, and wages in all sectors.

What is the typical methodology used to analyze the distributional impact through each channel?

The typical methodology used to analyze exchange rate reform will capture the distributional impact of all channels. The introduction of this chapter summarizes five approaches to the measurement of the distributional impact: the before-and-after, cross-country, reduced-form, structural, and full package approaches. The first three approaches provide methods to gauge the impact of the reform on poverty and income inequality aggregated over all transmission channels. The structural and full package approaches decompose the individual contributions of the transmission channels to poverty and income inequality.

Empirical analyses of the impact of exchange rate policy changes on poverty and social issues typically focus on periods of financial crisis. As noted in Sahn (1987) and Smith and others (2000), the exchange rate policy reform in such times is only one of many shocks to an economy in crisis. Generally, it will be quite difficult to disentangle the effect of exchange rate policy reform and the many factors that trouble the economy.

McKenzie (2003a, 2003b) performed a careful before-and-after analysis of consumer survey data relevant to the peso crisis in Mexico. He examined samples from 1994 and 1996 and attributed the difference in behavior in the two samples to the impact of the Mexican peso crisis (which began in December 1994). He did not supply an explicit definition of poverty or income inequality, but his analysis documented the fall in consumption among disaggregated population groups. For example, urban and more highly educated households suffered the greatest falls in income during the peso crisis. He also decomposed the adjustment in consumption into an Engel effect of reduced income and a switching effect of consumption during the crisis. He noted that the consumption shares, on average, rose for essential items and fell for durable goods and luxury items. There was some evidence as well that goods not considered necessities before the crisis became necessities during the crisis. McKenzie's two papers do not assist in quantifying the impact of a future exchange rate depreciation, but

they do identify some of the mechanisms through which Mexicans adjusted to the shock. One adjustment mechanism was reduced fertility, that is, families had fewer children. Another mechanism involved adjustment in the consumption basket of essential items, as noted above.

Baldacci, de Mello, and Inchauste (2002) presented a complementary before-and-after analysis of the impact of the 1994 Mexican devaluation. The data surveys used were the same as those used by McKenzie. While McKenzie analyzed consumption demand, Baldacci, de Mello, and Inchauste adopted the poverty definition of the Mexican statistical agency, characterized each household as being in or out of poverty as of that date, and then estimated the probability of being in poverty as a function of demographic and geographic factors. There was no explicit consideration of the devaluation: The authors attribute all changes between 1994 and 1996 to the devaluation in December 1994.

There are no cross-country studies of the impact of exchange rate reform on poverty. Baldacci, de Mello, and Inchauste (2002) are nearly on topic, given that the definition of financial crisis in the paper is exchange rate based, but the analysis suffers from the shortcomings noted in the previous section.

It has not been possible to identify in the literature a reduced-form study of exchange rate reform.

The paper by Robilliard, Bourguignon, and Robinson (2001) is a good example of the structural approach to exchange rate policy. The exchange rate movement in question (in Indonesia) is a policy reform in the sense that a fixed exchange rate regime was abandoned in favor of a temporarily flexible exchange rate. The resulting depreciation of the equilibrium nominal exchange rate models a real-life devaluation. The simulation model constructed is a combination of a CGE model at the macroeconomic level and a household behavioral model derived from a household survey at the microeconomic level. The iterative approach, as outlined in the previous section, ensures the consistency of the macroeconomic and microeconomic conclusions. The model replicates well the precrisis year of 1996. Then, in simulation, the authors examined the 1997 crisis. The authors concluded that the Indonesian crisis was, in part, a crisis of real devaluation, but was, in equal part, a crisis of credit availability to producers. The authors were able to replicate aggregate output, employment, poverty, and inequality indicators for the crisis years. They did not report comparisons of their simulation results with the actual outturns at a more disaggregated level.

Sahn, Dorosh, and Younger (1997) reported an evaluation of trade and exchange rate policy reforms in five Sub-Saharan African countries.

Their analysis considered the income-distributional effects of these policies for four representative households: rural poor, rural non-poor, urban poor, and urban non-poor. The analysis is implemented through CGE models, and so the financial aspects of exchange rate policy reform are ignored. The effect of the reform is to remove restrictions on the exchange rate and thus allow the real exchange rate to depreciate to clear the foreign exchange market. (Before the policy reform, the economies were characterized by shortages and the rationing of foreign exchange.) The policy experiment considered is a joint hypothesis: If export revenue falls by 4 percentage points of gross domestic product, then which policy (flexible real exchange rate or fixed real exchange rate and foreign-exchange rationing) leads to higher income for poor households? According to Sahn, Dorosh, and Younger—

... both urban and rural poor gain from the liberalization. The real exchange rate depreciation improves production incentives for tradable goods; agricultural output rises, leading to increased labor demand and higher real incomes for the poor (1997, 89).

Ferreira and others (2003) implemented the full package approach in examining the effects of the 1999 Brazilian devaluation on poverty and income inequality. They developed a multisectoral IS-LM model and then created links between the wage, price, and employment levels implied by that model and the information in a household survey. The authors estimated the IS-LM model, thus adding an ability to check confidence in the accuracy of the coefficients they use. They created 18 representative households from the household survey data by estimating job choice and income equations over various subsets of the survey. They also specified a system of linking equations that assures an iterative solution for wages, prices, and employment choices. In this system, the predictions of aggregate employment and income from the first step are equal to the sum of the individual employment and income measures created from the survey. The resulting system replicates the features of the Brazilian economy fairly well for 1998. They then derived their predicted effects of devaluation on poverty and inequality through a three-step procedure: (1) they resolved the IS-LM model for the devalued exchange rate; (2) they used the linking equations to derive appropriate wages, prices, and employment; and (3) they used the representative-household equations to derive individual job and earning choices. They then iterated. From the model, the authors were able to produce a nuanced description of increased poverty and inequality in response to devaluation.

The paper illustrates nicely the data and computational requirements of a full package approach to exchange rate reform.

- At the top level of the analysis, the IS-LM model includes six sectors of the economy (urban informal, rural informal, urban formal tradable, rural formal tradable, urban formal nontradable, and rural formal nontradable). Productive labor is decomposed into three skill levels: unskilled, semi-skilled, and skilled. Production functions are specified for each sector. Wages and goods prices are determined endogenously in the model. The balance of payments is modeled in some detail, including the trade in goods in four of the sectors, as well as financial capital flows. The financial markets are modeled in great detail. Eight types of financial instruments are considered: local currency, time deposits, bonds, domestic-currency loans, equity, foreign currency, foreign loans, and foreign bonds. For each instrument, the portfolio demands for each asset must be equal to the supplies; this generates the structure of interest rates. The IS-LM model is estimated using time-series data from Brazil (1981–98).
- The middle level of the analysis generates employment, incomes, and prices from the results of the top-level model. Employment is represented by the model's prediction on occupational status for 24 job categories (for example, an individual in an urban unskilled formal tradable job). There are also predictions of incomes for 18 categories of factors, and there are six predictions of changes in relative commodity prices.
- The bottom level of the analysis is based on information from household surveys (the National Household Sample Survey) for Brazil in 1998 and 1999. Roughly 90,000 respondents are included for each year. The data are used to estimate a model of household income determination according to occupational choice and the earnings derived from such occupational choices. The predicted individual incomes are aggregated into household incomes.

The experiment involved in the paper introduced the observed depreciation in the real exchange rate in 1998 into the top level of the IS-LM model. The new equilibrium at the top level measures employment, income, and price implications in the transmission channels of the middle level. At the bottom level, the predicted effect on household incomes is measured and then aggregated into indicators of the increase in poverty and income inequality.

The estimation and computational demands of this full package approach are large. A detailed macroeconomic model must be estimated

on the top level using time-series data. The bottom level requires a cross-sectional estimation of occupational-status equations and Mincer earnings equations for the individuals in the national household survey sample. The top and bottom levels are linked through the transmission channels of employment, wages, and prices. In computation, these equilibrium values must be consistent on the top and bottom levels (that is, the household-level results of the bottom level must aggregate to the macroeconomic results at the top level).

In addition to these techniques for examining transmission channels together, methods also exist to examine one channel at a time. Levinsohn, Berry, and Friedman (2001), for example, examined in isolation the relative price effects of the 40 percent nominal devaluation in Indonesia in 1998. The authors used data on 58,100 households from the SUSENAS survey of 1993 to create a prediction of the impact of the devaluation on poverty. The authors held consumption shares for individual goods constant at the percentages observed in 1993 and changed the relative prices of goods to reflect the 1998 values. They then measured the impact of these new relative prices on the income distribution and the incidence of poverty.

This method has the advantage of simplicity, but leaves two questions unanswered. First, can the entire increase in commodity prices be attributed to exchange rate movements? Second, did the financial crisis have an impact on employment and disaggregated wages that intensified inequality or poverty? The evidence of Smith and others (2000) from household and labor surveys in Indonesia suggests that the impact of the crisis on real earnings was notably different by gender and location (urban versus rural), and this will be critical in a more general equilibrium analysis.

What are the main risks? How serious are the risks?

Exchange rate reforms create systemic risks. Large numbers of citizens and majorities of the population in parts of the economy are affected in the same way. The risks facing all households are unemployment, higher prices for foodstuffs (because they are traded goods), pressure on the employed to accept lower or no wage increases, higher costs of borrowing, and reduction in the purchasing power of financial assets. Households producing traded goods will also face the positive risk of an increased return for their goods (when measured in domestic currency).

The literature suggests that a relative price movement is quite likely in response to devaluation in the short term; few countries are so open that the pass-through to domestic wages and prices is immediate. Unemployment and a credit shortage are also likely in the short term, as adjustments

to the relative price shock begin with closures of firms and only gradually lead to an expansion of the traded-goods sector.

McKenzie (2003b) calls exchange rate movements “aggregate shocks.” Households have many coping mechanisms for idiosyncratic shocks (for example, interhousehold transfers, borrowing, increased labor force participation) that will be less effective if the households are faced with an aggregate shock. The research of Glewwe and Hall (1998) and McKenzie (2003b) indicates that exchange rate reforms will have differentiated impacts on individual households. As Glewwe and Hall found for the Peruvian case, some households are more vulnerable to this aggregate shock than are others. These authors concluded that households with better-educated heads of household are less vulnerable to macroeconomic shocks; they also found that female heads of households are less vulnerable. McKenzie (2003b) examined the data from Mexico in 1996 for evidence of coping mechanisms and found that the only robust responses were reduced consumption and reduced fertility.

Monitoring and evaluation

The existence of household surveys before and after the exchange rate reform offers excellent opportunities to monitor the changes in poverty and income inequality: Sahn (1987); Frankenberg, Smith, and Thomas (2003); and McKenzie (2003b) provided good examples of such an evaluation. In each of these cases, however, it is difficult to attribute the shifts in poverty or income inequality exclusively to exchange rate changes. There were many concurrent macroeconomic and microeconomic policies implemented in Sri Lanka, Indonesia, and Mexico, respectively, and it is imprecise to attribute all the shifts observed in poverty to the exchange rate policy alone.

REFORM BRIEF: REFORMS TO THE MONEY-GROWTH (OR INTEREST RATE) RULE

What are the types of reform encompassed in this family of reforms?

The monetary authority in a given country has a rule for putting money into circulation. It may be a rule setting the growth rate of the money supply. It may also be a rule using money issuance to stabilize the domestic interest rate. Any change to either of these rules is considered a reform. For example, reducing the growth rate of the money supply is a policy reform, so also is a change in the interest-rate-targeting rule.

These reforms must be taken in the context of the impossible trilemma: If the country currently has a fixed exchange rate and no controls on the international flows of capital, then it cannot have independent money-growth or interest-rate-targeting rules.

What is the typical rationale?

The typical rationale for reducing the rate of growth of the money supply revolves around the effort to lower inflationary pressure. This is a standard recommendation of the IMF to developing countries (see Bruno and others 1988). Because money creation is a financing source for a government budget deficit, reducing the rate of growth of the money supply is linked in most developing countries to a reduction in the government budget deficit or an identification of alternative sources of financing.

Changes in the interest-rate-targeting rule usually follow from speculative pressure. If the monetary authority is attempting to stabilize the domestic interest rate at a level below that on the world market and if there is a fixed exchange rate, then capital flows out of the country will make the interest-rate-targeting rule unsustainable. Reform in this instance will require abandoning the unsustainable interest rate target.

How are the reforms typically implemented? What issues emerge?

Reducing the rate of growth of the money supply is typically attained through refusal by the central bank to purchase promissory notes from the government, the departments of which are running fiscal deficits. This refusal forces the government to lower expenditure, increase government revenue, or shift to the foreign financing (and international debt) of fiscal deficits. It is a choice made by the head of state and the ministry of finance. This reform will typically cause a shift in purchasing power between borrower and lender, with those who hold nominal financial assets gaining from the reform.

Interest rate targeting is achieved through government intervention in the bond market (open-market operations). This is, of course, only feasible if there is a deep, functioning bond market and a professional bureaucracy within the central bank or the ministry of finance that can implement such an intervention. The typical rationale for stabilizing interest rates is to reduce the uncertainty involved in financial investment. The use of such an interest-rate-targeting rule normally has the effect of making observed unemployment, wages, or prices more volatile.

Which stakeholders will be affected by the reform positively or negatively?

Monetary policy reform is a macroeconomic reform. Those within the economy who have a say in the size and timing of the reform are typically within the central government and the central bank. If we consider those affected by the reform, all citizens within the economy become stakeholders.

With reform in the money-growth or interest-rate-targeting rule, the initial impact will be observed in domestic interest rates or in government expenditures.

- If the reform leads to higher domestic interest rates (for example, a reduced money-growth rate, or abandoning a lower interest rate target), then the key stakeholders will be the people with nominal financial assets denominated in local currency. Stakeholders who are net borrowers at the prior interest rate will lose if the reform leads to lower inflation (and thus a higher real interest rate) or if they have to roll their loan over into a loan at the higher interest rate. Both outcomes tend to raise the cost of borrowing.
- People who have lent funds denominated in local currency (net savers) will be the winners because of the increased value of their savings.
- Those who rely on government expenditures or transfers will lose to the extent that the government must lower spending to sustain the cuts in money growth.
- If the reform involves a reduction in the volatility of macroeconomic outcomes (for example, adoption of a fixed exchange rate), then Agénor (2002) suggests that the poor will benefit. Investment will be stimulated by the reduction in volatility, thus leading to employment and income. Saving will be reduced, thus lowering the leakage from the economy's circular flow. Risk premia on financial transactions will be reduced. To the extent that the poor participate in these markets, they will benefit.

What is the principal transmission channel through which each stakeholder is affected by the reform? What is the direction and magnitude of impacts, and how do they evolve over time? What are the assumptions?

There are two primary transmission channels for a reduction in the growth of money: (1) the domestic nominal interest rate will rise, and (2) the rate of consumer price inflation will fall. We can think of the first effect as dominant in the short term, while the second effect will dominate in the long

term. We can single out three groups for which this has a differential impact.

- *People with savings in nominal domestic financial assets.* The nominal return on these assets will rise with the reform, and, because of the lower rate of inflation, the purchasing power of the returns on these assets will fall by a rate lower than the previous corresponding rate. Those people with domestic liabilities will face the opposite effects.
- *People with unindexed wages.* These workers, typically not in unions, will benefit from the lower inflation rate. The value of indexation for unionized workers will be reduced.
- *Owners of indebted corporations and workers at such corporations.* This group will normally suffer. Because working capital is more expensive, many of these firms will shut down or reduce operations. Workers in these corporations will become unemployed.

If the monetary authority abandons an interest-rate-targeting rule, this could lead to higher interest rates and lower inflation, with the impacts outlined above. If the abandonment of the interest-rate-targeting rule is money-growth neutral, the only transmission channel available is through the increased volatility of interest rates over time.

- *People with savings in nominal domestic financial assets* will be made worse off if they are risk averse, as the return on their savings will fluctuate more from period to period.
- *People borrowing working capital* will be worse off if they are risk averse. They may benefit from the increased volatility if they are able to take advantage of borrowing during periods of low interest rates.

What is the typical methodology used to analyze the distributional impact through each channel?

The typical methodology used to analyze exchange rate reform will capture the distributional impact of all channels. The introduction of this chapter summarizes five approaches to the measurement of the distributional impact: the before-and-after, cross-country, reduced-form, structural, and full package approaches. The first three provide a measure of the impact of the reform on poverty and income inequality aggregated over all transmission channels. The structural and full package approaches decompose the individual contributions of the transmission channels to poverty and income inequality.

Agénor, Izquierdo, and Fofack (2003b) provided an analysis of the impact of a permanent reduction (by 30 percent) in domestic credit from the central bank to the government. It will be useful to examine the data, programming, and computational demands of this full package approach. There are three distinctive features of the approach.

- The authors constructed a CGE model with a great deal of disaggregation in labor-market choices. They consider five types of goods: tradable goods and nontradable goods from the rural sector, as well as formal (both tradable and public nontradable) and informal goods from the urban sector. There are two types of labor, skilled and unskilled. The unskilled workers are employed in producing all goods, while the skilled workers are employed only in urban formal sector production. Wages and prices adjust to clear labor and commodity markets.
- The authors created a financial sector with numerous financial instruments. Households can hold money, domestic bank deposits, or foreign bank deposits and are always in stock equilibrium and flow equilibrium. Firms can borrow, and the cost of this borrowing is an important component of production costs. A commercial banking system intermediates between savers and borrowers, and interest rates are determined endogenously.
- There are six types of households (corresponding to the five types of labor and a “capitalist” household), and each has a flow of income determined by equilibrium in the model.

In the model, the authors implemented the 30 percent drop in the level of domestic credit from the central bank to the public sector. There are two transmission channels of importance. First, the cutback in credit requires a reduction in public sector spending. Second, the fall in the monetary base causes deflationary pressure. These lead to a rise in the interest rate on loans that, through the demand for working capital, causes a reduction in output. There is also a portfolio reallocation toward domestic and foreign deposits.

This full package model predicts increases in both poverty and inequality in the short term, with the rises in poverty largely eliminated in the long term. Income inequality remains higher in the long run as measured by the Gini coefficient.

The features of this full package model mean that the data demands for the calibration of the model are large. Not only is it necessary to have a social accounting matrix (SAM) of the requisite dimension, but a flow-of-funds matrix for these financial instruments is also needed. In their

paper, Agénor, Izquierdo, and Fofack (2003b) skirted these issues by calibrating a “virtual country,” with poverty indicators derived for “virtual households.” They outlined, however, how the financial CGE could be derived from a SAM and a flow-of-funds matrix for the country in question. They also described how to link the model to a household survey for a specific country to derive more accurate poverty indicators. It is not clear from the paper how difficult these more realistic calibrations will be, but this last step will be necessary if the results are to be made fully comparable to Ferreira and others (2003) or Robilliard, Bourguignon, and Robinson (2001).

Devarajan, Go, and others (2002) provided an analysis for a government expenditure shock that could easily be linked with a monetary expansion, but this is not done explicitly in the paper. In addition, the structure of Ferreira and others (2003) could be used to examine a reform in the money-issuance rule.

What are the main risks? How serious are they?

Monetary reform is a policy that creates systemic risk. While different actors will face different quantitative shocks, large classes of actors will be affected simultaneously and in the same direction. Thus, coping strategies that work well in the context of an idiosyncratic risk will be ineffective.

The most likely risk from a reform that reduces growth in the money supply involves the possible rise in nominal interest rates. This will advantage lenders, disadvantage borrowers, and make the use of working capital more expensive. Also quite likely, at least in the short term, is a reduction in employment and income as marginally profitable firms are forced to scale back production or shut down.

The most likely risk from a reform that stabilizes (rather than increases) interest rates is that the volatility in the economy will be transferred to output and consumer prices. This greater uncertainty will represent a systemic risk, and domestic insurance mechanisms will be ineffective. International borrowing, if possible, will provide a coping strategy.

Monitoring and evaluation

The existence of household surveys before and after a reform offers excellent opportunities to monitor the changes in poverty and income inequality: Sahn (1987); Frankenberg, Smith, and Thomas (2002); and McKenzie (2003b) provide good examples of such an evaluation. In each of these cases, however, it is difficult to attribute the changes in poverty or income

inequality exclusively to monetary policy changes. There were many concurrent macroeconomic and microeconomic policies implemented in Sri Lanka, Indonesia, and Mexico, respectively, and it is imprecise to attribute all the changes observed in poverty to the money supply policy alone.

NOTES

1. Monetary policy can also be expansionary or contractionary through changes in credit availability if the nominal interest rate is unable to adjust.
2. For this purpose, the authors define a financial crisis as a nominal depreciation of at least 25 percent that also represents an increase in the rate of depreciation of at least 10 percent.
3. Three useful sources on the empirical implications of the introduction (or elimination) of capital controls are Johnson and Mitton (2001), Kaplan and Rodrik (2001), and Ariyoshi and others (2000).
4. Kenen (1986) provides a succinct summary of this “adjustment” advice.

BIBLIOGRAPHY

- Agénor, P.-R. 2002. “Macroeconomic Adjustment and the Poor: Analytical Issues and Cross-Country Evidence.” Policy Research Working Paper 2788, World Bank, Washington, DC.
- Agénor, P.-R., and P. Montiel. 1996. *Development Macroeconomics*. Princeton, NJ: Princeton University Press.
- Agénor, P.-R., A. Izquierdo, and H. Fofack. 2003a. “The Integrated Macroeconomic Model for Policy Analysis (IMMPA).” World Bank, Washington, DC. Mimeo.
- . 2003b. “IMMPA: A Quantitative Macroeconomic Framework for the Analysis of Poverty Reduction Strategies.” Policy Research Working Paper 3092, World Bank, Washington, DC.
- Ariyoshi, A., K. Habermeier, B. Laurens, I. Otker-Robe, J. I. Canales-Kriljenko, and A. Kirilenko. 2000. “Country Experiences with the Use and Liberalization of Capital Controls.” IMF Occasional Paper 190, International Monetary Fund, Washington, DC.
- Baldacci, E., L. de Mello, and G. Inchauste. 2002. “Financial Crises, Poverty and Income Distribution.” IMF Working Paper 02/4, International Monetary Fund, Washington, DC.
- Bruno, M., G. di Tella, R. Dornbusch, and S. Fischer. 1988. *Inflation Stabilization*. Cambridge, MA: MIT Press.
- Caramazza, F., and J. Aziz. 1998. “Fixed or Flexible? Getting the Exchange Rate Right in the 1990s.” IMF Economic Issues 13, International Monetary Fund, Washington, DC.

- Datt, G., and M. Ravallion. 2002. "Is India's Economic Growth Leaving the Poor Behind?" Policy Research Working Paper 2846, World Bank, Washington, DC.
- Devarajan, S., and D. S. Go, with F. M. Charlier, A. Dabalén, W. R. Easterly, H. Fofack, J. A. Izquierdo, and L. Koryukin. 2002. "A Macroeconomic Framework for Poverty Reduction Strategy Papers (with an Application to Zambia)." Paper presented at the CSAE 2002 Conference, Understanding Poverty and Growth in Sub-Saharan Africa, The Centre for the Study of African Economies, University of Oxford, Oxford, 18–19 March.
- Easterly, W. R. 2001. "The Lost Decades: Explaining Developing Countries' Stagnation 1980–1998." *Journal of Economic Growth*, 6 (2):135–157.
- Ferreira, F. H. G., P. G. Leite, L. A. Pereira da Silva, and P. Picchetti. 2003. "Aggregate Shocks and Income Distribution: Can Macro-Micro Models Help Identify Winners and Losers from a Devaluation?" World Bank, Washington, DC. Mimeo.
- Flood, R. P., and P. M. Garber. 1984. "Collapsing Exchange Rate Regimes: Some Linear Examples." *Journal of International Economics* 17 (1–2): 1–13.
- Frankenberg, E., J. P. Smith, and D. Thomas. 2003. "Economic Shocks, Wealth and Welfare." University of California, Institute for Social Science Research, *California Center for Population Research On-line Working Paper Series*, California Center for Population Research, Los Angeles. <http://repositories.cdlib.org/ccpr/olwp/ccpr-009-03/>.
- Friedman, J., and J. Levinsohn. 2002. "The Distributional Impacts of Indonesia's Financial Crisis on Household Welfare: A 'Rapid Response' Methodology." *World Bank Economic Review* 16 (3): 397–424.
- Glewwe, P., and G. Hall. 1998. "Are Some Groups More Vulnerable to Macroeconomic Shocks than Others? Hypothesis Tests Based on Panel Data from Peru." *Journal of Development Economics* 56 (1): 181–206.
- Hossain, S. M. 2003. "Poverty and Social Impact Analysis: A Suggested Framework." IMF Working Paper 03/195, International Monetary Fund, Washington, DC.
- Johnson, S., and T. Mitton. 2001. "Cronyism and Capital Controls: Evidence from Malaysia." NBER Working Paper 8521, National Bureau of Economic Research, Cambridge, MA.
- Kaplan, E., and D. Rodrik. 2001. "Did the Malaysian Capital Controls Work?" NBER Working Paper 8142, National Bureau of Economic Research, Cambridge, MA.
- Kenen, P. B. 1986. "Financing, Adjustment and the International Monetary Fund." *Brookings Studies in International Economics*. Washington, DC: Brookings Institution.
- Krueger, A. O. 2002. "Transcript of a Press Briefing (Teleconference) on Argentina." 11 January 2002. International Monetary Fund, External Relations Department. www.imf.org/external/np/tr/2002/tr020111.htm.
- Levinsohn, J., S. Berry, and J. Friedman. 2001. "Impacts of the Indonesian Economic Crisis: Price Changes and the Poor." University of Michigan, Department of Economics, Ann Arbor, MI. Mimeo.

- McKenzie, D. J. 2003a. "The Consumer Response to the Mexican Peso Crisis." Stanford University, Department of Economics, Stanford, CA. Mimeo.
- . 2003b. "How Do Households Cope with Aggregate Shocks? Evidence from the Mexican Peso Crisis." *World Development Report*, 31 (7):1179–1199.
- Obstfeld, M., and K. S. Rogoff. 1996. *Foundations of International Macroeconomics*. Cambridge, MA: MIT Press.
- Pangestu, M. 2001. "The Social Impact of Globalization in Southeast Asia." OECD Development Centre Technical Paper 187, Organisation for Economic Co-operation and Development, Paris.
- Robilliard, A. -S., F. Bourguignon, and S. Robinson. 2001. "Crisis and Income Distribution: A Micro-Macro Model for Indonesia." World Bank, Washington, DC. Mimeo.
- Sahn, D. E. 1987. "Changes in the Living Standards of the Poor in Sri Lanka during a Period of Macroeconomic Restructuring." *World Development* 15 (6): 809–30.
- Sahn, D. E., P. A. Dorosh, and S. D. Younger. 1997. *Structural Adjustment Reconsidered: Economic Policy and Poverty in Africa*. Cambridge, UK: Cambridge University Press.
- Smith, J. P., D. Thomas, E. Frankenberg, K. Beegle, and G. Teruel. 2000. "Wages, Employment and Economic Shocks: Evidence from Indonesia." *Journal of Population Economics* 15 (1): 161–93.

Utility Reforms

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Since 1990, many countries have undergone major reforms to their utility sectors, aimed at reducing the fiscal burden of financing public services, and improving the performance of dysfunctional utility operators. Reforms often have been successful in improving government finances, turning around enterprise performance, and expanding access to services. However, reforms have often also involved major tariff increases for essential services, substantial layoffs among public sector employees, and huge asset transfers. As a result, utility reform has proven to be politically and socially controversial, and is strongly opposed by some constituencies. Early reforms often failed to take the full social consequences of reform into account and, therefore, did not incorporate policies to mitigate these effects and improve the overall distribution of benefits across society. This underlines the importance of undertaking Poverty and Social Impact Analysis (PSIA) in advance of such reform measures. Moreover, during the last decade, considerable experience has accumulated on how to improve the design and distributional impact of utility reforms, suggesting that future reform efforts are better placed to balance fiscal and efficiency gains with adequate social safeguards.

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This chapter is concerned with the utility services, water, electricity, gas, and telecommunications. These sectors have been grouped together because they present a common set of economic and political issues. The transportation sector is not explicitly included in the analysis, although some of the reform issues may be similar. The chapter is organized as follows:

- **Types of Reform** characterizes the main types of reforms that are typically undertaken in the utilities, and the ways in which they are usually combined in each sector.
- **Rationale for Reform** explains the contrasting macroeconomic and microeconomic rationales for undertaking utilities reform and their differing impacts on the design of reforms.
- **Typical Direction, Magnitude, and Evolution of Impacts** documents the impacts of utilities reform along seven key dimensions: employment, prices, quality, access, fiscal flows, asset ownership, and entry conditions.
- **Stakeholders in Reform Process** identifies the key stakeholders to any utility reform, including workers, consumers, owners, competitors, and the state.
- **Mitigation of Reform Impacts and Risks** describes mitigating measures that can be taken to attenuate negative impacts on any of the stakeholder groups.
- **Tools for Measuring Social and Distributional Impacts** describes the data needed to evaluate the social impact of utility reforms, and describes rapid diagnostic methods, as well as more sophisticated quantitative and qualitative analysis techniques.

TYPES OF REFORM

The utility sectors have been subject to a very broad range of reform measures, which can nonetheless conceptually be broken down into the following building blocks:

Public sector reform

Historically, utility service provision has tended to be institutionally embedded within the state, whether at the central or municipal level. This has led to extensive politicization of service provision, also known as clientelism, leading to artificially depressed prices, overemployment, political manipulation of investment priorities, and associated construction contracts, as well as a lack of managerial autonomy, technical competence, and

stability over time. To minimize these undesirable effects, there is growing recognition of the need to increase the managerial and financial autonomy of utilities relative to the state. A number of autonomy-enhancing measures can be taken within the context of public sector service provision. These include incorporation of the utility, accounting separation from public administration, signature of performance contracts with the executive, governance reforms aimed at increasing the independence of the board, and changes in the legal status of the enterprise (for example, by conversion to a public limited company that is freed from public sector procurement, employment, and investment regulations). Such reforms have become less commonplace since the growth of private sector participation (PSP) in the 1990s. However, they increasingly are being considered again in sectors and countries where private sector participation may not be a feasible option in the medium term.

Private sector participation

PSP is one of the deepest institutional reforms that can be undertaken on public utilities, and the one that offers the potential of providing the greatest degree of insulation from political interference in the day-to-day management of the utilities. PSP can itself take a wide variety of contractual forms, depending on the extent of responsibilities and associated risks that are transferred from the public to the private sector (Table 3.1). At one end of the spectrum, it may entail no more than subcontracting-specific operational functions, while at the other end of the spectrum, it may involve a full transfer of asset ownership. The appropriate form of PSP will be highly dependent on the sectoral and country-specific context. A key consideration is the extent to which the utility revenue stream and economic and political conditions in the country present a suitable environment for supporting private sector investment. The wide variety of forms of PSP make it inappropriate to make generalizations about its likely social and distributional effects, because the nature and depth of the impacts will depend on the specific form of PSP that is selected in any particular case.

Regulatory reform

Regulatory reform essentially aims to strengthen the framework of accountability for utility operators. Historically, public utilities were assumed to be self-regulating because of their supposed public interest focus. However, in practice this often led to the poacher-gamekeeper problem with low accountability leading to poor performance. Regula-

TABLE 3.1 Spectrum of Options for Private Sector Participation

<i>Option</i>	<i>Asset Ownership</i>	<i>Investment</i>	<i>Revenue collection</i>	<i>Management</i>	<i>Operation</i>	<i>Typical duration</i>
Service contract	Public	Public	Public	Public	Public and private	1–2 years
Management contract	Public	Public	Public	Private	Private	3–5 years
Lease or affermage	Public	Public and private	Private	Private	Private	8–15 years
Concession	Public	Private	Private	Private	Private	25–30 years
Build-operate-transfer (BOT)	Private and public	Private	Private	Private	Private	20–30 years
Full or partial divestiture	Private	Private	Private	Private	Private	Indefinite

Source: Authors.

tory reform therefore requires an explicit legal framework defining accountability, and often entails institutional separation of the regulatory function from both the utility and the state to create an independent watchdog. The two most central components of any regulatory reform are the mechanisms introduced for regulating tariffs and quality of service. Tariff regulation typically involves the introduction of rules requiring tariffs to reflect the efficient costs of service provision, with adjustment mechanisms to reflect changes in these costs over time. Quality regulation typically defines specific quality targets, sets up a system for monitoring quality performance, and establishes sanctions for performance deficiencies. While regulatory reform is an absolute necessity when one of the more complete forms of PSP is introduced, it also remains relevant as a tool for improving the performance of public utilities.

Sector restructuring

This can take the form of horizontal or vertical restructuring. Under vertical restructuring, institutional responsibilities for different stages in the production process are changed. For example, instead of having a single electric utility responsible for generation, transmission, and distribution, these functions are allocated to three separate utilities. Under horizontal restructuring, the number of units responsible for a given stage of service provision is reduced or (more typically) increased. For example, instead of having a single national company managing all electric generation

assets, these are broken down into subsets and allocated to four separate companies. Centralization and (more typically) decentralization reforms are a special case of horizontal restructuring, where the geographical boundaries of service provision are altered to reflect the structure of different tiers of government.

Market liberalization

Historically, most utility services have typically been provided under legal or de facto monopolies. In some subsectors, such as water and electricity distribution, this is inevitable because of the natural monopoly nature of the infrastructure networks. However, there has been growing recognition that in other subsectors, such as electricity generation and long-distance telephone calls, competition may often be both feasible and desirable. This has led to reforms that gradually lift legal monopoly restrictions allowing competition to emerge, often accompanied by the creation of a broader antitrust framework for the economy. Market liberalization is often preceded by sector restructuring measures designed to separate the components of the production chain most susceptible to competition, and to break up any market power that may currently exist in those activities. In the case of the water sector, liberalization may also refer to the legal recognition of alternative, often informal and small-scale providers, which provide competing services at the margins of the existing network distribution system.

In most cases, a number of these measures will be packaged together simultaneously, although the typical reform package differs significantly across the utility sectors.

Energy sector

In the electricity sector, it is typical to restructure the sector along vertical lines to separate generation, transmission, and distribution activities. In generation, the market is usually liberalized to allow entry of new independent power producers, while existing generation assets may be privatized sometimes following horizontal restructuring measures designed to increase the number of market players. Furthermore, the introduction of competition entails the creation of complex wholesale market institutions. Distribution, and to a lesser extent transmission, are sometimes privatized by asset sale or concession, or sometimes reformed within the public sector. The regulatory framework is typically established through a national law, and national regulatory agencies are commonplace, although

distribution is sometimes regulated at the state or provincial level. In the gas sector, vertical restructuring is commonplace, with transportation and distribution functions subject to a national regulatory framework.

Telecom sector

In the telecom sector, PSP has become the norm, often entailing the sale of the national monopoly provider. The long-distance market is typically liberalized, although a transition period of exclusivity, or sometimes duopoly, may be granted. In parallel, licenses for cellular telephony are usually bid out to private operators. The regulatory framework is invariably established through a telecommunications law leading to the establishment of a national regulatory agency, that sometimes shares responsibility with the antitrust agency.

Water sector

In the water sector, it is increasingly typical for utilities to be decentralized to the state (provincial) or municipal level, depending on the political structure of the country (unitary or federal). Public sector provision remains the norm in the vast majority of cases, and some measures may be taken to reform utilities within that institutional context. While there have been numerous cases of PSP, it remains comparatively unusual overall and rarely, if ever, involves transfer of ownership. Significant use has been made of various contractual forms of PSP, including management contracts, lease contracts (mainly in Africa), concessions (mainly in Latin America), and Build-Operate-Transfer schemes as a vehicle for financing new drinking water and wastewater treatment plants. In many cases regulation remains implicit or is incorporated into the contract for PSP. Regulatory agencies take a variety of forms, including municipal, state level, or national entities.

RATIONALE FOR REFORM

There are essentially two broad motivations for utility reforms.

Macroeconomic

From a macroeconomic perspective, utilities reform can be seen primarily as a means to improve public finances. Utilities often constitute some of the state's most valuable assets, occasionally referred to as crown jewels. Nevertheless, their historic mode of operation within the public sector has tended to create a large fiscal drain on the state, because of the

transfer of large operational and capital subsidies. For both of these reasons, privatization and some other forms of sector reform can become particularly attractive in times of fiscal austerity. On the other hand, in some countries, macroeconomic concerns about inflation can present an impediment for the achievement of financially sustainable tariffs.

Microeconomic

From a microeconomic perspective, reform can be seen as a means to improve sector performance, in particular by strengthening efficiency incentives, improving accountability for the quality of service, and increasing the availability of funds to finance service expansion. In these cases, reform is designed primarily to address the deficiencies observed in the historic performance on public utilities, with an emphasis on sector restructuring, institutional transformation, liberalization, and regulation.

Economists have long argued that maximization of efficiency, not government revenues, should be the goal of sector reform. Nevertheless, in practice, it is often the case that fiscal constraints provide the immediate pressure for reform, and that the Ministry of Finance plays a central reform in the reform process. These two reform motivations tend to conflict with one another, and the political economy of these conflicts substantially shapes the way in which such reforms are carried out.

In a macroeconomically motivated reform, the paramount objective is to maximize net fiscal flows. This tends to create pressure to create attractive transactions, by reducing competition, keeping regulation light, and minimizing investment obligations. Conversely, in a microeconomically motivated reform, the central aim is to improve sector performance. This requires a much stronger focus on sector restructuring, regulatory reform, and market liberalization, which may reduce short-term sale revenues but substantially improves the medium-term performance for the sector, with major greater impacts on consumer welfare.

TYPICAL DIRECTION, MAGNITUDE, AND EVOLUTION OF IMPACTS

The various types of utility reform described above affect a number of key variables with important distributional implications.

Employment and wages

Public utilities have traditionally been characterized by labor hoarding; therefore any reform measure designed to promote efficiency is likely to lead to an immediate and often significant reduction in employment. The

evidence indicates that workforce reductions of the order of 30–50 percent can be typical. Although this is a substantial labor market shock to one sector of the economy, as a whole, infrastructure services rarely employ more than 1–2 percent of the workforce, so the overall impact on employment may be much more modest. The contribution of infrastructure services to formal employment, however, may be significantly higher than their contribution to overall employment, depending on the structure of the economy.

While the immediate employment effects are typically negative, these may be offset to some degree in the medium term, either by increased employment among subcontractors to the utility (as services are contracted out), or because of faster sectoral growth triggered by the reforms (particularly in sectors such as telecommunications, where liberalization often triggers rapid market expansion).

For workers who are laid off, a key determinant of welfare will be the terms of the redundancy package, including whether the layoff is voluntary or involuntary. It is also important to consider their reemployment prospects with reference to the utility sector and in terms of the broader employment situation in the economy. Although some workers may be reemployed by subcontractors to the utility, their terms and conditions of employment may not be as favorable as when they were employed directly by the utility.

For workers who remain in the industry, pay and work conditions can also be expected to change. Where PSP is implemented, this may lead to a higher dispersion of salaries and more flexible labor contracts.

Prices of services

Reforms affect both the average level of tariffs and the tariff structure. Regarding tariff levels, the impacts can be major, although the direction of change is ambiguous and may evolve over time. Where tariffs have historically been kept artificially low for political reasons, reform will typically necessitate tariff increases to restore the financial sustainability of the utility. This situation is most typical in the water sector, and sometimes in the electricity sector, where the need for tariff increases may be particularly large (in excess of 100 percent in many cases). Where tariffs have historically covered costs, but enterprises have been inefficiently run, reform will probably lead to tariff reductions as consumers benefit from improved efficiency. This situation is more typical in subsectors such as electricity and telephony, which have a history of greater commercial management within the public sector and where some degree of competition may be possible.

Where tariffs have been kept historically low, and enterprises are also inefficient, initial tariff increases may eventually give way to tariff reductions as regulatory reform helps to improve efficiency. Nonetheless, in sectors where large investment programs need to be financed, even large efficiency gains may not liberate enough resources to finance the necessary investments, leading to tariff increases in spite of efficiency improvements.

Substantial changes in tariff structures are often necessary because of the fact that utilities have historically tended to cross-subsidize either among services provided by a given utility or among different consumers of the same service. For example, in many countries public telephone monopolies have tended to cross-subsidize between local and long-distance calls, charging below cost for the former and above cost for the latter. Again, many utilities discriminate between residential and nonresidential customers, charging substantially higher prices to the latter group although they may be less costly to serve. Such cross-subsidies can be perceived as unfair and may significantly distort economic decisions, leading larger industries to self-supply even when it may be more economically efficient to connect to the public network. In either case, they are not sustainable in the context of a competitive market because customers paying above cost to the incumbent utility will be open to capture by competitors.

Quality of services

Deficient quality of service provided by utilities imposes major coping costs on consumers. These usually take the form of investments in alternative supplies (water storage tanks, water treatment equipment, electricity generators, candles, and batteries) to deal with supply interruptions and inadequacies. Where consumers are not able to mitigate the consequences of inadequate supplies, they may also suffer from lost production or reduced household welfare.

Successful reforms can potentially have a major impact on quality of service parameters, with consequent improvements in economic productivity and quality of life. Improvements that are typically observed following utility reform include greater service continuity, reduced service interruptions, better customer service, more stable pressure or voltage, more accurate billing, and shortened waiting times for new connections.

Access to services

To the extent that reforms improve the availability of investment finance for utility operators, they should pave the way for more rapid

expansion of services. However, operators will only voluntarily expand into market segments where they face a clear commercial incentive to do so. Underserved market segments are often associated with low-income neighborhoods, or isolated rural communities, that often present a commercially unattractive combination of low demand and high cost of service provision. In these cases, reforms will need to incorporate special policy measures to encourage service expansion in these areas. Potential instruments include universal service obligations, connection targets, connection subsidies, amending regulations to allow for the use of low-cost technologies, and providing financing facilities to amortize connection costs.

Asset ownership

Some types of reform can lead to major changes in ownership. Given the scale and value of the assets concerned, this can have a significant effect on the ownership structure of the economy. The two key changes in ownership occur in decentralization reforms, where assets are transferred to subnational tiers of government, and in divestitures, where assets are sold to the private sector.

In the case of privatization, the scale of the transaction, as well as its detailed technical design, and choice of sale mechanism can substantially affect the nature of the subsequent private owner and the degree of concentration of ownership. Because of limited development of stock markets, governments have tended to sell directly to private investors via auction methods. Such transactions tend to be dominated by multinational companies. However, by keeping transactions relatively small and reducing capital requirements, governments can substantially increase participation of the local private sector. Restrictions on cross-ownership within restructured industries can also prevent a single multinational firm from acquiring a dominant position within a given country.

In some cases, broader ownership of assets can be achieved through stock market flotation with special facilities for small investors, or where that is not possible through voucher schemes (as in Eastern Europe) or pension funds (as in Bolivia). However, the application of voucher methods in Eastern Europe has generally been disappointing. It led to insiders (managers and workers) or privatization investment funds owning controlling stakes in privatized firms. In the process, it also impeded the restructuring required for better management of utilities. In some cases, managers sold assets for personal gain, at the expense of smaller shareholders. As a result, some have advocated a compromise: limit voucher

privatization to minority stakes in firms after selling a controlling majority share to a strategic investor.

Fiscal flows

Utility reform can have a major positive impact on public finances. In this context, it is important to distinguish between one-time windfall gains and ongoing fiscal flows. Where asset sales are involved, there may be major fiscal windfalls in terms of sale revenues. Although of lesser financial importance, concession contracts can also sometimes be designed to generate a canon or royalty payment. A key issue is the treatment of the historic debt of public utilities. This may either be written off against privatization revenues, transferred to the balance sheet of the private operator, or reabsorbed into the public sector balance sheet.

Although windfall gains can be substantial, experience suggests that the positive impact from improved ongoing net fiscal flows to the utility sector can be at least as large. Such improvements in ongoing net fiscal flows can be expected from any type of reform that facilitates the achievement of financially sustainable tariffs for the utility service, thereby allowing state subsidies to be substantially reduced or even eliminated. This fiscal benefit may be partially offset by the need to provide publicly funded subsidies to cushion the most vulnerable households from the tariff increases that may be associated with utilities reform. Nevertheless, a targeted social subsidy of this kind tends to cost only a fraction of untargeted historic supply-side subsidies to these sectors. Another offsetting factor arises when governments decide to privatize highly profitable state utilities. In this case, the fiscal benefits mentioned above must be offset against the loss of dividend payments from the utility that previously accrued to the state.

After utilities become commercially viable, governments often start to regard them as an interesting tax base, given their broad reach and rel-

TABLE 3.2 Summary of Utilities Privatization Revenues, 1990–99

<i>US\$1999m</i>	<i>East Asia and Pacific</i>	<i>Europe and Central Asia</i>	<i>Latin America and Caribbean</i>	<i>South Asia and Sub-Saharan Africa</i>	<i>Total</i>
Power	522	968	3,900	151	5,541
Telecom	2,600	2,300	411	0	5,311
Total	3,122	3,268	4,311	151	10,852

Source: World Bank 2001.

atively low price elasticity. As a result, they may begin to generate substantial tax revenues in the medium term.

The ultimate distributional impact of these changes in net fiscal flows will depend on how the government chooses to use the additional fiscal space created by utilities reform, whether to reduce the stock of public debt, or increase public expenditure on social programs or other areas of public initiative.

Summary overview

Table 3.3 summarizes the extent to which each of the five components of utilities reform identified at the outset of this chapter can be expected to yield impacts along each of the channels identified in the discussion above. The table illustrates that each of the different types of utility reform can have a very broad range of impacts.

Furthermore, the annexes to this chapter provide a comprehensive summary overview of the literature on the impacts of utilities reform, comprising 46 country studies (Annex 1) and 13 cross-country studies (Annex 2). These annexes indicate which of the six channels of impact described above are covered in each of the studies, and also briefly summarize the methodology used according to the typology developed below. The annexes illustrate how difficult it is to make generalizations about the magnitude and direction of impacts of any specific type of reform, without reference to specific country and sector conditions, as well as the detailed design of the reforms themselves. All of the studies cited in these tables are fully referenced in the bibliography to this chapter.

STAKEHOLDERS IN REFORM PROCESS

Utility reform processes affect a number of stakeholder groups with disparate and often conflicting interests. Moreover, each group presents a certain amount of internal heterogeneity that complicates the characterization of its interests.

Consumers

Consumers represent by far the largest group, although they are often the most diffuse and least organized of all the stakeholders. Furthermore, consumers include a number of different groups with very distinct, and potentially conflicting, interests.

TABLE 3.3 Summary of Expected Impacts of Different Types of Utility Reform

	<i>Employment and wages</i>	<i>Price of service</i>	<i>Quality of service</i>	<i>Access to service</i>	<i>Asset ownership</i>	<i>Fiscal flows</i>	<i>Entry conditions</i>
Public sector reform	Employment <i>may</i> ^a fall because of increased pressure for efficiency.	Prices <i>may</i> adjust upward or downward toward efficient cost-reflective levels.	Quality <i>may</i> improve because of better management.	Access <i>may</i> improve because of improved finances.	n.a.	Subsidies to the sector <i>may</i> be reduced.	n.a.
Private sector participation	Employment <i>should</i> ^b fall because of increased pressure for efficiency.	Prices <i>should</i> adjust upward or downward toward efficient cost-reflective levels.	Quality <i>may</i> improve because of better management.	Access <i>may</i> improve because of improved finances.	Asset sales increase private ownership, concentration depends on design details.	Subsidies to the sector <i>should</i> be reduced, sale revenues <i>may</i> be large, and tax revenues <i>may</i> follow thereafter.	n.a.
Regulatory reform	Employment <i>may</i> fall because of increased pressure for efficiency.	Prices <i>should</i> adjust upward or downward toward efficient cost-reflective levels.	Quality <i>should</i> improve because of increased oversight and accountability.	Access <i>should</i> improve because of increased oversight and accountability.	n.a.	Subsidies to the sector <i>should</i> be reduced as tariffs converge to cost-reflective levels.	Regulatory decisions <i>may</i> affect terms of competition between providers. (continued)

TABLE 3.3 Summary of Expected Impacts of Different Types of Utility Reform (Continued)

	<i>Employment and wages</i>	<i>Price of service</i>	<i>Quality of service</i>	<i>Access to service</i>	<i>Asset ownership</i>	<i>Fiscal flows</i>	<i>Entry conditions</i>
Sector restructuring	Ambiguous effects on employment.	n.a.	n.a.	n.a.	Decentralization transfers assets to subnational governments.	Responsibility for subsidization <i>may</i> shift to subnational government.	n.a.
Market liberalization	Employment <i>may</i> rise because of sector growth, but wages <i>may</i> fall because of competition.	Prices <i>should</i> fall because of competitive pressures.	Quality <i>should</i> improve as a result of competition.	Access <i>should</i> improve because of entry of new providers, and wider consumer choice.	Private ownership increases because of entry of new operators.	Entry fees may generate revenues, and tax revenues <i>should</i> increase.	Liberalization <i>should</i> open up market for entry of new players.

Source: Authors.

Note: n.a. = not applicable.

a *may* indicates possible impact.

b *should* indicates probable impact.

The first distinction that must be made within the customer category is between current consumers and potential consumers who are not yet served by the utility. It is also relevant to distinguish what is often an important third category of customers, namely, those who receive service through clandestine connections.

Potential. Potential customers are those who do not yet receive utility service, but are located in areas where expansion may be possible in the medium term. Most of the poorest members of society tend to fall into this stakeholder group, and they may often lack the political organization to make their voices heard. This group will not be immediately concerned with how any reform affects the price and quality of current utility services. In many cases, these customers depend on alternative supplies that can sometimes be more costly than those provided by the utility, and offer a much less convenient and reliable service. From their perspective, the key element of the reform will be the potential to accelerate service expansion, which can have a major impact on the household welfare of beneficiaries. They may also be concerned about reforms that affect the cost, quality, and availability of the alternative services on which they often have to rely. Within this group, a further distinction might be drawn between urban and rural customers. Only the former typically have anything to gain from utilities reform, because this seldom affects service availability in rural areas, unless very specific policy mechanisms are included for this purpose. However, there is a danger that rural services will be overlooked in the drive to improve urban service provision.

Current (legitimate). The utility's current customers will be concerned primarily about changes in the price and quality of utility services and the extent to which these will be subject to adequate regulatory protection. In utilities that provide low cost but highly deficient service, existing customers may well be willing to pay a somewhat higher price for real service improvement. However, because of prevailing skepticism about the utility, this willingness to pay may often materialize only after the service quality improvement has actually been brought about, raising delicate issues regarding the timing of tariff increases. In cases where utilities provide relatively good services at a cheap price, existing consumers may feel that they can only lose out from any proposed reform to the sector. Nevertheless, because any given utility service only represents a small share of the household budget, the impact of price increases on overall household welfare may not be large.

Current (clandestine). Most reform processes tend to strengthen incentives for commercial management of utilities. Therefore, one of the most immediate impacts of reform is a crackdown on clandestine connections, as well as a stricter enforcement of payment obligations and service disconnection for legitimate customers who have fallen behind with their payments. For these clandestine customers, who are often paying an effective tariff close to zero, the tariff increase resulting from reform is even larger than for legitimate customers. Nevertheless, clandestine customers do stand to gain from being formally incorporated into the utility's cadastre. First, service quality may improve more for clandestine than for legitimate customers, because the technical deficiencies of illegal connections often jeopardize service quality. Second, in some cases, clandestine customers pay substantial sums to intermediaries to secure access. Thus, the effective tariff increase they experience may not be as large as appears at first sight. Finally, acquiring formal status as a utility customer can confer a broader range of benefits, in particular facilitating applications for bank accounts, identity cards, and legal tenure documents. Notwithstanding these offsetting benefits, this is undoubtedly a delicate issue that must be handled carefully to promote the formation of a payment culture without major recriminations.

A second critical distinction that can be made within the category of current customers is between residential and nonresidential (that is, commercial and industrial) users.

Residential. In addition to the general customer resistance to tariff increases described above, residential customers may also be concerned that they will be adversely affected by the removal of cross-subsidies that may have favored them at the expense of nonresidential customers. Within the class of residential customers, there will also be conflicts of interest between small and large consumers, because changes to tariff structures that affect the size of monthly fixed charges, or the step structure of block tariffs, can significantly affect the distribution of welfare between these two groups.

Nonresidential. Nonresidential customers may take a more favorable view toward reform than residential customers. As mentioned above, they potentially stand to benefit from the removal of cross-subsidies that have traditionally penalized them and, in some cases, forced them to seek alternatives to utility supply. Furthermore, nonresidential customers potentially have the most to gain from market liberalization.

Workers

Employees tend to be one of the best organized and most vocal stakeholder groups, because of the relatively high degree of unionization typically found in utility workforces. Unions tend to be strong opponents of reform from the outset, because of their concern about layoffs. Once reform processes are under way, their interventions will focus on improving severance conditions for those laid off and ensuring that pay and conditions of employment do not deteriorate for those who are retained. A potential upside that arises in some privatization processes is the distribution of utility shares among retained employees.

Finally, beyond the current utility workforce, reforms that lead to market liberalization or increased reliance on subcontracting may create new opportunities for workers in upstream supply industries or in competitor companies. Furthermore, to the extent that the reform enhances the dynamism of the sector, new job opportunities may be created. However, these potential beneficiaries are highly diffuse and disorganized, and therefore they do not often form part of stakeholder discussions.

Competitors

Reforms that affect the extent and conditions of market liberalization will also be of major concern to the utility's potential competitors. In general, competitors stand to gain from utility reforms. However, they will be concerned to establish a level playing field for competition, given that the former state monopoly incumbent may continue to exercise a dominant position and enjoy substantial competitive advantages.

In addition to traditional competitors, utilities may often also compete with small informal providers of substitute services, particularly in peri-urban areas where utility networks may be absent or deficient. These providers may often be forced to operate in the shadow of illegality, and reforms may either improve or, more typically, worsen this situation.

Owners

In reforms that involve transfer of asset ownership, the interests of current and future owners need to be carefully considered.

In the case of PSP entailing full asset sale, the citizenry at large rightly perceives itself as being the ultimate owner of the public utility assets. As a result, the general public may raise concerns about whether the family's assets are being sold at a fair price. There may also be considerable sensi-

tivity to transferring ownership of such strategic assets to foreign companies, or concentrating it in the hands of the local elite. In addition, the public may be concerned that the transaction be carried out with adequate transparency to avoid the proceeds from being diverted by corruption. At the same time, the potential new private sector owners will be concerned to have the transaction structured in a way that is favorable to them, pressuring for higher prices, laxer regulations, weaker competition, and fewer investment obligations.

In cases of decentralization, where asset ownership is transferred between different tiers of the state, different levels of the government will have concerns about the fair allocation of assets, as well as associated historic liabilities (both explicit and contingent). An additional concern is the extent to which decentralization of responsibility for service provision will be matched by the necessary increase in fiscal transfers to support the cost of operating, maintaining, and expanding services, where relevant.

State

Aside from its role as owner of assets, the state usually holds the ultimate constitutional responsibility for ensuring that utility services are adequately provided in any particular country. In most reform settings, the state is distancing itself from service provision, whether by delegating to a corporate public entity or contracting with the private sector. As a result, the state is in some sense reducing its direct responsibilities for maintaining service provision, and greatly easing its financial burden. However, by the same token, it is also reducing its degree of control over a highly strategic and politically sensitive sector. This step can therefore generate very ambivalent reactions from the public bureaucracy. The Ministry of Finance may see it as a very positive step, while the Sector Ministry may present a more ambiguous range of responses, depending on whether it is primarily relieved to be rid of the responsibility, or feels that its political influence is being threatened or reduced.

Summary of stakeholder impacts

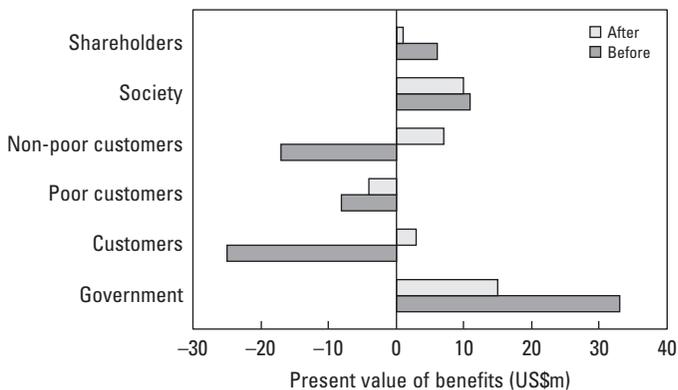
Table 3.4 summarizes the extent to which each of the stakeholder groups stands to gain or lose from impacts passing through each of the transmission channels identified in the preceding section, namely, employment and wages, price of service, quality of service, access to service, asset ownership, fiscal flows, and entry conditions. The table clearly identifies that each stakeholder group is concerned about a specific subset of the

BOX 3.1 Ex Ante Simulation of Winners and Losers from Reform

In most utility transactions, financial advisers use models to examine the viability of the utility and the expected fiscal gains from the transaction. While important, this perspective overlooks the issue of how benefits are distributed across different stakeholder groups, and hence the ultimate equity and political acceptability of the reform. To address these concerns, the World Bank developed a model to estimate the net benefits of reform to each stakeholder group and the overall net social benefits of the transaction.

This model was applied to three water utilities based in some of the smaller Argentine provinces that were developing a concession arrangement with the private sector. The draft concession documents were used as the basis to simulate how the reform would affect each of the stakeholder groups. In each case, the analysis indicated that the reforms would benefit society with economic rates of return in the range of 24 to 54 percent, reflecting the gross inefficiency of the existing utilities. However, in all cases, the proposed concession documents were found to lead to a highly inequitable distribution of benefits, with the government generally being the major beneficiary at the expense of consumers. Indeed, in two of the three utilities, it was found that consumers would actually lose out from the proposed reforms, although they were beneficial for society as a whole. This was as a result of high canon payments to the government, high connection costs for new customers, and tariff structures that did not provide adequate incentives for service expansion.

After seeing the results of the simulations (summarized in red in the figure), local government officials were motivated to modify the design of the contract by reducing connection targets, using part of the transaction revenues to subsidize new connections, reforming the tariff structures, and slowing the pace of new investments in sewage treatment. As a result, the distribution of benefits became significantly more equitable (see green columns in the figure), producing a more balanced and probably more robust contract.



Source: van den Berg, 2000.

TABLE 3.4 Summary of Key Concerns of Different Stakeholder Groups

	<i>Employment</i>	<i>Price of service</i>	<i>Quality of service</i>	<i>Access to service</i>	<i>Asset ownership</i>	<i>Fiscal flows</i>	<i>Entry conditions</i>
Customers	n.a.	<p>Current customers stand to <i>lose</i> from tariff increases or from paying tariffs for the first time.</p> <p>Residential customers stand to <i>lose</i> from removal of cross-subsidies.</p> <p>Nonresidential customers stand to <i>gain</i> from removal of cross-subsidies and arrival of competition.</p>	Current customers stand to <i>gain</i> from quality improvements.	Potential customers stand to <i>gain</i> from acceleration in access, stand to <i>lose</i> from restrictions to alternative suppliers.	n.a.	n.a.	n.a.
Workers	Stand to <i>lose</i> from layoffs or	n.a.	n.a.	n.a.	Stand to <i>gain</i> from share	n.a.	n.a.

Competitors	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	Stand to <i>gain</i> from new business opportunities.
Owners	reduced pay and conditions of employment.	Private owners stand to <i>gain</i> higher profits from lower wage bills.	Private owners stand to <i>gain</i> higher profits from price increases	n.a.	n.a.	ownership in certain forms of PSP.	General public stands to <i>lose</i> from sale of public assets or <i>gain</i> from democratization of ownership.
State	n.a.	Sector Ministry stands to <i>gain</i> from reduced responsibility but to <i>lose</i> direct political control.	Sector Ministry stands to <i>gain</i> from reduced responsibility but to <i>lose</i> direct political control.	Sector Ministry stands to <i>gain</i> from reduced responsibility but to <i>lose</i> direct political control.	n.a.	Ministry of Finance stands to <i>gain</i> from improved fiscal flows.	n.a.

Source: Authors.

Note: n.a. = not applicable; PSP = private sector participation.

impacts caused by utilities reform, and may be positively or negatively affected depending on the direction of the change. Box 3.1 provides a concrete example of how simulation techniques can be used to improve the distribution of reform benefits across stakeholder groups.

MITIGATION OF REFORM IMPACTS AND RISKS

When errors are made in the design of a reform, the impacts described in the preceding section can become large, unleashing political forces strong enough to derail the entire process or even to reverse it once it has been implemented. Labor unions can (and have) mobilized major strikes to prevent the sale of the relevant public enterprise and associated redundancies and changes in working conditions. Communities around the world can (and often have) responded with organized (and sometimes violent) civil disturbances to substantial tariff increases, mandatory connection charges, formalization of clandestine customers, supply interruptions, and plans to sell public enterprises to foreign investors.

These examples illustrate that utility reform is a risky process and that significant attention should be paid to the incorporation of measures to mitigate negative impacts on different stakeholder groups and ensure that the positive impacts of reform are fairly distributed between them.

Indeed, it is important to understand that the distribution of benefits among stakeholder groups is no accident, but a fairly predictable consequence of the way in which the sector reforms are designed, and the choices that are made regarding each of the key variables identified in the section on the “Typical Direction, Magnitude, and Evolution of Impacts.” It follows that the design of any utilities reform process should ideally estimate the costs and benefits accruing to each stakeholder group, and identify design changes that may make this distribution more equitable and thereby secure broader political support for the reform.

Among these potential design changes are a range of mitigating measures that help to attenuate the adverse impacts on any specific group. Table 3.5 summarizes the main mitigating measures proposed for each dimension of impact. These are discussed in further detail below. Estache, Foster, and Wodon (2002) provide a more extensive discussion of the mitigating measures that help to safeguard access and affordability of services by the poor in the wake of utilities reform.

It is essential to recognize the substantial tradeoffs that exist among the interests of the different stakeholder groups and, hence, among the application of the various mitigating measures identified in Table 3.5. For example, the higher the sale price of the enterprise, the greater the fiscal

revenues will be to the government, *but* the lower the financial return to investors. Similarly, the greater the efficiency gains, the lower the tariffs offered to consumers will be, *but* the higher the number of redundancies in the labor force. And again, the more ambitious the plans to expand service coverage, the greater the benefits will be to the excluded poor, *but* the lower the sale value of the enterprise will be to the state. The balancing of interests among these different stakeholder groups is ultimately a political choice and depends critically on the design of the original transaction and how effectively it is subsequently regulated.

Employment and wages

Where major labor retrenchment is anticipated, careful consideration should be given to the conditions under which this is done. Issues to be considered are whether this should be done before or after a PSP transaction, whether voluntary or involuntary schemes need to be developed, how much compensation workers will receive and how their pension rights will be treated, whether special assistance needs to be provided to

FIGURE 3.1 Conflicts of Interest in Privatization Processes

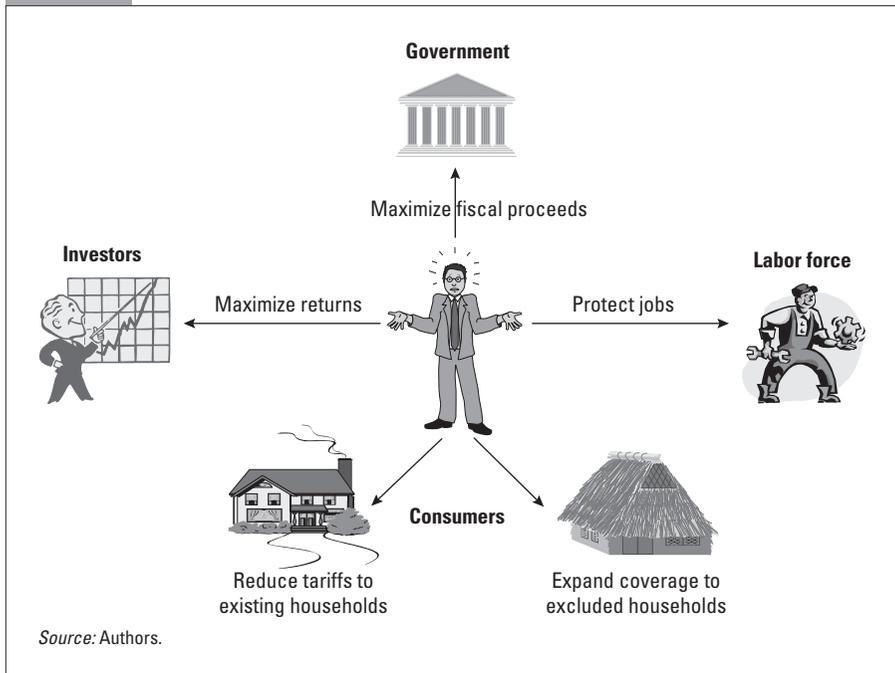


TABLE 3.5 Mitigating Measures for Each Dimension of Impact

<i>Mitigating measures</i>	
Employment and wages	<ul style="list-style-type: none"> • Generous severance package and retraining opportunities for laid-off workers • Voluntary rather than compulsory redundancies • Distribution of utility shares among retained workforce
Price of service	<ul style="list-style-type: none"> • Reduce scale of investment program and delay its implementation • Reduce quality of service targets to reduce investment requirements • Reduce minimum sale price or canon payment requested for utility • Phase in tariff increases gradually over time • Synchronize tariff increases with quality of service improvements • Incorporate a social tariff mechanism to protect most vulnerable households • Improve balance of fixed and variable charges in the tariff structure • Provide more frequent payment options, such as prepayment meters • Provide the option of consumption-limiting devices
Quality of service	<ul style="list-style-type: none"> • Incorporate strict quality of service regulation
Access to service	<ul style="list-style-type: none"> • Incorporate universal service obligation into regulatory framework • Define explicit connection targets for the utility • Provide connection subsidies for the utility • Reduce costs of connection through appropriate technology and labor contributions
Asset ownership	<ul style="list-style-type: none"> • Design transaction to permit participation of local firms • Incorporate mechanisms to broaden ownership of shares.
Fiscal flows	<ul style="list-style-type: none"> • Substitute dividend payments with tax revenues. • Increase minimum sale price for enterprise.
Entry conditions	<ul style="list-style-type: none"> • Develop an explicit policy and regulatory framework for alternative water suppliers

Source: Authors.

facilitate retraining and reemployment of those laid off. In all of these areas, compliance with national and international regulations on labor standards will help to ensure that workers are fairly treated.

Price of service

Where a utility reform process looks likely to result in substantial tariff increases, which appear to be unaffordable for the most vulnerable consumers or that (while strictly speaking of affordable increase) are likely to result in a major political backlash, steps should be taken to reduce the necessary price increases or soften their social and political impact.

The price level for the utility service is highly sensitive to the projected investment program, which in turn reflects the expansion and quality obligations imposed on the utility. Because these obligations are largely a public policy decision, price increases can be reduced by adopting a less ambitious set of expansion and quality targets, or by introducing govern-

ment cofinancing for part of the investment obligations. In cases of PSP, another variable with an important impact on the price level is the minimum sale price determined for an asset sale or minimum canon payment determined for a concession. Once again, this is almost entirely a public policy decision and can be modified if necessary to improve the distribution of benefits between taxpayers (who benefit from a high sale price) and consumers (who benefit from a lower sale price).

Where the resistance to price increases stems from political opposition, as opposed to genuine affordability concerns, it may be relevant to think about the timing and presentation of the tariff increases. It may make a difference, for example, whether price increases are adopted in one sudden adjustment or as part of a lengthy process of convergence. There is no *a priori* reason to think that one strategy would work better than another, but local considerations may provide reasons for preferring a particular strategy. Gradually phasing in higher tariffs, as opposed to doubling tariffs overnight, may make the adjustment process less painful for customers. Furthermore, the timing of tariff increases to coincide with the advent of improved levels of service will also help to improve the acceptability of this reform.

In situations where the bulk of the population is able to accommodate higher tariffs, but a more vulnerable minority faces genuine affordability problems, it will be important to accompany reform efforts with the introduction of an appropriate social tariff or other safety net scheme. Doing so will cushion this group from the effects of the tariff increase on the cost of meeting their most basic needs. A wide range of direct subsidy and cross-subsidy instruments exist, such as lifeline tariffs, zonal subsidies in low-income neighborhoods, or subsidies to individuals who qualify for other welfare benefits. Each of these instruments has advantages and disadvantages, which need to be carefully evaluated against any particular country setting. The basic principle, however, is that instruments of social protection need to be found in cases in which reforms raise tariffs beyond the reach of vulnerable social groups.

Beyond subsidies, other measures can be used to improve the affordability of utilities services to the poor, most of which are linked to changes in the utilities' commercial policy. Where utility tariff structures present high fixed charges, shifting costs toward variable components of the tariff structure in a revenue neutral manner gives low-income households greater control over their utility bills by ensuring that economy measures taken within the household yield payoffs in terms of lower bills. In some cases, payment difficulties have more to do with cash-flow problems than with affordability problems. Thus, providing an option for more frequent pay-

ment of bills can make it easier for households with limited cash reserves to budget the cost of utility services. An extreme example of this is devices such as prepayment meters that allow households greater control over the timing of their expenditures. In some context, consumption-limiting devices can be used to restrict the volume of service that can be drawn from the public network, which can sometimes keep utility expenditure within affordable limits, while ensuring that the most basic needs can be met.

Quality of service

While quality of service could be expected to improve as a result of reform, this cannot be taken for granted; thus, an adequate quality of service regulatory framework is needed to provide the necessary incentives and obligations. This framework should include well-defined service targets, as well as an adequate system for monitoring the achievement of those targets, combined with appropriate sanctions to operators and compensations to consumers.

ACCESS TO SERVICE

Utility reform typically strengthens commercial incentives to expand into new markets. However, many of the unserved markets in developing countries—including low-income peri-urban and rural areas—are not commercially attractive to serve. To compensate for the lack of commercial incentives, and to ensure that the benefits of reform reach these key disadvantaged groups, it is typically necessary to incorporate within the design of the reform a package of policy instruments aimed at promoting access. These instruments can be regulatory measures to require utilities to serve these markets, financial incentives to make these markets more commercially attractive, or measures aimed at reducing the cost faced by new customers in connecting to the network.

The most commonly used regulatory measure is the universal service obligation, requiring utilities to provide services to all customers requesting them within a specified service area. While desirable, this provision has limited relevance when major network expansions are required to reach new communities, or where low-income households may desire service but be unable to pay for it. Therefore, it may be preferable to use mandatory connection targets that are referenced to specific (low-income) neighborhoods over a specific time horizon.

However, regulatory instruments will not be effective if there is a real economic barrier in customers covering the up front capital costs associated

with connecting to the network. One alternative, in these cases, is the use of connection subsidies to reduce the economic barriers faced by customers and to improve the overall return of the investment to the operator. These may either be publicly funded grants or cross-subsidy funds raised within the sector (for example, through some kind of universal access surcharge). Where connection subsidies are not financially viable, alternative instruments can be used to reduce the cost of extending services to low-income areas. These may include the adoption of alternative technologies or the contribution of community labor to the construction of new networks.

Asset ownership

A concern often raised by utility reforms, particularly where asset sales are involved, is the concentration of asset ownership in the hands of a relatively small (often multinational) group of commercial interests. A number of measures can be taken to reduce the probability of this outcome. One approach is to break up large transactions into smaller packages that may be more manageable to local investors, often entailing horizontal restructuring measures before the reform. Another alternative is to introduce legal restrictions that prevent a single firm from acquiring assets in different segments of the market or that require international investors to partner with local firms. Finally, ownership democratization measures can be considered, such as giving or selling shares to employees, pension funds, or the general public.

Fiscal flows

As noted above, utilities reform (and in particular PSP) tends to have a positive impact on the public finances, not only through sale revenues but also as a result of subsequent tariff increases. Situations sometimes arise, however, in which well-run public utilities are significant fiscal contributors through the dividend payments they make to the state. The potential loss of these dividends may therefore become a concern, and in some cases even an obstacle, to reform. One way to compensate for the loss of such dividends is to create a tax regime for the privatized utility that compensates, at least to some degree, for the loss of fiscal revenues.

Entry conditions

Utilities reform usually leads to greater liberalization, which leads to market entry, intensified competitions, and improved choice for consumers.

The exception to this rule is the water sector, in which concession contracts often incorporate exclusivity provisions that outlaw alternative suppliers within the concession zone. In areas where significant coverage deficits remain, this kind of provision has the undesirable effect of stifling the only medium-term alternatives that may be available to lower-income customers. Consequently, it is desirable for water utility reform processes to incorporate an explicit analysis and policy framework for improving services in this segment of the market. This may include a framework that obliges the formal utility to provide certain alternative forms of service in unserved neighborhoods and measures to regulate and improve the functioning of alternative supplies, and facilitates partnership between the formal utility and the alternative suppliers (for example via bulk supply of potable quality water).

TOOLS FOR MEASURING SOCIAL AND DISTRIBUTIONAL IMPACTS

The following section discusses data availability, as well as simple and more complex, quantitative, and qualitative techniques for evaluating utilities reform. The tools are discussed separately, but a combination of several techniques may be used. Each tool provides a unique perspective but may also have specific drawbacks. Using them in combination provides a rich source of information on diverse aspects of the poverty and social impact of utility reforms. However, data limitations may well be a binding constraint in many cases.

Data availability

Data availability can often be a significant limitation in assessing the impact of reforms to the utilities sector. The typical data sources that exist are listed and briefly described below, and a comparative summary is provided in Table 3.6. With the exception of utility data and international benchmarks, the best overall source for most of the data identified is the National Statistics Office.

Utility data. A lot of important information can be obtained directly from the utility, including the tariff structure, the costs of service provision, the quality of service provision, and broader enterprise performance indicators, as well as the consumption and payment record of customers. A key drawback of utility data, however, is that it does not usually identify the socioeconomic conditions of the household. Furthermore, it only doc-

uments the formal segment of the market and thus does not provide much information on the consumption patterns of households that have illegal connections or rely on alternative forms of water and energy services.

Census. The census is often a good source of comprehensive information on basic access data as well as physical housing characteristics. However, it seldom incorporates more sophisticated variables and never measures income directly. Moreover, because it is conducted at most once per decade, it is often too out of date to be useful for the purposes at hand. Nevertheless, there are techniques available for combining household survey and census data to produce relatively reliable poverty maps (Elbers, Lanjouw, and Lanjouw 2003). This is typically done by developing regression models with household survey data that predict income based on housing variables common to both the census and the household survey.

National household surveys. An increasing number of countries conduct regular national surveys that include some relevant information about utilities in combination with socioeconomic data for households.

- *Labor Force Surveys (LFS)*—The most frequently available surveys tend to be LFS, which are conducted at least once each year, but may only report on access to utilities (if that).
- *Household Expenditure Surveys (HES)*—Many countries conduct HES every few years to update the weights in the consumer price index. Such surveys can often contain interesting information on household expenditure.
- *Living Standards Measurement Surveys (LSMS)*—An increasing number of countries are conducting LSMS on an occasional basis. To varying degrees, many of these draw on the standardized international format developed by the World Bank. LSMS typically have the richest source of information on utilities, because they combine data on household socioeconomic circumstances with data on access to utilities, characteristics and quality of service, use of utilities, expenditure on utilities, and quality variables. However, they can also present a number of limitations. First, the timing of the surveys may not always be well synchronized with utility reform processes, so the data is not necessarily available for the key time periods of interest (that is, immediately before and some time after the reform). Second, availability and definitions of key impact variables may vary over time, making it difficult to perform the analysis even when surveys exist for the relevant points in time. Third, they are usually representative only at the national and regional

level, and (with the exception of large metropolitan areas) not at the city level, which is often the relevant geographic unit of analysis for utilities reform. Moreover, rural coverage is sometimes limited.

Ad hoc household surveys. Occasionally, smaller city-level or utility-level surveys are conducted for specific purposes or may be funded in the context of a PSIA. These offer the best opportunity to tailor information-gathering to analytical needs, although they are costly (approximately US\$50,000) and time-consuming (4–8 months). In addition, they are not always capable of measuring household income and poverty with the same precision as the national household surveys, given the complexity of this task and the desirability, for example, of requiring households to keep expenditure diaries over extended periods.

National statistics. The Sector Ministry often has helpful national statistics on the utility sectors, while the Social Development Ministry should be able to provide information on poverty lines, poverty rates, and any national poverty databases or welfare-targeting systems, such as poverty maps.

International statistics. For the purposes of comparing the situation of a specific utility with respect to other countries, it can be useful to have benchmarking parameters from other countries that have a similar geographic and socioeconomic environment. A number of international databases exist for benchmarking enterprise performance across utilities. In addition, country case studies (such as those cited in the annexes) can provide a useful point of reference.

This review makes it clear that there is no single perfect source of data to support analyses of the social impact of utilities reforms. The central challenge is to combine information about utility consumption patterns with information about socioeconomic conditions at the level of specific individual households. A good starting point is to gather as many data sources as are readily available and then evaluate the desirability and feasibility of conducting an ad hoc survey. In most cases, a considerable degree of ingenuity and sleuthing is needed to splice data from different sources and draw appropriate inferences.

One of the most important and difficult data collection challenges is to obtain joint readings on physical utility consumption and socioeconomic characteristics at the level of individual households. Table 3.6 discusses some of the methodological options available, highlighting the particular drawbacks that arise in each case.

TABLE 3.6 Comparative Summary of Data Sources

	<i>Variables</i>	<i>Strengths</i>	<i>Weaknesses</i>	<i>Source</i>
Utility data	Tariffs, costs, quality, payment, and consumption records	Detailed time series on payment and consumption	Only covers formal market; no socioeconomic information	Utility
National census	Access, housing characteristics	Comprehensive	Often out of date; no data on income or consumption	National Statistics Office
National household surveys	n.a.	n.a.	n.a.	National Statistics Office
• LFS	Access	Frequent, readily available	Limited coverage of relevant variables	National Statistics Office
• HES	Access, expenditure	Sometimes readily available	Excludes some relevant variables	National Statistics Office
• LSMS	Access, expenditure, consumption patterns, socioeconomic characteristics	Sometimes readily available, broad coverage of variables	May not be well-timed or representative, may omit some variables	National Statistics Office
Ad hoc household surveys	Access, expenditure, consumption, income, socioeconomic variables	Extremely flexible, representative of target population	Costly, time-consuming, may not measure poverty very precisely	National Statistics Office
National statistics	<u>Sector</u> : aggregate data on coverage, consumption, prices, and quality <u>Social</u> : poverty lines, poverty rates, poverty maps, poverty databases	Often readily available	Often too aggregated to be very useful	Sector Ministry and Social Ministry
International statistics	Benchmark parameters on utility performance, as well as access, expenditure, and consumption	Useful point of comparison	May not cover countries and variables of interest	Academic and policy literature Water: WB-IBNET Electricity: IEA Telecom: ITU

Source: Authors.

Note: n.a. = not applicable; LFS = Labor Force Survey; HES = Household Expenditure Surveys; LSMS = Living Standards Measurement Surveys; WB-IBNET = World Bank-International Benchmarking Network; IEA = International Energy Agency; ITU = International Telecommunication Union.

BOX 3.2 The Challenge of Measuring Physical Consumption

There are a number of strategies available for trying to measure the physical consumption of utility services.

Direct measurement. The ideal approach to obtaining joint readings of physical consumption and socioeconomic characteristics would be to conduct an ad hoc household survey that takes the utility's customer cadastre as a sample reference frame, thereby permitting socioeconomic data to be matched up against the household's complete consumption and payment history. Confidentiality considerations may make this almost impossible to do in practice. Moreover, even if it can be done, it does not resolve the issue of measuring consumption of unmeasured or clandestine utility customers, or those who obtain services from alternative providers.

Field measurement. For households that lack meters, or for whom utility data cannot be accessed, there is the possibility of measuring consumption directly in the field. This can be done by making engineering estimates based on household appliances and reported use patterns, requiring households to keep detailed consumption diaries, or installing temporary measurement devices purely for observation purposes. In practice, the field measurement approach, although probably the least accurate, may be the only practical and cost-effective option.

Reading from bill. Where an ad hoc household survey is conducted, it may be possible to ask households to show the interviewer their latest utility bill, allowing consumption to be read directly from the bill. However, many households may never actually receive a utility bill (for example, tenants), while many others may be unable or unwilling to present the document. Even when the bill is available, careful interviewer training will be required to ensure that it is adequately interpreted. Experience with this approach indicates success rates of not much more than around 25 percent, leading to potential selectivity biases.

Expenditure inference. Given the difficulties identified with these methods, often the only way of estimating the physical volume of consumption is to infer it from reported utility expenditure, using the prevailing tariff structure to "back out" the level of consumption. Although relatively straightforward, this approach also presents serious limitations. In particular, it may not always be easy to identify which tariff structure a given consumer is paying under or whether the consumer is being effectively metered. Furthermore, it is not possible to ascertain whether the last month's expenditure relates solely to the last month's consumption, or also includes payment of arrears.

Source: Authors.

Simple diagnostics

Even when time and data availability are extremely limited, there are some very simple diagnostic indicators that can be quite easily put together from the sources described above and that shed light on the likely severity of each of the impacts on the most affected stakeholder groups. Table 3.7 identifies the key diagnostic indicators for each dimension of impact. These are discussed in further detail below.

TABLE 3.7 Diagnostic Indicators for Each Dimension of Impact

<i>Diagnostic indicators</i>	
Employment and wages	<ul style="list-style-type: none"> • Utility workforce as a percentage of total national and local workforce • Estimate of potential redundancies in the utility labor force • Potential redundancies as percentage utility workforce • Potential redundancies as percentage of local and national workforce • Age and skill profile of potential redundancies • Current rate of unemployment in the national and local labor market. • Unionization rate of utility workforce
Price of service	<ul style="list-style-type: none"> • Current average price of service • Estimated percentage increase in price needed to reach efficient cost-recovery level • Cost of subsistence level of consumption as percentage of poor family monthly income • Actual expenditure on utility service as percentage of poor family monthly income
Quality of service	<ul style="list-style-type: none"> • Current quality of service indicators • Estimate of potential improvements in quality of service • Estimate of coping costs incurred because of current quality deficiencies
Access to service	<ul style="list-style-type: none"> • Current coverage rate of service • Socioeconomic profile of customers currently lacking access • Average price of alternative services used by households without access • Connection charge for services • Connection charge as percentage of poor family monthly income • Monthly installment of connection charge as percentage of poor family monthly income
Asset ownership	<ul style="list-style-type: none"> • Extent of foreign enterprise ownership and investment in the economy • Extent of concentration of local enterprise ownership and investment in the economy
Fiscal flows	<ul style="list-style-type: none"> • Potential sale value of utility • Present value of fiscal transfers to utility • Present value of tax revenues paid by the utility to the state • Present value of dividends paid by the utility to the state • Present value of debt service on historic debts retained by the state
Entry conditions	<ul style="list-style-type: none"> • Explicit and implicit entry costs imposed on new market players • Welfare cost of delaying transition to a competitive market

Source: Authors.

Employment and wages. To assess the severity of potential impacts on employment and wages, it is relevant to first try and estimate how large the scope of redundancies might be, both in absolute terms and relative to sectoral employment and overall employment in the economy. This can be done by comparing current levels of labor productivity (employees per thousand connections) with those in benchmark utilities that

have undergone reform, or by applying historic parameters on the potential percentage of layoffs following reform. These numbers should be compared with local and national rates of unemployment. An assessment of the buoyancy of the local labor market, as well as the age and skill profile of the current workforce, can also be made to assess the probability of reemployment for workers that could be laid off.

Price of service. To estimate the potential severity of social impacts arising from price increases, it is necessary to estimate the potential magnitude of tariff increases that may take place as a result of the reform. Taking an estimate of subsistence consumption, as well as a reference income level for a household living below the poverty line, it is then possible to estimate how much the tariff increase is likely to affect the affordability of the service.

Quality of service. To assess the extent to which quality of service improvements may help to compensate consumers for tariff increases, it is relevant to compare the utility's current quality levels with those that might be expected following reform, based on international benchmarks. It is also relevant to explore how severely the population is affected by current quality of service deficiencies, for example, by incurring coping costs to compensate for deficient service (such as back-up generators or water tanks).

Access to service. To evaluate the potential upside of reform in terms of expanding access to services, it is helpful to look at current coverage rates and past coverage trends to see whether adequate progress has been made toward universal access. It is also important to have a reasonable characterization of the population without access, including their geographic location, socioeconomic status, and the cost and quality of the substitute services on which they depend. All of these help to gauge the likely benefits of access expansion, as well as the potential socioeconomic obstacles. In this sense, it is relevant to compare connection costs with the typical income level of the unconnected population to determine the extent to which connection subsidies or other social policies aimed at connection may be needed as part of the reform package.

Asset ownership. To gauge the potential sensitivity of asset ownership issues in a reform process, it will be relevant to look at the current patterns of participation of foreign investors in the country. Statistics on foreign investment and foreign ownership of assets are relevant points of reference. Where possible, it also is relevant to look at the concentration of market power in the hands of powerful local business interests.

Fiscal flows. To estimate the changes in fiscal flows likely to result from utility reform, it is necessary (where relevant) to estimate the sale value of the utility. In addition, the dynamic fiscal effects need to be considered by quantifying the present value of future fiscal flows, whether positive or negative. On the positive side, there is the present value of avoided subsidies and increased tax revenues. On the negative side, there is the present value of foregone dividends and debt service payment on historic debts absorbed by the state.

Entry conditions. To gauge the impact of the reform on entry conditions for competitors, it is important to calculate the explicit or implicit entry costs that are imposed by the regulatory framework. These include any license payments and required investments (for example, to provide nationwide service presence), as well as costs associated with bureaucracy and red tape. Where the reform process creates exclusivity periods, it is relevant to estimate the welfare loss to consumers from the delayed transition to a competitive market. This is done by comparing the differing pace of market expansion and price reduction in competitive versus monopoly markets in other countries.

Quantitative techniques

When time, data availability, and resources permit, more sophisticated methodological tools can be used to either predict the impact of reform *ex ante* or measure the impact *ex post*. These tools become complex in technical terms, because they depend on assumptions about household behavior and about the links between markets and households. They are also much more demanding in terms of data requirements. The availability of suitable household survey data becomes absolutely essential, complemented where possible by data on physical volumes of utility consumption, as discussed above.

When performing *ex post* analysis, the minimal requirement is for repeated surveys before and after the reform. However, for strong conclusions to be reached, it is critical to have panel data, constructed by visiting the *same* households before and after the reform process. With repeated surveys, it is necessary to make (sometimes dubious) assumptions about how comparable different groups are over time. For example, if reform has strong distributional effects, it is not possible to assume that, say, the bottom 20 percent of the population is composed of the same type of households before and after a given reform. Panel data overcomes these difficulties.

Based on a review of the literature summarized in the annexes to this chapter, the main methodological approaches commonly used are identified and briefly described below. Most of the techniques covered focus on the problem of measuring changes in consumer welfare as a result of changes in service price, quality, and access, because this is by far the most methodologically challenging aspect of the problem. Impacts on employees, owners, and the state are usually quite straightforward to measure in terms of net present value of earnings or returns. In addition, benefit incidence analysis focuses on analyzing the distribution of benefits as opposed to their absolute value. Finally, counterfactual analysis and computable general equilibrium (CGE) models are two techniques for integrating the different impacts of reform into a single methodological framework.

Impact on budget shares

Several elements of reform, including changes in tariffs, increased enforcement of utility contracts, and legalization of illegal connections, result in changes in the utility expenditures of the poor. Such changes can be simulated by first estimating a demand for the service and then simulating how household demand would react to the new prices. This type of simulation can be useful *ex ante* in the identification of the need for subsidy schemes (for example, when expenditure shares exceed generally accepted international norms, such as the World Health Organization's recommendation of 5 percent for water), as well as in political economy analyses highlighting groups that are likely to be particularly hurt by and, hence, oppose the reform.

Ex post analysis can be used to observe how the expenditure pattern of various groups has evolved over time and can present these changes for different groups of the income distribution (in a way analogous to the benefit incidence analysis discussed below). This type of analysis does not fully capture the impact of changes on the welfare of the poor, which depends on the quantities consumed rather than on expenditure levels. However, it can provide a useful approximation of the direction and magnitude of welfare changes.

Welfare impact measurement via consumer surplus

As mentioned above, utility reforms may have a complex array of welfare impacts on consumers, operating through changes in prices, quality of service, and access conditions. The key instrument for analyzing this complex outcome is provided by the estimation of changes in consumer surplus, which, under reasonable assumptions, approximates to changes in consumer welfare. However, the use of consumer surplus

measures is premised on the assumption of zero income effects. Therefore, the methodology may not be very reliable in situations in which price changes are large in relation to existing expenditure levels.

There are different ways of approximating the consumer surplus. The simplest one is to assume that changes in welfare are proportional to the quantity initially consumed. However, more complex formulae also take into account how demand reacts to changes in utility prices. This type of calculation can also be extended to groups that do not initially have access to a utility service by imputing virtual prices (that is, the lowest price at which households do not consume a service even if they have access), allowing an overall evaluation of the benefits. An advantage of this type of calculation is that it provides a monetary metric for the changes in welfare that households experience. This allows their costs and benefits to be directly compared with those of other stakeholders, such as investors, employees, or the state.

Welfare impact measurement via willingness to pay

In addition to the consumer surplus methods described above, welfare impacts can be measured directly or indirectly through a variety of other techniques. Many of these techniques have been developed in environmental economics literature in response to the problem of valuing goods that are not openly or explicitly traded in the market place. This problem makes it impossible to directly observe the demand function and calculate consumer surplus using the standard techniques described above. This broad set of methodologies, reviewed in detail elsewhere (Devicienti, Klytchnikova, Paternostro 2004), aims at gauging households' willingness to pay for specific services or service characteristics.

One family of methods relies on obtaining households' willingness to pay, which is estimated directly from ad hoc surveys, by asking how much households would be willing to pay for something they do not have (Contingent Valuation) or by asking households to rank different price and quality bundles for specific services (Contingent Ranking). The central challenge of these methodologies is how to ensure that responses to hypothetical questions accurately reflect real valuations.

Another family of methods relies on inferring willingness to pay from household behavior in markets for goods and services that are complements or substitutes for the good or service of interest. Examples might include estimating savings on candles and kerosene lamps when evaluating the benefits of rural electrification, or savings in time of water collection when evaluating the benefits of a household tap. In the case of industrial customers, it may be possible to value the economic losses that

they suffer from supply interruptions or from maintaining their own generator or borehole to compensate for deficiencies in public supply.

One salient example of these methodologies is the hedonic regression, which explains the value of housing or rents paid on the basis of the physical characteristics of the house, the type and quality of services to which it has access, and the general characteristics of the neighborhood. This makes it possible to isolate house price premiums associated with access to particular types of services or different levels of service quality. For this method to work, there must be significant variation in service characteristics across the area under study. Moreover, information about service characteristics must be widely available, otherwise they will not be adequately reflected in house prices or rents.

Impact on nonmonetary dimensions of poverty

Utility reform processes can also have important impacts on many proximate determinants of some key nonmonetary dimensions of well-being. Thus, access to (good quality) utility service is often significantly correlated with improved nutrition, sanitation, lower child and infant mortality, and so on. Although these benefits are not directly amenable to monetary quantification, any improvements in these variables evidently represent key (potential) impacts of reform. A simple approach to the measurement of this type of effect is to consider the incidence of these nonmonetary deprivations by income groups, and cross-tabulate them against access to utility services. Such cross-tabulations can be easily constructed from comprehensive household surveys following the LSMS model.

Ex post valuations can focus on changes in these nonmonetary indicators among groups that, for example, have benefited from connection to services they previously did not have. Monetary measures of the impact of access to services on nonmonetary deprivations can be obtained by first estimating reduced form models of nonmonetary deprivation and then using the coefficients to calculate by how much the income or consumption of poor groups would need to be increased to provide the same effect as a connection to one of these services. This method provides ballpark estimates of the impact of access to utilities, although concerns can be raised on the robustness of the results to model specification and, in particular, omitted variable bias.

Benefit incidence analysis

Where the objective is to measure the distribution of benefits, rather than to measure the welfare impact of the reform, benefit incidence analysis may be a useful analytical tool. A benefit incidence analysis calculates the

monetary value of the benefits accruing to different members of the population; for example, as a result of a change in the tariff or subsidy policy of a utility.

If the subsidy (or other benefit delivered) is constant across beneficiaries, a simple analysis of errors of inclusion and exclusion—by group (poor-nonpoor) and by decile of the income distribution—can highlight how well it is reaching its intended beneficiaries.

If the subsidy (or other benefit delivered) has a complex distributional pattern, a fuller incidence analysis needs to be undertaken. A powerful way to summarize this type of analysis, and possibly compare alternative subsidy schemes, is through distribution curves, where the x axis shows the cumulative distribution of the households or individuals when ranked in increasing order, and the y axis shows the percentage of benefits and subsidy received. If the subsidy is progressive (or regressive), the resulting curve lies above (or below) the 45 degrees line.

An important caveat in interpreting these results is that they might differ from results of other methodologies that estimate the welfare impact of utility provision, because this type of analysis focuses on the costs for the provider of the utility rather than the welfare benefits. These studies, however, can provide useful estimates of the resources that can be targeted in a pro-poor fashion as well as how their distribution can be improved.

Finally, to obtain a full picture of distributional incidence, it is important to consider the entire population of poor and not simply those directly connected to an existing utility network.

Counterfactual analysis

One of the most difficult issues in evaluating the impact of utilities reform is to establish an appropriate counterfactual against which to compare the results of the reform. This question is relevant under all methodological approaches and can be answered to varying degrees of sophistication. The simplest approach is to compare the situation before and after the reform. However, a more accurate methodology is to extrapolate historic trends observable in the years before reform and compare them with the new trends observed in years after the reform. The impact of reform should show up as a change in the long-term trend of the different variables under consideration. Clearly, the key methodological problem with this approach is having a sufficiently solid basis on which to predict the counterfactual, given that prereform data are often very scarce or may only be available for one or two years, making it difficult to establish the historic trend.

Computable general equilibrium models

CGE models form a class of models in which production activities, factors, and institutions and their internal links within the economy, are fully specified. These require both national accounts and survey data. The data are compiled into a single information (or social accounting) matrix in which the links among activities, factors, and institutions are organized. These models are attractive because they allow the impact of reforms to be fully traced through the entire economy, as opposed to focusing on first-order, first-round effects. Because they are technically demanding and data-intensive, however, they have rarely been used to examine the impact of utility reforms.

The conclusions of this review of quantitative methodologies for measuring the impact of utilities reform are summarized in Table 3.8, which identifies key examples of case studies that have applied each of the techniques described.

Qualitative techniques

In addition to the quantitative techniques described above, a number of qualitative approaches are also effective in shedding light on the design and impact of reforms.

Focus groups. These are structured discussions with small (and not necessarily representative) groups of people drawn from specific stakeholder perspectives. These groups make it possible to explore issues and concerns in a more open-ended way than normally would be possible through a questionnaire-based survey. It is also possible to brainstorm about potential mitigating measures. This approach is being used by Guasch to understand the negative perception of utility reform in Peru through in-depth discussions with utility customers, customers receiving first-time connections following the reform, and employees laid off as a result of the reform.

Stakeholder analysis. This particular tool uses qualitative data to describe the interests and level of influence of selected groups with respect to policy reforms, thereby clarifying the political economy dynamics. This is a qualitative version of the analysis of winners and losers described above. This method is used to examine the potential for building consensus across competing interest groups. Walker, Velasquez, Ordoñez, and Rodriguez (1999) performed an interesting application of this technique to the problem of water sector reform in Honduras.

TABLE 3.8 Summary Overview of Quantitative Techniques

	<i>Purpose</i>	<i>Method</i>	<i>Examples</i>
Impact on budget shares of poor	To gauge nature of impact of price changes on consumers	Measure changes in expenditure on utilities as a result of price changes	Wallich and Freund 1995
Benefit incidence analysis	To determine equity characteristics of a price or subsidy policy on consumers	Measure how benefits are distributed across a particular target population	Gómez-Lobo and Contreras 2003
Welfare impact measures through consumer surplus	To measure welfare impact of price changes (and access) on consumers	Measure changes in consumer surplus via approximations to the demand function	McKenzie and Mookherjee 2003
Welfare impact measures through willingness to pay	To measure welfare impact of changes in service price, quality, and access on consumers	Direct methods Ascertain willingness to pay directly through survey questions Indirect methods Infer willingness to pay through observed demand for complements or substitutes	Direct methods Whittington, Lauria, and Mu 1991 Indirect methods Foster and Araujo 2004 Korman 2002 Lampietti and Meyer 2002
Impact on non-monetary dimensions of poverty	To measure impact of access on broader quality of life of consumers	Cross-tabulate nonmonetary dimensions against access to service by income level before and after reform; value changes in nonmonetary dimensions	Foster and Araujo 2004 Ruggeri Laderchi 1999
Counterfactual analysis	To compare situations of all stakeholders before and after reform	Project all relevant variables under a nonreform scenario to compare with reform outcomes	Galal, Jones, Tandon, and Vogelsang 1994
Computable general equilibrium models	To gauge the first and second order impacts of reform on the entire economy	Construct model-capturing links between inputs and outputs within the reformed sector and across the rest of the economy.	Chisari, Estache, and Romero 1999

Source: Author's creation.

BIBLIOGRAPHY

- Abdala, Manuel Angel. 1994. "Privatization and Changes in Welfare Costs of Inflation: The Case of ENTel Argentina," *Journal of Public Economics* 55: 465–493.
- . 1997. "Welfare Effects of Buenos Aires' Water and Sewerage Service Privatization," *Anales: Asociacion Argentina de Economia Politica* 32 (4): 285–310.
- Ajwad, M. I., and Q. Wodon. 2001. "Do Local Governments Maximize Access Rates to Public Services Across Areas? A Test Based on Marginal Benefit Incidence Analysis." World Bank, Washington, DC. Mimeo.
- Ajwad, M. I., Carlos Anguizola, and Q. Wodon. 2001. "Estimating the Welfare Impact of Privatization: Electricity in Bolivia." World Bank, Washington, DC. Mimeo.
- Alcázar, Lorena, Manuel Abdala, and Mary M. Shirley. 2002. "The Buenos Aires Water Concession." In Mary M. Shirley, ed., *Thirsting for Efficiency: The Economics and Politics of Urban Water System Reform*. Amsterdam: Pergamon.
- Alcázar, Lorena, Lixin Colin Xu, and Ana M. Zuluaga. 2002. "Institutions, Politics, and Contracts: The Privatization Attempt of the Water and Sanitation Utility of Lima, Peru." In Mary M. Shirley, ed., *Thirsting for Efficiency: The Economics and Politics of Urban Water System Reform*. Amsterdam: Pergamon.
- Andersson, Bo, and Lars Bergman. 1995. "Market Structure and the Price of Electricity: An Ex Ante Analysis of the Deregulated Swedish Electricity Market." *Energy Journal* 16 (2): 92–109.
- Andres, Luis, Vivien Foster, and Jose Luis Guasch. 2004. "The Impact of Privatization on Electricity Distribution in Latin-American Countries." World Bank, Washington, DC. Mimeo.
- Arocena, Pablo. 2003. "The Reform of the Utilities Sector in Spain." In C. Ugaz and C. Waddams Price, eds., *Utility Privatization and Regulation: A Fair Deal for Consumers?* Cheltenham: Edward Elgar.
- Azam, Jean-Paul, Magueye Dia, and Tchétché N'Guessan. 2002. "Telecommunication Sector Reform in Senegal." Policy Research Paper 2894, World Bank, Washington, DC.
- Barja, Gover, and Miguel Urquiola. 2001. "Capitalization, Regulation and the Poor: Access to Basic Services in Bolivia." WIDER Discussion Paper 20001/34, United Nations University—World Institute for Development Economics Research, Helsinki. In C. Ugaz and C. Waddams Price, eds., *Utility Privatization and Regulation: A Fair Deal for Consumers?* Cheltenham: Edward Elgar.
- Benitez, Daniel, Omar Chisari, and Antonie Estache. 2003. "Can the Gains from Argentina's Utilities Reform Offset Credit Shocks?" In C. Ugaz and C. Waddams Price, eds., *Utility Privatization and Regulation: A Fair Deal for Consumers?* Cheltenham: Edward Elgar.
- Bhaskar, V., Bishnupriya Gupta, and Mustaq Khan. 2002. "Partial Privatization and Yardstick Competition: Evidence from Employment Dynamics in Bangladesh." Discussion Paper 545, University of Essex, Department of Economics, Essex, UK.

- Birdsall, N., and J. Nellis. 2002. "Winners and Losers: Assessing the Distributional Impact of Privatization." Working Paper 6, Center for Global Development, Washington, DC.
- Boles de Boer, David, and Lewis Evans. 1996. "The Economic Efficiency of Telecommunications in a Deregulated Market: The Case of New Zealand." *Economic Record* 72: 24–35.
- Botelho, A., and C. Addis. 1997. "Privatization of Telecommunications in Mexico." In R. Van der Hoeven and G. Sziraczki, eds., *Lessons from Privatization: Labour Issues in Developing and Transition Countries*. Geneva: International Labour Office.
- Boylaud, Olivier, and Giuseppe Nicoletti. 2000. "Regulation, Market Structure and Performance in Telecommunications." Economics Department Working Paper 237, Organisation for Economic Co-operation and Development, Paris.
- Chisari, O., A. Estache, and C. Romero. 1999. "Winners and Losers from the Privatization and Regulation of Utilities: Lessons from a General Equilibrium Model of Argentina." *World Bank Economic Review* 13 (2): 357–78.
- Clarke, George R. G., and Scott J. Wallsten. 2002. "Universal (ly Bad) Service: Providing Infrastructure Services to Rural and Poor Urban Consumers." Policy Research Paper 2868, World Bank, Washington, DC.
- Clarke, George R. G., Frew A. Gebreab, and Henry R. Mgombelo. 2003. "Telecommunications Reform in Malawi." Policy Research Paper 3036, World Bank, Washington, DC.
- Crane, Randall. 1994. "Water Markets, Market Reform and the Urban Poor: Results from Jakarta, Indonesia." *World Development* 22 (1): 71–83.
- De Luca, L., ed. 1998. *Labour and Social Dimensions of Privatization and Restructuring (Public Utilities: Water, Gas, and Electricity)*. Geneva: International Labour Office.
- Delfino, José, and Ariel Casarin. 2003. "The Reform of Utilities Sector in Argentina." In C. Ugaz and C. Waddams Price, eds., *Utility Privatization and Regulation: A Fair Deal for Consumers?* Cheltenham: Edward Elgar.
- Devicienti, Francesco, Irina Klytchnikova, and Stefano Paternostro. 2004. "Willingness to Pay for Water and Energy: An Introductory Guide." World Bank, Washington, DC. Mimeo.
- Dodonov, Boris, Petra Opitz, and Wolfgang Pfaffenberger. 2004. "How Much Do Electricity Tariff Increases in Ukraine Hurt the Poor?" *Energy Policy* 32 (7): 855–863.
- D'Souza, J., and W. Megginson. 1999. "The Financial and Operating Performance of Privatized Firms during the 1990s." *Journal of Finance* 54 (4): 1,397–1438.
- D'Souza, J., B. Bortolotti, M. Fantini, and W. Megginson, 2000, "Sources of Performance Improvement in Privatized Firms: A Clinical Study of the Global Telecommunications Industry." University of Oklahoma, Norman, OK. Mimeo.
- Elbers, Chris, J. O. Lanjouw, and Peter Lanjouw. 2003. "Micro-Level Estimation of Poverty and Inequality." *Econometrica* 71 (1): 355–64.

- Ennis, Huberto M., and Santiago M. Pinto. 2003. "Privatization and Income Distribution in Argentina." Mimeo. <http://www.depeco.econo.unlp.edu.ar/semi/semi300503.pdf>.
- Estache, A., V. Foster, and Q. Wodon. 2002. "Accounting for Poverty in Infrastructure Reform: Learning from Latin America's Experience." World Bank Institute Development Studies, World Bank, Washington, DC.
- Fink, Carsten, Aaditya Mattoo, and Randeep Rathindran. 2003. "An Assessment of Telecommunications Reform in Developing Countries." *Information Economics and Policy* 15 September: 443–466.
- Foster, Vivien, and Caridad Araujo. 2004. "Does Infrastructure Reform Work for the Poor? A Case Study from Guatemala." Policy Research Paper 3185, World Bank, Washington, DC.
- Foster, Vivien, and CEER (Centro de Estudios Economicos para la Regulacion, Universidad Argentina de la Empresa). 2003. "Towards a Social Policy for the Infrastructure Sectors in Argentina." CMU Discussion Paper, World Bank Country Management Unit for Argentina, Chile, Paraguay, and Uruguay.
- Foster, Vivien, and Osvaldo Irusta. 2003. "Does Infrastructure Reform Work for the Poor? A Case Study on the Cities of La Paz and El Alto in Bolivia." Policy Research Paper 3177, World Bank, Washington, DC.
- Foster, Vivien, and J. P. Tré. 2003. "Measuring the Impact of Energy Interventions on the Poor—An Illustration from Guatemala." Chapter 4 in P. J. Brook and T. C. Irwin, eds., *Infrastructure for Poor People*. Washington, DC: World Bank.
- Foster, Vivien, A. Gómez-Lobo, and J. Halpern. 2000. "Designing Direct Subsidies for Water and Sanitation Services. Panama: A Case Study." Policy Research Working Paper 2344, World Bank, Washington DC.
- Foster, Vivien, S. Pattanayak, and L. S. Prokopy. 2003a. "Water Tariffs and Subsidies in South Asia Paper 4: Do Current Subsidies Reach the Poor?" Field Note, Water and Sanitation Program, New Delhi.
- . 2003b. "Water Tariffs and Subsidies in South Asia Paper 5: Can Subsidies be Better Targeted?" Field Note, Water and Sanitation Program, New Delhi.
- Freije, Samuel, and Luis A. Rivas. 2002. "Privatization, Inequality and Welfare: Evidence from Nicaragua," Mimeo. http://www.cgdev.org/events/privatization/rivas_nicaragua_paper.pdf.
- Galal, Ahmed. 1999. "Welfare Impact of Telecom Reform in Egypt: An Ex Ante Analysis." Partners for Development: New Roles for Government and Private Sector in the Middle East and North Africa, World Bank, Washington, DC.
- Galal, Ahmed, Leroy Jones, Pankaj Tandon, and Ingo Vogelsang. 1994. *Welfare Consequences of Selling Public Enterprises: An Empirical Analysis*. Washington, DC: World Bank.
- Galiani, Sebastian, P. Gertler, and E. Schargrotsky. 2002. "Water for Life: The Impact of the Privatization of Water Services on Child Mortality." Stanford Center for International Development Working Paper 154, Stanford Institute for Economic Policy Research (SIEPR), Stanford, CA.

- Gómez-Lobo, Andrés, and Dante Contreras. 2003. "Water Subsidy Policies: A Comparison of the Chilean and Colombian Schemes." *World Bank Economic Review* 17: 391–407.
- Gómez-Lobo, Andrés, Vivien Foster, and J. Halpern. 2000. "Information and Modeling Issues in Designing Water and Sanitation Subsidy Schemes." Policy Research Working Paper 2345, World Bank, Washington, DC.
- Gutiérrez, Luis Hernando. 2003. "The Effect of Endogenous Regulation on Telecommunications Expansion and Efficiency in Latin America." *Journal of Regulatory Economics* 23 (3): 257–286.
- Haggarty, Luke, Penelope Brook, and Ana Maria Zuluaga. 2002. "Water Sector Service Contracts in Mexico City, Mexico." In Mary M. Shirley, ed., *Thirsting for Efficiency: The Economics and Politics of Urban Water System Reform*. Amsterdam: Pergamon.
- Haggarty, Luke, Mary M. Shirley, and Scott Wallsten. 2003. "Telecommunications Reform in Ghana." Policy Research Paper 1983, World Bank, Washington, DC.
- Hattori, Toru, and Miki Tsutsui. 2004. "Economic Impact of Regulatory Reforms in the Electricity Supply Industry: A Panel Data Analysis for OECD Countries." *Energy Policy* 32 (6): 823–832.
- Jensen, Jesper, and David Tarr. 2003. "Trade, Exchange Rate, and Energy Pricing Reform in Iran: Potentially Large Efficiency Effects and Gains to the Poor." *Review of Development Economics* 7 (4): 543–62.
- Korman, Vijdan. 2002. "Estimating the Willingness to Pay for Improved Water Services: Famagusta-Cyprus." Unpublished thesis, Northeastern University, Boston, MA.
- Laffont, Jean-Jacques, and Tchetché N'Guessan. 2002. "Telecommunications Reform in Cote d'Ivoire." Policy Research Paper 2895, World Bank, Washington, DC.
- Lampietti, Julian A., and Anke S. Meyer. 2002. "Coping with the Cold: Heating Strategies for Eastern Europe and Central Asia's Urban Poor." World Bank Technical Paper 529, World Bank, Washington, DC.
- Lampietti, Julian A., Anthony A. Kolb, Sumila Gulyani, and Vahram Avenesyan. 2001. "Utility Pricing and the Poor: Lessons from Armenia." World Bank Technical Paper 497, World Bank, Washington, DC.
- Lampietti, Julian A., Hernan Gonzalez, Margaret Wilson, Ellen Hamilton, and Sergo Vashakmadze. 2003. "Revisiting Reform in the Energy Sector: Lessons from Georgia." World Bank Working Paper 21, World Bank, Washington, DC.
- Lee, Jeong-Dong, Jongsu Lee, and Tai-Yoo Kim. 2004. "Ex-Ante Analysis of Welfare Change for a Liberalization of the Natural Gas Market." *Energy Economics* 26: 447–461.
- McKenzie, D., and D. Mookherjee. 2003. "The Distributive Impact of Privatization in Latin America: Evidence from Four Countries." *Economia: Journal of the Latin American and Caribbean Economic Association* 3 (2): 161–218.
- Ménard, Claude, and George Clarke. 2000a. "A Transitory Regime Water Supply in Conakry, Guinea." Policy Research Paper 2362, World Bank, Washington, DC.

- . 2000b. “Reforming the Water Supply in Abidjan, Côte d’Ivoire: Mild Reform in a Turbulent Environment.” Policy Research Paper 2377, World Bank, Washington, DC.
- Nellis, J. 2003. “Privatization in Latin America.” Working Paper 31, Center for Global Development, Washington, DC.
- Neumann, L. 1997. “Privatization of Telecommunications in Hungary.” In R. Van der Hoeven and G. Sziraczki, eds., *Lessons from Privatization: Labour Issues in Developing and Transition Countries*. Geneva: International Labour Office.
- Newbery, David M., and Michael G. Pollitt. 1997. “The Restructuring and Privatisation of Britain’s CEBG: Was It Worth It?” *Journal of Industrial Economics* 45 (3): 269–303.
- Paredes, Ricardo M. 2003. “Redistributive Impact of Privatization and Regulation of Utilities in Chile.” In C. Ugaz and C. Waddams Price, eds., *Utility Privatization and Regulation: A Fair Deal for Consumers?* Cheltenham: Edward Elgar.
- Petrazzini, Ben A., and Theodore H. Clark. 1996. “Costs and Benefits of Telecommunications Liberalization in Developing Countries.” Working Paper, Hong Kong University of Science and Technology, Hong Kong.
- Plane, Patrick. 1999. “Privatization, Technical Efficiency and Welfare Consequences: The Case of the Côte d’Ivoire Electricity Company (CIE).” *World Development* 27 (2): 343–360.
- Raghupati, U., and V. Foster. 2003. “Water Tariffs and Subsidies in South Asia Paper 2: A Scorecard for India.” Field Note, Water and Sanitation Program, New Delhi.
- Shaikh, Hafeez, Manuel Angel Abdala, Christina Kappaz, Peter Lauter, and Alfredo Visintini. 1996. *Argentina Privatization Program: A Review of Five Cases*. Washington, DC: World Bank.
- Ramanadham, V. V., ed. 1995. *Privatization and Equity*. New York: Routledge.
- Ros, Agustin J. 1999. “Does Ownership or Competition Matter? The Effects of Telecommunications Reform on Network Expansion and Efficiency.” *Journal of Regulatory Economics* 15 (1): 65–92.
- Ruggeri Laderchi, Caterina. 1999. “The Many Dimensions of Deprivation in Peru: Theoretical Debates and Empirical Evidence.” Working Paper 29, Queen Elizabeth House, Oxford University, Oxford, UK.
- Shirley, Mary M., ed. 2002. *Thirsting for Efficiency: The Economics and Politics of Urban and Water System Reform*. Amsterdam: Pergamon.
- Shirley, Mary M., Lixin Colin Xu, and Ana Maria Zuluaga. 2002. “Reforming Urban Water Supply: The Case of Chile.” In Mary M. Shirley, ed., *Thirsting for Efficiency: The Economics and Politics of Urban Water System Reform*. Amsterdam: Pergamon.
- Shirley, Mary M., F. F. Tusubira, Frew Gebreab, and Luke Haggarty. 2002. “Telecommunications Reform in Uganda.” Policy Research Working Paper 2864, World Bank, Washington, DC.
- Toba, Natsuko. 2003. “Welfare Impacts of Electricity Generation Sector Reform in the Philippines.” Economics and Research Department Working Paper 44, Asian Development Bank, Manila.

- Tóroero, Máximo. 2003. "Peruvian Privatization: Impacts on Firm Performance." In Alberto Chong and Florencio Lopez-de-Silanes, ed., *The Truth about Privatization in Latin America*. Palo Alto, CA: Stanford University Press.
- Tóroero, Máximo, and A. Pascó-Font. 2001. "The Social Impact of Privatization and Regulation of Utilities in Peru." WIDER Discussion Paper 20001/17, United Nations University—World Institute for Development Economics Research, Helsinki. Also published in C. Ugaz and C. Waddams Price, eds., *Utility Privatization and Regulation: A Fair Deal for Consumers?* Cheltenham: Edward Elgar.
- Tóroero, Máximo, Enrique Schroth, and A. Pascó-Font. 2003. "The Impact of Telecommunications Privatization in Peru on the Welfare of Urban Consumers." *Economía: Journal of the Latin American and Caribbean Economic Association* 4 (1): 99–128.
- Ugaz, C., and C. Waddams Price. 2002. *Utility Privatization and Regulation: A Fair Deal for Customers?* Cheltenham: Edward Elgar.
- van den Berg, Caroline. 2000. "Water Concessions: Who Wins, Who Loses and What to Do about It." Note 217, Public Policy for the Private Sector, World Bank, Washington, DC. <http://www1.worldbank.org/viewpoint/HTMLNotes/217/217summary.html>.
- van den Berg, Caroline, and Yoko Katakura. 2004. "Winners and Losers in Argentina's Water Utility Reform: An Analytic and Economic Financial Framework," Finance, Private Sector and Infrastructure Department, Latin America and Caribbean Region, World Bank, Washington, DC. Mimeo. <http://poverty.worldbank.org/library/view/15061/>
- Waddams Price, Catherine, and Ruth Hancock. 1998. "Distributional Effects of Liberalising UK Residential Utility Markets." *Fiscal Studies* 19 (3): 295–319.
- Wakumonya, Njeri. 2003. "Power Sector Reform in Developing Countries: Mismatched Agendas." *Energy Policy* 31: 1,273–89.
- Walker, I., M. Velasquez, F. Ordoñez, and F. M. Rodriguez. 1999. "Reform Efforts and Low-Level Equilibrium in the Honduran Water Sector." In W. Savedoff, and P. Spiller, eds., *Spilled Water: Institutional Commitment in the Provision of Water Services*. Washington, DC: Inter-American Development Bank.
- Wallich, Christine I., and Caroline Freund. 1995. "Raising Household Energy Prices in Poland: Who Gains? Who Loses?" Policy Research Paper 1495, World Bank, Washington, DC.
- Wallsten, Scott J. 2000. "An Econometric Analysis of Telecommunications Competition, Privatization, and Regulation in Africa and Latin America." *Journal of Industrial Economics* 49 (1): 1–19.
- Whittington, Dale, Don Lauria, and Xinming Mu. 1991. "A Study of Water Vending and Willingness to Pay for Water in Onitsha, Nigeria." *World Development* 19 (2/3): 1,779–98.
- Whittington, Dale, John Briscoe, Xinming Mu, and W. Barron. 1990. "Estimating the Willingness to Pay for Water Services in Developing Countries: A Case Study of the Use of Contingent Valuation Surveys in Southern Haiti." *Economic Development and Cultural Change* 38 (2): 293–311.

- World Bank. 2004. *Colombia Recent Economic Developments in Infrastructure, Latin America and Caribbean Region*. Washington, DC: World Bank.
- World Bank. 2001. *Global Development Finance*. Washington, DC: World Bank.
- Zhang, Yin-Fang, David Parker, and Colin Kirkpatrick. 2002. "Electricity Sector Reform in Developing Countries: An Econometric Assessment of the Effects of Privatisation, Competition and Regulation." Working Paper RP0216, Aston Business School, Birmingham, UK.

ANNEX

1

Summary of Selected Country Studies on the Impact of Utility Reforms

ANNEX 1: Summary of Selected Country Studies on the Impact of Utility Reforms

<i>Country</i>	<i>Analysis</i>	<i>Sector</i>	<i>Reform</i>	<i>Reform date</i>	<i>Source</i>
Argentina	EP	M	P	1990s	Ennis and Pinto 2003
	EP	M	P	1990s	Benitez, Chisari, and Estache 2003
	EP	M	P, R1, R2	1989–93	Chisari, Estache, and Romero 1999
	EA	W	P, R1	Ongoing	van den Berg and Katakura 2004
	EP	M	P	1990s	Foster and Araujo 2004
Armenia	EP	E2	T	1999	Lampietti, Kolb, Gulyani, and Avenesyani 2001
Chile	EP	E2	P	1986	Galal et al. 1994

Annex 1: Summary of Selected Country Studies on the Impact of Utility Reforms

Method	Impact							Summary
	E	W	P	Q	A	S	D	
B, BI, CS	■	■	■		■		■	Access increased, relative prices of services decreased, and employment fell but has since recovered.
CGE, EV			■	■	■		■	Significant gains from improvements in quality, access, and productivity, especially among the poor. But gains are not enough to offset credit shocks. Fiscal gains are larger under bad regulatory environment.
CGE	■		■	■			■	General increase in employment; gains (price decrease or improvement in quality) from privatization accrue mainly to rich; while gains from regulation of privatized firms accrue to low-income classes.
BI, CS, NM			■				■	Society as a whole benefits. The government is the big winner while consumers, particularly the poor, stand to lose from the proposed reform. The projected outcome for investors is mixed.
B, BI			■				■	Social policy measures adopted at time of sector reform are poorly targeted toward low-income households. Targeting performance can be substantially improved by subsidizing connection rather than consumption.
B, DB			■				■	Electricity consumption fell by 17 percent while consumption of substitutes increased. Collection rates fell 9 percentage points, and arrears increased four-fold. Compared with the nonpoor, the poor cut consumption more, the share of households with arrears was higher, and the average size of arrears increased more.
CF, CS			■			■	■	Overall welfare gain, but the government and previously nonpaying customers are worse off. Large gains for both domestic and foreign shareholders as well as employees in their capacity as shareholders.

(continued)

**ANNEX 1: Summary of Selected Country Studies on the Impact of Utility Reforms
(Continued)**

<i>Country</i>	<i>Analysis</i>	<i>Sector</i>	<i>Reform</i>	<i>Reform date</i>	<i>Source</i>
Chile	EP	T	P	1986	Galal et al. 1994
	EP	W	T	1990	Gómez-Lobo and Contreras 2003
	EP	M	P	1989	Paredes 2003
Chile (Santiago)	EP	WS	R1	1989	Shirley, Xu, and Zuluaga 2002
Colombia	EP	W	T	1994	Gómez-Lobo and Contreras 2003
	EP	M	T	1994	World Bank 2004
Côte d'Ivoire	EP	T	M, P	1990s	Laffont and N'Guessan 2002

Annex 1: Summary of Selected Country Studies on the Impact of Utility Reforms

Method	Impact							Summary
	E	W	P	Q	A	S	D	
CF, CS			■	■	■		■	Overall welfare gain, with consumers gaining the most mainly through expanded services and unchanged tariffs, although with some deterioration in quality.
DB			■				■	More than 60 percent of subsidies go to households that are above the third decile of the income distribution. Domestic and foreign shareholders, competitors, and the government are better off.
DB			■		■		■	Significant increases in coverage, especially among the poor. No clear trend in prices.
CF, CS, D	■	■	■	■		■		Overall welfare gains with large gains for the government. Consumers gained with price increases offset by increased connection. Employees gained from higher wages. Private shareholders gained.
BI			■				■	All poor households receive some benefit from water subsidy policy because the program is overly generous and gives benefits to almost all households.
B, BI			■		■		■	Cross-subsidy system used to cushion poor households from tariff increases associated with reform is not effective in targeting resources to the poor.
D			■	■	■			Expansion of access, but large regional imbalances remain (for example, more new lines installed in the capital than in the rest of the country). Quality of services is reasonably good but has not met the targets set by the reform. The fall in basket prices is larger than the required fall.

(continued)

**ANNEX 1: Summary of Selected Country Studies on the Impact of Utility Reforms
(Continued)**

<i>Country</i>	<i>Analysis</i>	<i>Sector</i>	<i>Reform</i>	<i>Reform date</i>	<i>Source</i>
Côte d'Ivoire	EP	T	P	1990	Plane 1999
Côte d'Ivoire (Abidjan)	EP	W	R2	1988	Ménard and Clarke 2000
Egypt	EA	T	P, M, R1	—	Galal 1999
Georgia	EP	E1	P, T	1998	Lampietti, Gonzalez, Wilson, Hamilton, and Vashakmadze 2003
Ghana	EP	T	P	1996	Haggarty, Shirley, and Wallsten, 2003
Guatemala	EP	M	P, R2	1996	Foster and Tré 2003 Foster and Araujo 2004

Annex 1: Summary of Selected Country Studies on the Impact of Utility Reforms

Method	Impact							Summary
	E	W	P	Q	A	S	D	
CS	■	■	■	■	■		■	Consumers have been the major beneficiaries of reduced prices. Also reported expansion of services and improvement in quality. Workers reportedly the main losers, with labor force contraction and wage deterioration.
D			■	■	■			Coverage maintained at a high level despite rapid population growth; water and service quality have been good and prices have declined in real terms.
CF, CS	■		■		■	■	■	Consumers gain from reduced prices and expanded provision of services. Workers gain, assuming laid-off workers are compensated, and workers who stay receive shares at a discount. Both foreign and domestic buyers gain. Government breaks even.
B, BI			■		■		■	Improved service quality and the increased supply of clean and subsidized natural gas have offset the potentially negative impact of higher electricity prices.
D					■			Landline telephone penetration and mobile subscription increased dramatically, but the network did not reach the levels the government hoped.
B, BI, WTP, NM			■		■		■	New connections to water, electricity, and sanitation services increased significantly. Most dramatic change in the telecommunication sector. The poor, rural, and indigenous households have doubled their probability of receiving services but in absolute terms are still least likely to receive services.

(continued)

**ANNEX 1: Summary of Selected Country Studies on the Impact of Utility Reforms
(Continued)**

<i>Country</i>	<i>Analysis</i>	<i>Sector</i>	<i>Reform</i>	<i>Reform date</i>	<i>Source</i>
Guinea (Conakry)	EP	W	P	1989	Ménard and Clarke 2000
Indonesia (Jakarta)	EP	W	R1	1990	Crane 1994
Iran	EA	E1	T	2000	Jensen and Tarr 2003
Malawi	EP	T	P	1993	Clarke, Gebreab, and Mgombelo 2003
Mexico (Mexico City)	EP	W	P	1990s	Haggarty, Brook, and Zuluaga 2002
Mexico	EP	T	P	1989	Galal et al. 1994

Annex 1: Summary of Selected Country Studies on the Impact of Utility Reforms

Method	Impact							Summary
	E	W	P	Q	A	S	D	
CF, CS			■	■	■		■	Both consumers and the government gained from reform. Although the increase in the number of connections has been slow, it has increased faster than it would have under continued public ownership. Prices have increased, but the quality of both water and service have improved considerably.
B			■					The 1990 deregulation allowing homes with water connection to resell municipal water has led to money saving and increased consumption by former vendor and standpipe customers.
B, BI, CGE			■				■	The analysis assumes that revenues generated by removing subsidies is distributed back to households. Energy pricing reform (removal of subsidies) is estimated to produce large gains in consumer welfare.
D			■		■			Cellular penetration and Internet use expanded dramatically following reform, but prices increased, especially for cellular calls, and fixed-line penetration remains low by regional standards.
D			■	■			■	Mixed effect on quality. With the introduction of metering, the number of low-income consumers receiving a water bill rose, while water bills for high-income consumers fell or stayed the same. Mixed outcome for middle-income consumers.
CF, CS	■		■	■		■	■	Overall welfare gains, but consumers lose from rising prices. High proportion of foreign ownership also suggests that benefits have leaked abroad.

(continued)

**ANNEX 1: Summary of Selected Country Studies on the Impact of Utility Reforms
(Continued)**

<i>Country</i>	<i>Analysis</i>	<i>Sector</i>	<i>Reform</i>	<i>Reform date</i>	<i>Source</i>
New Zealand	EP	T	R1, P	1987, 1990	Boles de Boer and Evans 1996
Nicaragua	EP	E2	E2	1998	Freije and Rivas 2002
Panama	EA	W	P	1998	Foster, Gómez-Lobo, and Halpern 2000
Peru	EP	T	P	1994	Tóroero, Schroth, and Pascó-Font 2003
Peru (Lima)	EA, EP	WS	P	1990s	Alcázar, Xu, and Zuluaga 2002
Peru	EP	M	P, R1	1990–98	Tóroero and Pascó-Font 2001

Annex 1: Summary of Selected Country Studies on the Impact of Utility Reforms

Method	Impact							Summary
	E	W	P	Q	A	S	D	
CS, D	■		■	■			■	Large welfare gains for consumers stemming from price reductions. These reductions transferred producer surplus to consumer surplus. Also reported improvement in quality and reduction in labor force.
CS			■		■		■	The increase in the price of electricity reduced welfare at all expenditure deciles, with larger losses at the top of the distribution. Households that obtained access during the reform period experienced substantial gains in welfare, with larger gains among poorer households.
BI			■					Simulation of alternative subsidy designs to mitigate tariff impacts of proposed concession on the poor.
CS, WTP			■	■	■		■	Privatization brought dramatic improvements in coverage, quality, and technology. Privatization improved total consumer welfare, mainly by increasing access to the service. But price increase negatively affected low- and, especially, very-low-income households.
CF, CS	■		■	■	■	■	■	Overall welfare gains, but workers lose from forced early retirements. Consumers gain from expanded connections net of higher prices. Welfare gains would have been higher with full reform, analyzed as a counterfactual to actual partial reform.
BI, CS			■	■	■		■	Improvement in access for all sectors. But water is still of low quality, electricity reform has led to tariff increase (and consumer surplus has decreased), and prices of phone calls have increased (and consumer surplus has fallen).

(continued)

**ANNEX 1: Summary of Selected Country Studies on the Impact of Utility Reforms
(Continued)**

<i>Country</i>	<i>Analysis</i>	<i>Sector</i>	<i>Reform</i>	<i>Reform date</i>	<i>Source</i>
Philippines	EP	E2	M	1990–93	Toba 2003
Poland	EA	E1	T	1993	Wallich and Freund 1995
Senegal	EP	T	P	1997	Azam, Dia, and N'Guessan 2002
South Asia (Bangalore, Kathmandu)	EP	W	T	2002	Foster, Pattanayak, and Prokopy 2003
South Korea	EA	E1	P, M	2002	Lee, Lee, and Kim 2004
Spain	EA, EP	M	T	1996–2000	Arocena 2003
Sweden	EA	E2	R1	1996	Andersson and Bergman 1995

Method	Impact							Summary
	E	W	P	Q	A	S	D	
CF, CS	■		■			■	■	Reforms produced net benefit. Consumers and investors are net gainers (most of whom are foreigners), but government loses. Large benefits of avoided costs during power crisis and efficiency gains in generation.
CS, B			■		■		■	Increases in electricity prices hurt the poor more than increases of other energy prices. But the rich consumer absolutely uses more energy than the poor, so raising prices has a progressive effect.
D					■			Both fixed-line and mobile telephone penetration grew significantly.
BI			■					Current rising block tariffs in the water sector fail to deliver subsidies to the poor. Targeting would improve somewhat by use of individual or zonal criteria for subsidization. However, ultimately subsidizing connection may be a better strategy.
CS			■				■	Divestiture focusing on competition would result in overall welfare loss. With respect to welfare distribution, profits would increase dramatically, along with the substantial decrease in residential and commercial consumers' surplus. To protect consumers, options to increase demand elasticities should be implemented before divestiture.
BI			■				■	The poorest households lose from rebalancing in telecom (adverse effect from increase in line rentals, despite falling call prices). Further rebalancing would result in larger welfare losses for the poor.
CS			■					Deregulation is not a sufficient condition for lower prices. To lower prices, the deregulated market must consist of at least five firms of equal size.

(continued)

**ANNEX 1: Summary of Selected Country Studies on the Impact of Utility Reforms
(Continued)**

<i>Country</i>	<i>Analysis</i>	<i>Sector</i>	<i>Reform</i>	<i>Reform date</i>	<i>Source</i>
Uganda	EP	T	M	1997–98	Shirley, Tusubira, Gebreab, and Haggarty 2002
Ukraine	EA	E2	T	Ongoing	Dodonov, Opitz, and Pfaffenberger 2004
United Kingdom	EP	T	P	1984	Galal et al. 1994
	EP	M	P, T	1990s	Waddams Price and Hancock 1998
	EP	E2	P, R2	1990	Newbery and Pollitt 1997

Source: Authors.

Note: — = not available

Analysis: EA (ex ante); EP (ex post)

Sector: E1 (energy); E2 (electricity); M (multisectoral); T (telecom); W (water and sanitation)

Reform: P (privatization); R1 (regulatory reform); R2 (restructuring); T (tariff reform)

Annex 1: Summary of Selected Country Studies on the Impact of Utility Reforms

Method	Impact							Summary
	E	W	P	Q	A	S	D	
D			■	■	■			Access has expanded, service has improved, and tariffs have fallen.
CV, EV			■				■	Electricity tariff increases up to the level that would cover officially measured costs, as defined by the Ukrainian authorities, would not cause severe social problems. However, further increases up to a level comparable to the average Organisation for Economic Co-operation and Development level lead to significant welfare losses.
CF, CS	■	■	■				■	Overall welfare gain, although British Telecom's competitors lose. Consumers have the largest absolute gain, while domestic and foreign buyers as well as the government also are better off. Substantial layoffs, but severance pay made redundancy voluntary. Employees also bought a substantial number of shares.
CS			■				■	Mixed outcome, with adverse impacts on some household groups, such as pensioners.
CF			■			■	■	Large increase in profits and small decline in real final prices. Shareholders benefit disproportionately more than consumers.

Method: B (budget shares); BI (benefit incidence); CF (counterfactual analysis); CGE (computable general equilibrium); CS (consumer surplus); D (descriptive); EV (equivalent variation); NM (nonmonetary dimensions); WTP (willingness to pay)

Impact: E (employment); W (wages); P (price); Q (quality); A (access); S (assets); D (distribution, includes disaggregated analysis by quintiles, stakeholders, or winner and loser)

ANNEX

2

Summary of Cross-Country Studies on the Impact of Utility Reform

ANNEX 2: Summary of Cross-Country Studies on the Impact of Utility Reform

<i>Country</i>	<i>Analysis</i>	<i>Sector</i>	<i>Reform</i>	<i>Reform date</i>	<i>Source</i>
23 Organisation for Economic Co-operation and Development countries	EP	T	P, M	1991–97	Boylaud and Nicoletti 2000
21 Developing and transition countries	EP	M	P	1990s	Clarke and Wallsten 2002
17 Countries	EP	T	P	1981–94	D'Souza and Megginson 1999
21 Industrial and developing countries	EP	T	P	1984–97	D'Souza, Bortolotti, Fantini, and Megginson 2000
86 Developing countries	EP	T	P, R1, M	1985–99	Fink, Mattoo, and Rathindran 2003

Method	Impact							Summary
	E	W	P	Q	A	S	D	
F	■			■	■			Insignificant reduction in employment.
D			■	■	■			Privatization and competition lead to significant improvements in mainline penetration. But a comprehensive reform program, involving both policies and the support of an independent regulator, produced the largest gains. The sequence of reform matters: mainline penetration is lower if competition is introduced after privatization, rather than at the same time.
R					■		■	Expanded retail access is likely to lower the industrial price and increase the price differential between industrial customers and household customers. The unbundling of generation and the introduction of a wholesale spot market did not necessarily lower the price and may possibly have resulted in a higher price.
R	■	■			■			Sound regulatory governance has a positive impact on network expansion and efficiency. Openness of markets to competition and divestment of former state-owned operators also contributed positively to better performance. Competition and privatization have greater impact for lower-income countries than for higher-income ones, but regulatory reforms have a smaller impact on lower-income countries.
R	■							Both reforms improve access, but there is no consistent impact on quality. Deregulation associated with lower prices and employment increase; privatization with higher prices and employment decrease.

(continued)

**ANNEX 2: Summary of Cross-Country Studies on the Impact of Utility Reform
(Continued)**

<i>Country</i>	<i>Analysis</i>	<i>Sector</i>	<i>Reform</i>	<i>Reform date</i>	<i>Source</i>
10 OECD countries	EP	E2	R1	1987–99	Hattori and Tsutsui 2004
22 Latin American countries	EP	T	R1, P	1980–97	Gutiérrez 2003
Latin American survey	EP	M	P	1990s	Nellis 2003
26 Developing countries	EP	T	R1, P	1994	Petrazzini and Clark 1996
130 Countries	EP	T	P, M	1986–95	Ros 1999
30 African and Latin American countries	EP	T	P, R1, M	1984–97	Wallsten 2000

Method	Impact							Summary
	E	W	P	Q	A	S	D	
R			■				■	Expanded retail access is likely to lower the industrial price and increase the price differential between industrial customers and household customers. The unbundling of generation and the introduction of a wholesale spot market did not necessarily lower the price and may possibly have resulted in a higher price.
R					■			Sound regulatory governance has a positive impact on network expansion and efficiency. Openness of markets to competition and divestment of former state-owned operators also contributed positively to better performance. Competition and privatization have greater impact for lower-income countries than for higher-income ones, but regulatory reforms have a smaller impact on lower-income countries.
D	■	■	■	■	■	■	■	Recent studies conclude that privatization has contributed only slightly to rising unemployment and inequality, and either reduces poverty or has no effect on it. However, the benefits of privatization are spread widely in the medium term, while the costs are large and immediate.
R	■		■	■	■			Both reforms improve access, but there is no consistent impact on quality. Deregulation associated with lower prices and employment increase; privatization with higher prices and employment decrease.
R				■	■			Privatization associated with network expansion (except in lower-income countries) and efficiency. Competition associated with greater efficiency but not network expansion. No discernible impact on quality.
R			■		■			Increased competition associated with increase in access and decrease in cost. Privatization not helpful unless coupled with effective regulation.

(continued)

**ANNEX 2: Summary of Cross-Country Studies on the Impact of Utility Reform
(Continued)**

<i>Country</i>	<i>Analysis</i>	<i>Sector</i>	<i>Reform</i>	<i>Reform date</i>	<i>Source</i>
51 Developing countries	EP	E2	P, R1, M	1985–2000	Zhang, Parker, and Kirkpatrick 2002
Global survey	EP	M	P	1990s	Birdsall and Nellis 2002

Source: Authors.

Note: OECD = Organisation for Economic Co-operation and Development.

Analysis: EA (ex ante); EP (ex post)

Sector: E1 (energy); E2 (electricity); M (multisectoral); T (telecom); W (water and sanitation)

Reform: P (privatization); R1 (regulatory reform); R2 (restructuring); T (tariff reform)

Method	Impact							Summary
	E	W	P	Q	A	S	D	
R			■		■			Competition associated with higher service penetration and lower prices for industrial users (no significant effect on residential users), among others. On their own, privatization and regulation have insignificant effects. Together, they lead to greater electricity availability, generation capacity, and labor productivity.
D	■	■	■	■	■	■	■	Most privatization programs appear to have worsened the distribution of assets and income in the short run. This is more evident in transition economies than in Latin America, and less clear for utilities (such as electricity and telecom), where the poor have benefited from greater access, than for banks, oil companies, and other natural resource producers.

Method: B (budget shares); BI (benefit incidence); CF (counterfactual analysis); CGE (computable general equilibrium); CS (consumer surplus); D (descriptive); EV (equivalent variation); NM (nonmonetary dimensions); WTP (willingness to pay)

Impact: E (employment); W (wages); P (price); Q (quality); A (access); S (assets); D (distribution, includes disaggregated analysis by quintiles, stakeholders, or winner and loser)

Agricultural Market Reforms

Mattias Lundberg

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 (Govere, 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 Staatz (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

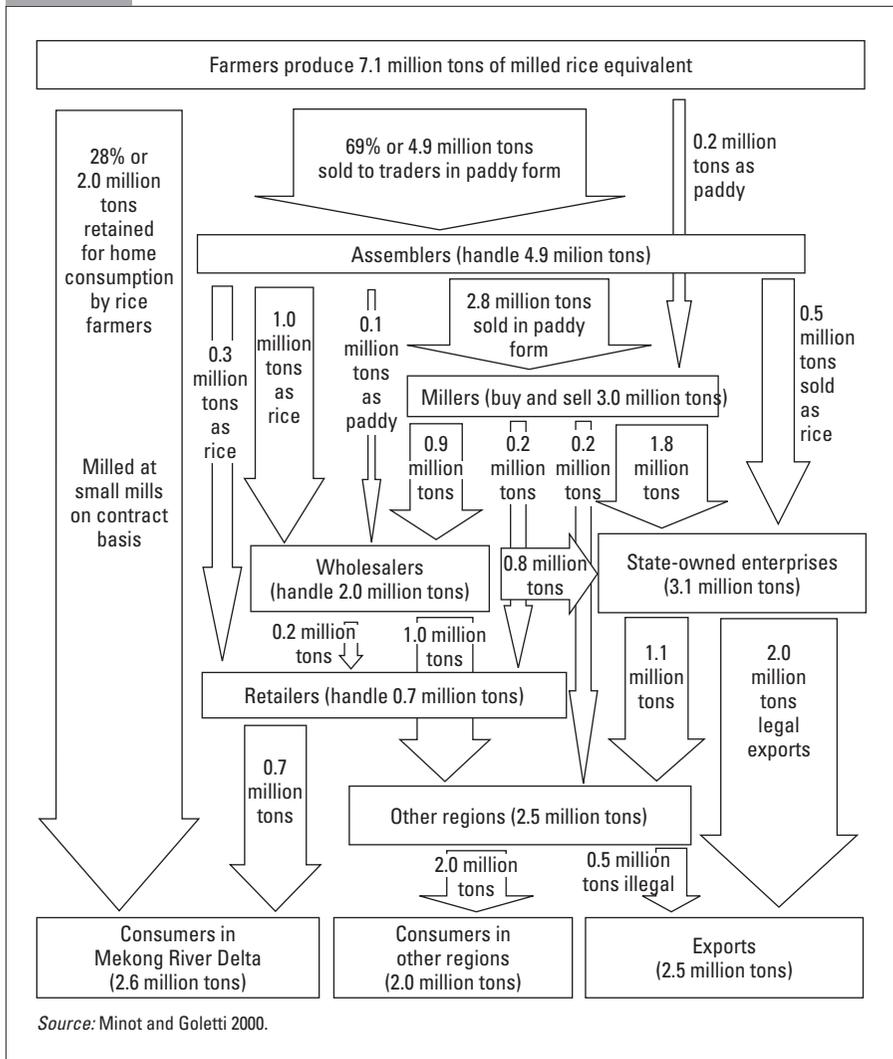
At a more aggregate level, one can conduct an analysis on an entire subsector, that is, tracing all factors and activities related to the production of one particular good. This involves computing budgets and the value added at each step, from the provision of seed and inputs to the final retail marketing. 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 Cherele-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.

BIBLIOGRAPHY

- Abdulai, A., and W. Huffman. 2000. "Structural Adjustment and Economic Efficiency of Rice Farmers in Northern Ghana." *Economic Development and Cultural Change* 48 (3): 503–20.
- Adams, D. W., D. H. Graham, and J. D. von Pischke. 1984. *Undermining Rural Development with Cheap Credit*. Boulder, CO: Westview Press.
- Akiyama, T., J. Baffes, D. F. Larson, and P. Varangis, eds. 2001. *Commodity Market Reforms: Lessons of Two Decades*. Washington, DC: World Bank.

- . 2003. “Commodity Market Reform in Africa: Some Recent Experience.” Policy Research Working Paper 2995, Development Research Group, Rural Development, World Bank, Washington, DC.
- Alston, J. M., P. G. Pardey, and J. Roseboom. 1998. “Financing Agricultural Research: International Investment Patterns and Policy Perspectives.” *World Development* 26 (6): 1,057–71.
- Alwang, J., and P. B. Siegel. 1999. “Labor Shortages on Small Landholding in Malawi: Implications for Policy Reforms.” *World Development* 27 (8): 1,461–75.
- Alwang, J., P. B. Siegel, and S. L. Jorgensen. 1996. “Seeking Guidelines for Poverty Reduction in Rural Zambia.” *World Development* 24 (11): 1,711–23.
- Arndt, C., R. Schiller, and F. Tarp. 1998. “Maize Markets and Rural Storage in Mozambique: A Spatial and Temporal Analysis.” Purdue University, West Lafayette, IN. Mimeo.
- Arulpragasam, J., and C. del Ninno. 1996. “Do Cheap Imports Harm the Poor? Rural-Urban Tradeoffs in Guinea.” In D. E. Sahn, ed., *Economic Reform and the Poor in Africa*, 266–397. Oxford, UK: Clarendon Press.
- Askari, H., and J. T. Cummings. 1977. “Estimating Agricultural Supply Response with the Nerlove Model: A Survey.” *International Economic Review* 18 (2): 257–92.
- Badiane, O., F. Goletti, M. Kherallah, P. Berry, K. Govindan, P. Gruhn, and M. Mendoza. 1997. *Agricultural Input and Output Marketing Reforms in African Countries*. Washington, DC: International Food Policy Research Institute.
- Baffes, J. 2002. “Tanzania’s Cotton Sector: Constraints and Challenges in a Global Environment.” Development Prospects Group and Africa Region, World Bank, Washington, DC. Mimeo.
- Bappenas (Indonesia National Development Planning Agency), Department Pertanian (Ministry of Agriculture), United States Agency for International Development, Development Alternatives, Inc., and Food Policy Advisory Team. 2003. “Indonesian Food Policy Program: The Food Policy Agenda.” Policy Brief 34. Bappenas, Jakarta. www.macrofoodpolicy.com/docs/pb/foodpolicyagenda.pdf.
- Bardhan, P., S. Bowles, and H. Gintis. 1998. “Wealth Inequality, Wealth Constraints, and Economic Performance.” CIDER Working Paper C98-097, University of California, Center for International and Development Economics Research, Berkeley, CA.
- Barnum, H., and L. Squire. 1979. *A Model of an Agricultural Household*. Washington, DC: World Bank.
- Barrett, C. B. 1994. “Understanding Uneven Agricultural Liberalization in Madagascar.” *Journal of Modern African Studies* 32 (2): 449–76.
- . 1997. “Food Marketing Liberalization and Trader Entry: Evidence from Madagascar.” *World Development* 25 (5): 763–77.
- Barrett, C. B., and P. A. Dorosh. 1996. “Farmers Welfare and Changing Food Prices: Nonparametric Evidence from Rice in Madagascar.” *American Journal of Agricultural Economics* 78 (3): 656–69.
- Barrett, C. B., and D. G. Maxwell. Forthcoming. *Food Aid after 50 Years: Recasting Its Role*. London: Routledge.

- Bates, R. 1981. *Markets and States in Tropical Africa: The Political Basis of Agricultural Policies*. Berkeley, CA: University of California Press.
- Bazaara, N. 2001. "The Impact of Liberalisation on Agriculture and Food Security in Uganda: Final Report." Structural Adjustment Participatory Review Initiative Uganda. Center for Basic Research, Kampala. www.saprin.org/uganda/research/uga_liberalization.pdf. Mimeo.
- Binswanger, H. P. 1989. "How Agricultural Producers Respond to Prices and Government Investments." Paper presented at the Annual Bank Conference on Development Economics, World Bank, Washington, DC, April 27–28.
- Bond, M. 1983. "Agricultural Responses to Prices in Sub-Saharan Africa." *IMF Staff Papers* 30 (4): 703–26. International Monetary Fund, Washington, DC.
- BOSTID (National Academy of Sciences, Bureau of Science and Technology, Office of International Affairs). 1996. *Lost Crops of Africa: Volume I: Grains*. Washington, DC: National Academies Press.
- Boughton, D., D. Tschirley, B. Zulu, A. Osorio Ofiço, and H. Marrule. 2003. "Cotton Sector Policies and Performance in Sub-Saharan Africa: Lessons behind the Numbers in Mozambique and Zambia." Michigan State University, Department of Agricultural Economics, East Lansing, MI. Mimeo.
- Braverman, A., and J. S. Hammer. 1986. "Multimarket Analysis of Agricultural Pricing Policies in Senegal." In I. Singh, L. Squire, and J. Strauss, eds., *Agricultural Household Models: Extensions, Applications, and Policy*, 233–254. Baltimore: Johns Hopkins University Press.
- Budd, J. W. 1993. "Changing Food Prices and Rural Welfare: A Nonparametric Examination of the Côte d'Ivoire." *Economic Development and Cultural Change* 41 (3): 587–603.
- Chhibber, A. 1989. "The Aggregate Supply Response in Agriculture: A Survey." In S. Commander, ed., *Structural Adjustment and Agriculture: Theory and Practice in Africa and Latin America*, 45–68. London: Overseas Development Institute.
- Cooksey, B. 2003. "Marketing Reform? The Rise and Fall of Agricultural Liberalization in Tanzania." *Development Policy Review* 21 (1): 67–91.
- Copestake, J. G. 1998. "Agricultural Credit Management in Zambia: Business Development, Social Security, or Patronage?" *Development Policy Review* 16 (1): 5–28.
- Csaki, C., J. Nash, V. Matusevich, and H. Kray. 2002. "Food and Agricultural Policy in Russia: Progress to Date and the Road Forward." Technical Paper 523, World Bank, Washington, DC.
- Deaton, A. 1989. "Rice Prices and Income Distribution in Thailand: A Nonparametric Analysis." *Economic Journal* 99 (395) (Supplement): 1–37.
- Dehn, J. 2000. "Commodity Price Uncertainty in Developing Countries." Policy Research Working Paper 2426, Development Research Group, Rural Development, World Bank, Washington, DC.
- Dembélé, N. N., and J. M. Staatz. 1999. "The Impact of Market Reform on Agricultural Transformation in Mali." MSU Agricultural Economics Staff Paper 99-29, Michigan State University, Department of Agricultural Economics, East Lansing, MI.

- Dercon, S. 2002. *The Impact of Economic Reforms on Rural Households in Ethiopia: A Study from 1989–1995*. Washington, DC: World Bank, Poverty Dynamics in Africa Initiative.
- Dercon, S., and P. Krishnan. 1996. "Income Portfolios in Rural Ethiopia and Tanzania: Choices and Constraints." *Journal of Development Studies* 32 (6): 850–75.
- Devarajan, S., and D. Rodrik. 1989. "Trade Liberalization in Developing Countries: Do Imperfect Competition and Scale Economies Matter?" *American Economic Review* 79 (2): 283–87.
- Devarajan, S., W. R. Easterly, H. Fofack, D. S. Go, J. A. Izquierdo, C. E. Petersen, L. Pizzati, C. L. Scott, and L. Serven. 2000. "A Macroeconomic Framework for Poverty Reduction Strategy Papers." World Bank, Washington, DC.
- Dorosh, P. A., and M. Lundberg. 1996. "More Than Just Peanuts (Groundnuts): Aid Flows and Policy Reforms in The Gambia." In D. E. Sahn, ed., *Economic Reform and the Poor in Africa*, 398–435. Oxford, UK: Clarendon Press.
- Dorosh, P. A., C. del Ninno, and D. E. Sahn. 1996. "Market Liberalization and the Role of Food Aid in Mozambique." In D. E. Sahn, ed., *Economic Reform and the Poor in Africa*, 339–65. Oxford, UK: Clarendon Press.
- Dorward, A., and J. A. Morrison. 2000. "The Agricultural Development Experience of the Past 30 Years: Lessons for LDCs." United Nations Food and Agriculture Organization, Rome. Mimeo.
- Duncan, A., and J. Howell, eds. 1992. *Structural Adjustment and the African Farmer*. Portsmouth, NH: Heinemann.
- Eicher, C. K., and B. Kupfuma. 1997. "Zimbabwe's Emerging Maize Revolution." In D. Byerlee and C. K. Eicher, eds., *Africa's Emerging Maize Revolution*, 25–44. Boulder, CO: Lynne Rienner Publishers.
- Fafchamps, M. 1992. "Cash Crop Production, Food Price Volatility, and Rural Market Integration in the Third World." *American Journal of Agricultural Economics* 74 (1): 90–99.
- Fafchamps, M., and B. Minten. 1998. "Relationships and Traders in Madagascar." MSSD Discussion Paper 24, International Food Policy Research Institute, Markets and Structural Studies Division, Washington, DC.
- Francis, P. A., J. T. Milimo, C. A. Njovu, and S. P. M. Tembo. 1997. "Listening to Farmers: Participatory Assessment of Policy Reform in Zambia's Agricultural Sector." World Bank, Washington, DC. Mimeo.
- Fry, Maxwell. 1988. *Money, Interest, and Banking in Economic Development*. Baltimore: Johns Hopkins University Press.
- Garnsey, Peter. 1998. *Cities, Peasants and Food in Classical Antiquity: Essays in Social and Economic History*. Edited with addenda by Walter Scheidel. Cambridge, UK: Cambridge University Press.
- Gemo, H., and W. M. Rivera. 2001. "Mozambique's Move Towards a Pluralistic National System of Rural Extension." Agren Network Paper 110, Overseas Development Institute, Agricultural Research and Extension Network, London.
- Gilbert, C. L., and J. ter Wengel. 2001. "The Production and Marketing of Primary Commodities." In Common Fund for Commodities, ed., *Commodities and*

- Development at the Turn of the Millennium*. Amsterdam: Common Fund for Commodities.
- Govere, J., T. S. Jayne, and J. Nyoro. 1999. "Smallholder Commercialization, Interlinked Markets, and Food Crop Productivity: Cross-Country Evidence in Eastern and Southern Africa." Michigan State University, Department of Agricultural Economics and Department of Economics, East Lansing, MI. Mimeo.
- Gutner, T. 1999. "The Political Economy of Subsidy Reform in Egypt." Food Consumption and Nutrition Division Discussion Paper 77, International Food Policy Research Institute, Washington, DC.
- Hartell, J. G., and J. F. M. Swinnen. 1997. "Trends in Agricultural Price and Trade Policy Instruments since 1990 in Central European Countries." Policy Research Group Working Paper 4, Catholic University, Department of Agricultural Economics, Policy Research Group, Leuven, Belgium.
- Hawkins, J. 1991. "Understanding the Failure of IMF Reform: The Zambian Case." *World Development* 19 (7): 839–49.
- Hazell, P. B. 2004. "A New Agenda for Pro-Poor Agricultural Development." International Food Policy Research Institute, Washington, DC. Mimeo.
- Hazell, P. B., C. Ramasamy, and V. Rajagopalan. 1991. "An Analysis of the Indirect Effects of Agricultural Growth on the Regional Economy." In P. B. Hazell and C. Ramasamy, eds., *The Green Revolution Reconsidered: The Impact of High-Yielding Rice Varieties in South India*, 153–180. Baltimore: Johns Hopkins University Press.
- Howard, J., and C. Mungoma. 1997. "Zambia's Stop-and-Go Maize Revolution." In D. Byerlee and C. K. Eicher, eds., *Africa's Emerging Maize Revolution*, 45–62. Boulder, CO: Lynne Rienner Publishers.
- Humphreys, C. P. 1986. "Cereal Policy Reform in Mali." World Bank, Washington, DC. Mimeo.
- Jarvis, L. S., J. Cancino, and E. Vera-Toscana. 2004. "The Agricultural Effects of Land and Economic Reforms in Chile, 1965–2000." University of California, Department of Agricultural and Resource Economics, Davis, CA. Mimeo.
- Jayarajah, C., and W. Branson. 1995. "Structural and Sectoral Adjustment: World Bank Experience, 1980–92." World Bank Operations Evaluation Study, Washington, DC.
- Jayne T. S., M. Mukumbu, M. Chisvo, D. Tschirley, M. T. Weber, B. Zulu, R. Johansson, P. Santos, and D. Soroko. 1999. "Successes and Challenges of Food Market Reform: Experiences from Kenya, Mozambique, Zambia, and Zimbabwe." International Development Working Paper 72, Michigan State University, Department of Agricultural Economics, East Lansing, MI.
- Jayne, T. S., M. Mukumbu, J. Duncan, J. M. Staatz, J. Howard, M. Lundberg, K. Aldridge, B. Nakaponda, J. Ferris, F. Keita, and A. K. Sanankoua. 1996. "Trends in Real Food Prices in Six Sub-Saharan African Countries." United States Agency for International Development, Washington, DC. Mimeo.

- Josling, T. 1998. "Agri-Food Policies in an Open Economy: Scope for Domestic Policies under the WTO." Stanford University, Stanford, CA. Mimeo.
- Khan, H. A., and E. Thorbecke. 1988. "Macroeconomic Effects of Technology Choice: Multiplier and Structural Path Analysis within a SAM Framework." *Journal of Policy Modeling* 11 (1): 131–56.
- Kherallah, M., C. Delgado, E. Gabre-Madhin, N. Minot, and M. Johnson. 2002. *Reforming Agricultural Markets in Africa*. Baltimore: Johns Hopkins University Press.
- King, F. H. 1911. *Farmers of Forty Centuries, or Permanent Agriculture in China, Korea, and Japan*. Kutztown, PA: Rodale Press. Reprint.
- King, R. G., and R. Levine. 1993. "Finance and Growth: Schumpeter Might Be Right." *Quarterly Journal of Economics* 108 (3): 717–37.
- Knudsen, O., and J. Nash. 1990. "Domestic Price Stabilization Schemes in Developing Countries." *Economic Development and Cultural Change* 38 (3): 539–58.
- Kodderitzsch, S. 1999. *Reforms in Albanian Agriculture: Assessing a Sector in Transition*. Washington, DC: World Bank.
- Krueger, A. O., M. Schiff, and A. Valdés. 1988. "Agricultural Incentives in Developing Countries: Measuring the Effect of Sectoral and Economywide Policies." *World Bank Economic Review* 2 (3): 255–72.
- , eds. 1991. *The Political Economy of Agricultural Pricing Policy*. Baltimore: Johns Hopkins University Press.
- Kydd, J., and A. Dorward. 2003. "Implications of Market and Coordination Failures for Rural Development in Least Developed Countries." Paper presented at the Development Studies Association annual conference, Strathclyde University, Glasgow, September 10–12.
- Lampietti, J., ed. 2004. "Power's Promise: Electricity Reforms in Eastern Europe and Central Asia." Policy Research Working Paper 40, World Bank, Washington, DC.
- Lundberg, M., and K. Rich. 2002. "Multimarket Models and Policy Analysis: An Application to Madagascar." Development Economics Research Group/Poverty Reduction Group, Environment and Infrastructure Team, World Bank, Washington, DC. Mimeo.
- Macours, K., and J. F. M. Swinnen. 2000. "Impact of Initial Conditions and Reform Policies on Agricultural Performance in Central and Eastern Europe, the Former Soviet Union, and East Asia." *American Journal of Agricultural Economics* 82 (5): 1,149–55.
- McCulloch, N., R. Baulch, and M. Chereh-Robson. 2000. "Poverty, Inequality and Growth in Zambia during the 1990s." IDS Working Paper 114, University of Sussex, Institute of Development Studies, Brighton, UK.
- Meerman, J. P. 1997. "Reforming Agriculture: The World Bank Goes to Market." World Bank Operations Evaluation Study, Washington, DC.
- Minot, N., and F. Goletti. 2000. "Rice Market Liberalization and Poverty in Vietnam." Research Report 114, International Food Policy Research Institute, Washington, DC.

- Minten, B., and S. Kyle. 2000. "Asymmetry in Food Price Transmission in African Retail Markets: The Case of Kinshasa." Staff Paper 95-06, Cornell University, Department of Agricultural, Resource and Managerial Economics, Ithaca, NY.
- Mosley, P. 1987. "Conditionality as Bargaining Process: Structural Adjustment Lending 1980–86." *Princeton Essays in International Economics Working Paper Series* 168. Princeton University, Department of Economics, International Economics Section, Princeton, NJ.
- Mundlak, Y., D. Cavallo, and R. Domenech. 1989. "Agriculture and Economic Growth in Argentina, 1913–84." Research Report 76, International Food Policy Research Institute, Washington, DC.
- Murshid, K. A. S. n.d. "Implications of Agricultural Policy Reforms on Rural Food Security and Poverty." Bangladesh Institute of Development Studies, Dhaka, Bangladesh. Mimeo.
- Mwanaumo, A. 1999. "Agricultural Marketing Policy Reforms in Zambia." Paper presented at the workshop Agricultural Transformation in Africa, Nairobi, Kenya, June 27–30.
- Myint, H. 1971. *Economic Theory and the Underdeveloped Countries*. New York: Oxford University Press.
- Nerlove, M. 1958. *The Dynamics of Supply Response: Estimation of Farmers Response to Price*. Baltimore: Johns Hopkins University Press.
- Nicita, A., M. Olarreaga, and I. Soloaga. 2002. "A Simple Methodology to Assess the Poverty Impact of Economic Policies Using Household Data: An Application to Cambodia." World Bank, Washington, DC. Mimeo.
- Nouve, K., and G. Nyambane. 2003. "Privatization and Interlinked Credit-Output Contracts in Francophone Africa: An Illustration with the Cotton Sub-Sector in Mali." Paper presented at the eighty-first European Association of Agricultural Economists seminar Economics of Contracts in Agriculture, Third Annual Workshop, Copenhagen, June 19–21.
- OECD (Organisation for Economic Co-operation and Development). 2001. *Market Effects of Crop Support Measures*. Paris.
- . 2003. *Agricultural Policies in OECD Countries: Monitoring and Evaluation Highlights*. Paris.
- Olson, M., Jr. 1965. *The Logic of Collective Action: Public Goods and the Theory of Groups*. Cambridge, MA: Harvard University Press.
- Owens, J. 2003. "How Important is Access to ADMARC Markets in Malawi?" World Bank, Poverty Reduction Group, Washington, DC. Mimeo.
- . 2004. "Competition and Coordination in Liberalized African Cotton Marketing Systems." *World Development* 32 (3): 519–36.
- Pearce, R., and J. A. Morrison. 2002. "State Trading Enterprises in Developing Country Agriculture: Issues for the WTO Negotiations." United Nations Food and Agriculture Organization, Rome. Mimeo.
- Poulton, C., J. Kydd, and S. Harvey. 1999. "Agricultural Trade and Marketing Liberalisation in Sub-Saharan Africa and Latin America: The Impact on Growth and Poverty." *Quarterly Journal of International Agriculture* 38 (4): 315–39.

- Poulton, C., P. Gibbon, B. Hanyani-Mlambo, J. Kydd, W. Maro, M. Nylandsted Larsen, A. Osorio, D. Tschirley, and B. Zulu. 2004. "Competition and Coordination in Liberalized African Cotton Market Systems." *World Development* 32 (3): 519–36.
- Prebisch, R. 1950. *The Economic Development of Latin America and its Principal Problems*. New York: United Nations.
- Rahman, A., M. M. Shafiqur Rahman, A. Quashem, Z. Ali, and A. Rahman. 2000. "Impact of Structural Adjustment Policies: An Assessment Using Participatory Techniques." Structural Adjustment Participatory Review Initiative. SAPRI Study Office, Center for Policy Dialogue, Dhaka, Bangladesh. www.saprin.org/bangladesh/research/ban_par.htm.
- Robilliard, A.-S., F. Bourguignon, and S. Robinson. 2001. "Crisis and Income Distribution: A Micro-Macro Model for Indonesia." World Bank, Washington, DC. Mimeo.
- Rodrik, D., and M. McMillan. 2002. "When Economic Reform Goes Wrong: Cashews in Mozambique." NBER Working Paper 9117, National Bureau of Economic Research, Cambridge, MA.
- Rozelle, S., and J. F. M. Swinnen. 2000. "Transition and Agriculture." Working Paper 00-21, University of California, Department of Agricultural and Resource Economics, Davis, CA.
- Rukuni, M., M. J. Blackie, and C. K. Eicher. 1998. "Crafting Smallholder-Driven Agricultural Research Systems in Southern Africa." *World Development* 26 (6): 1,073–87.
- Sadoulet, E., and A. de Janvry. 1992. "Agricultural Trade Liberalization and Low-Income Countries: A General Equilibrium Multimarket Approach." *American Journal of Agricultural Economics* 74 (2): 268–80.
- . 1995. *Quantitative Development Policy Analysis*. Baltimore: Johns Hopkins University Press.
- Sahn, D. E. 1987. "Changes in the Living Standards of the Poor in Sri Lanka during a Period of Macroeconomic Restructuring." *World Development* 15 (6): 809–30.
- Sahn, D. E., P. A. Dorosh, and S. D. Younger. 1998. *Structural Adjustment Reconsidered: Economic Policy and Poverty in Africa*. Cambridge, UK: Cambridge University Press.
- Salinger, L., and H. Almeida-Dominguez. 1995. "Mexico: Maize Processing Sub-sector Study." Mexican Ministry of Agriculture, Livestock, and Rural Development, Mexico City. Mimeo.
- SAPRIN (Structural Adjustment Participatory Review International Network). 2004. *Structural Adjustment, the SAPRI Report: The Policy Roots of Economic Crisis, Poverty, and Inequality*. London: Zed Books.
- Seibel, H. D. 2001. "Agricultural Development Bank Reform." University of Cologne, Development Research Center, Cologne. Mimeo.
- Sen, K. K., and A. Chinkunda. 2002. "Economic Reforms and Rural Livelihoods in Malawi." Ladder Working Paper 20, University of East Anglia, Overseas Development Group, Norwich, UK.

- Shively, G. E. 1996. "Food Price Variability and Economic Reform: An Arch Approach for Ghana." *American Journal of Agricultural Economics* 78 (1): 126–36.
- Singer, H. 1950. "The Distribution of Gains between Investing and Borrowing Countries." *American Economic Review* 40 (2): 473–85.
- Singh, I., L. Squire, and J. Strauss, eds. 1986. *Agricultural Household Models: Extensions, Applications, and Policy*. Baltimore: Johns Hopkins University Press.
- Singh, S. 2002. "Contracting Out Solutions: The Political Economy of Contract Farming in the Indian Punjab." *World Development* 30 (9): 1,621–38.
- Srinivasan, P. V., and S. Jha. 2001. "Liberalized Trade and Domestic Price Stability: The Case of Rice and Wheat in India." *Journal of Development Economics* 65 (2): 417–41.
- Stifel, D., and J.-C. Randrianarisoa. 2004. "Rice Prices, Agricultural Input Subsidies, Transactions Costs and Seasonality: A Multi-Market Model Approach to Poverty and Social Impact Analysis for Madagascar." Lafayette College, Easton, PA. Mimeo.
- Subbarao, K., A. Bonnerjee, J. Braithwaite, S. Carvalho, K. Ezemenari, C. Graham, and A. Thompson. 1997. *Safety Net Programs and Poverty Reduction: Lessons from Cross-Country Experience*. Washington, DC: World Bank.
- Subramanian, S., and E. Sadoulet. 1990. "The Transmission of Production Fluctuations and Technical Change in a Village Economy: A Social Accounting Matrix Approach." *Economic Development and Cultural Change* 39 (1): 131–73.
- Swaminathan, M. 2002. "Liberalisation and Policies of Food Security: The Indian Experience." Paper presented to the Ethiopian Economic Association, Addis Ababa, January 3–5.
- Swinnen, J. F. M., and H. Beerlandt. 2003. "The Impact of Trade Liberalization and Institutional Reforms on Rural Poverty and Food Security in Transition Countries." Catholic University, Research Group on Food Policy, Transition and Development, Leuven, Belgium. Mimeo.
- Taylor, J. E., and I. Adelman. 2003. "Agricultural Household Models: Genesis, Evolution, and Extensions." *Review of Economics of the Household* 1 (1): 33–58.
- Temu, A., and A. Winter-Nelson. 2001. "Institutional Adjustment and Agricultural Markets: Following the Transaction Costs in the Tanzanian Coffee System." University of Illinois, Department of Agricultural and Consumer Economics, Champaign-Urbana, IL. Mimeo.
- Thorbecke, E. 1985. "The Social Accounting Matrix and Consistency-Type Models." In G. Pyatt and J. I. Round, eds., *Social Accounting Matrices: A Basis for Planning*, 207–256. Washington, DC: World Bank.
- Timmer, C. P., ed. 1991. *Agriculture and the State: Growth, Employment, and Poverty in Developing Countries*. Ithaca, NY: Cornell University Press.
- . 1993. "Rural Bias in the East and Southeast Asian Rice Economy: Indonesia in Comparative Perspective." *Journal of Development Studies* 29 (4): 149–76.

- . 1996. “Does Bulog Stabilize Rice Prices? Should It Try?” *Bulletin of Indonesian Economic Studies* 32 (2): 45–74.
- Timmer, C. P., W. P. Falcon, and S. R. Pearson. 1983. *Food Policy Analysis*. Baltimore: Johns Hopkins University Press.
- Townsend, R. F. 1999. “Agricultural Incentives in Sub-Saharan Africa: Policy Challenges.” Technical Paper 444, World Bank, Washington, DC.
- Trairatvorakul, P. 1984. “The Effects on Income Distribution and Nutrition of Alternative Rice Price Policies in Thailand.” Research Report 46, International Food Policy Research Institute, Washington, DC.
- Valdés, A. 1996. “Surveillance of Agricultural Price and Trade Policy in Latin America during Major Policy Reforms.” Discussion Paper 349, World Bank, Washington, DC.
- van de Walle, D. 1998. “Assessing the Welfare Impacts of Public Spending.” *World Development* 26 (3): 365–79.
- Varangis, P., D. Larson, and J. R. Anderson. 2002. “Agricultural Markets and Risks: Management of the Latter, Not the Former.” Policy Research Working Paper 2793, Development Research Group, Rural Development, World Bank, Washington, DC.
- Warning, M., and N. Key. 2002. “The Social Performance and Distributional Consequences of Contract Farming: An Equilibrium Analysis of the *Arachide de Bouche* Program in Senegal.” *World Development* 30 (2): 255–63.
- Webb, Patrick. 2002. “Emergency Relief during Europe’s Famine of 1817: Anticipated Responses to Today’s Humanitarian Disasters.” Working Papers in Food Policy and Applied Nutrition 14, Tufts University, Friedman School of Nutrition Science and Policy, Food Policy and Applied Nutrition Program, Boston, MA.
- Weber, M. T., J. M. Staatz, J. S. Holtzman, E. W. Crawford, and R. H. Bernsten. 1988. “Informing Food Security Decisions in Africa: Empirical Analysis and Policy Dialogue.” *American Journal of Agricultural Economics* 70 (5): 1,044–52.
- World Bank. 1983. *World Development Report 1983: Management in Development*. New York: Oxford University Press.
- . 1994a. *Adjustment in Africa: Reforms, Results, and the Road Ahead*. New York: Oxford University Press.
- . 1994b. “Zambia Poverty Assessment.” Working Paper 12985-ZA, Africa Regional Office, Southern Africa Department, Population and Human Resources Division, Washington, DC.
- . 2001a. “Zambia Public Expenditure Review: Public Expenditure, Growth and Poverty, a Synthesis.” Working Paper 22543-ZA, Washington, DC.
- . 2001b. “Rural Poverty Alleviation in Brazil: Toward an Integrated Strategy,” Vols. 1 and 2. Policy Summary and Technical Papers 27190-BR, Washington, DC.
- . 2001c. “Tanzania at the Turn of the Century: From Reforms to Sustained Growth and Poverty Reduction.” World Bank Country Study, Washington, DC.

- . 2001d. “Mexico Land Policy: A Decade after the Ejido Reform.” Working Paper 22187, Washington, DC.
- . 2003a. *Global Economic Prospects 2004: Realizing the Development Promise of the Doha Agenda*. Washington, DC: Development Prospects Group.
- . 2003b. “Poverty and Social Impact Analysis: Chad Cotton Sector Reform, Ex-Ante Qualitative Analysis, First Phase.” World Bank, Poverty and Social Impact Analysis, Washington, DC. Mimeo.
- . 2003c. “Reforming the Malawi Agricultural Development and Marketing Corporation (ADMARC): Synthesis Report of the Poverty and Social Impact Analysis.” Report 27512, Washington, DC.
- Yaron, J., and S. Charitenenko. 1999. *Making the Transition from State Agricultural Credit Institution to Rural Financial Intermediary: Role of the State and Reform Options*. Washington, DC: World Bank.

Land Policy Reforms

Klaus Deininger

This chapter is a source on key land policy issues for practitioners and policy makers. It aims to provide information about the way Poverty and Social Impact Analysis (PSIA) can be used to explore hypotheses to address these issues properly. To be effective, PSIA must explicitly take into account the needs and priorities of stakeholders in an ongoing policy dialogue. The chapter therefore identifies the requirements so that PSIA can fit into an ongoing policy dialogue or, if there is no such dialogue, generate one on a topic of particular land policy relevance. The discussion of substantive and methodological subjects related to PSIA is brief as these are examined in more detail elsewhere (Bourguignon and Pereira da Silva 2003; Deininger 2003).

The chapter focuses on two key land policy interventions: securing land tenure and improving access to land. The section on securing land tenure highlights ways to enhance tenure security and the impact of greater tenure security on investment, conflicts over land, and land market participation. The section on access to land covers the principles that affect the functioning of land markets and discusses policies to expand land access, particularly by the poor, by improving the functioning of markets or through direct transfers.

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PSIAs depend on quantitative information that is often not available through standard household surveys. For this reason, the chapter considers practical questions about sampling and questionnaire design so that household and community surveys can make meaningful and quantifiable contributions to the land policy dialogue.

BACKGROUND

The relevance of land policy

Inappropriate land policies constitute a serious constraint on economic and social development in a number of respects that are significant to developing countries. Insecure land tenure, outdated land laws, and slow or dysfunctional institutions of land administration can restrict private investment, undermine good governance, and reduce the ability of local authorities to raise taxes. Highly skewed distributions of landownership and patterns of land access that discriminate according to gender or ethnicity limit the ability of decentralized market mechanisms to put land to its best uses; shrink economic opportunities among disadvantaged groups, including the ability to use land as collateral; and foment social conflict and violence.

While the importance of land tenure and access to land for agricultural production and for shelter and housing has long been clear, recent research surpasses this recognition by emphasizing the significance of secure property rights over land as a precondition for sustainable pro-poor economic growth. This perspective is based on several considerations.

Investment climate

Nontransparent, corrupt, or inefficient systems of land administration and allocation add substantial costs to the efforts of small entrepreneurs to transform good ideas into viable enterprises. Indeed, in investment climate surveys conducted by the World Bank, poor access to land was identified as the main obstacle to business by 25 percent of enterprises in Kenya as well as Tanzania, 35 percent in Bangladesh, and 57 percent in Ethiopia.

Credit market access. Well-functioning land institutions and markets and the opportunities they create to use easily transferable land titles as collateral can help reduce the cost of acquiring credit, thus contributing to the development of enterprises and financial systems.

Local government revenues. Greater demand for land, together with public investment in roads and other infrastructure, tends to boost land

values. In many cases, inadequate mechanisms for taxing land mean that the opportunity for local governments and local residents to benefit from such increases in value is constrained. Instead, the gains fuel speculation or end up as bribes.

Accountability and transparency. In most developing countries, more than half the wealth of households is in land and real estate. If the system to administer such a significant portion of national wealth is perceived to be corrupt, inefficient, and untrustworthy, it is difficult to maintain confidence in the rule of law and in the competence of the state.

Social peace. The importance of land for economic growth does not reduce its relevance for poverty reduction. Even access to small plots of land can improve household welfare and act as a safety net. In situations where land has been expropriated during a colonial past, land reforms are generally economically and socially desirable.

Longitudinal analysis of standard indicators of human development in countries exhibiting similar conditions, but showing stark differences in land institutions, illustrate the social and economic costs of inappropriate land institutions. Comparing Colombia and Costa Rica with El Salvador and Guatemala provides an example. Although these countries share a common colonial history, language, religion, climate, topography, factor endowment, and technology, they reacted in very different ways to the coffee boom of the nineteenth century.

In El Salvador and Guatemala, large landowners depended on a repressive labor regime to remain economically viable, and the boom led to land expropriation and the massive concentration of land in the possession of a few, to the detriment especially of indigenous communities. Landlords held a monopsony on power in the labor market, which allowed them to pay their workers the bare subsistence minimum, thereby eliminating any incentives for human capital accumulation.

By contrast, in Colombia and Costa Rica, which are characterized by small landholdings, elites depended on trade rather than the revenue from large agricultural plantations, and the coffee boom led to the emergence of a smallholder coffee economy. As a consequence of these distinct reactions to the boom, literacy rates, as well as other indicators of socioeconomic development, have differed sharply between the two sets of countries since the late nineteenth century (Table 5.1). Perhaps most revealing, the establishment of democracy occurred about 40 years later in the two countries where large landlords exercised such dominance.

To complement this evidence with a cross-country perspective, Figure 5.1 illustrates the impact of unequal landownership distribution in the

TABLE 5.1 The Impact of Landownership Distribution in Four Latin American Countries

<i>Indicators</i>	<i>Colombia</i>	<i>Costa Rica</i>	<i>Guatemala</i>	<i>El Salvador</i>
<i>Structural characteristics</i>				
Land privatization	1870–80	1820–40	1870s	1870s
Coffee farms smaller than 10 hectares (%)	61.0	42.2	13.1	13.5
Coffee farms larger than 50 hectares (%)	14.0	37.5	79.5	57.1
<i>Coffee in exports (%)</i>				
1900	49	76	56	83
1929	55	58	77	93
<i>Social and economic development</i>				
GDP per capita (PPP US\$, 1995)	6,130	5,850	3,340	2,610
<i>Adult literacy (%)</i>				
1900	34	36	12	26
1910	40	50	13	26
1930	52	67	18	27
1980	85	91	54	64
Human Development Index (rank)	51	33	117	112
Democracy since	1958	1948	1996	1992

Source: Nugent and Robinson 2002.

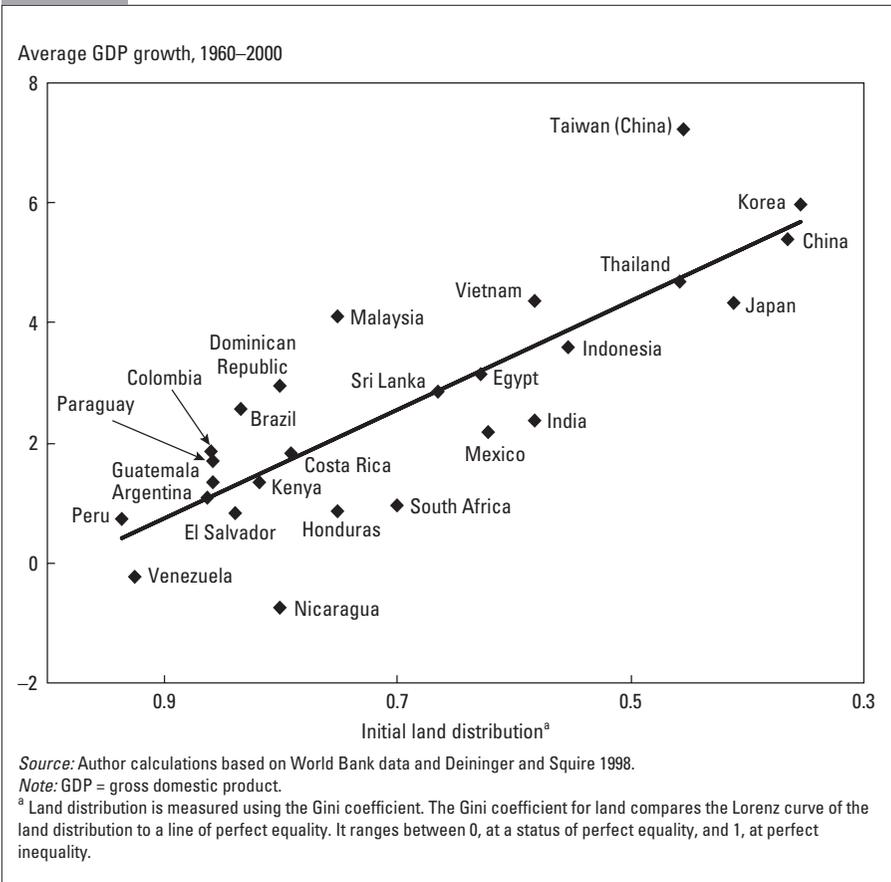
Note: GDP = gross domestic product; PPP = purchasing power parity.

1960s on economic growth during the subsequent four decades in a large number of developing countries. Countries characterized by more unequal initial land distribution tended to show lower rates of economic growth.

It appears that the unequal access to economic and social opportunities that underlies this unequal asset distribution is inimical to sustainable long-term development. Although the data do not contain sufficient structure to allow inferences on the channels through which such an impact would come about, they suggest that, in the process of economic development, policies to improve access to assets and overcome structural inequalities may play an important role.¹ In fact, this is consistent with the revival of interest in land by developing country governments, as well as bilateral and multilateral organizations, after the issue had virtually disappeared from the development agenda in the 1970s.

Applying PSIAs to land policy issues

Major areas of land reform that should be considered and evaluated through PSIAs include improving the security of land tenure and facilitating broadbased access to land. Regarding improved security of tenure,

FIGURE 5.1 Initial Land Distribution and Economic Growth, Selected Countries

key issues focus on measures to establish legal foundations that are less ambiguous and reduce conflicts over land, the introduction of efficient land registration procedures, and the creation of effective institutions that allow registration of land, as well as the transfer of land across users at low cost. Regarding access to land, ways to enhance the functioning of land rental and sales markets, as well as direct interventions to render land use more productive, such as reforms involving land redistribution, may also be examined.

Because of differences in the historic development and current patterns of land use and landownership among countries, the nature of land rights and the related institutions tends to vary significantly across countries and even across regions within individual countries. This suggests that

land policy reform and the related institutional reform should entail actions that are based on a careful analysis of local conditions rather than an attempt to realize abstract principles. These actions should be sequenced to address objective needs, as well as concerns about political acceptability, and they should be supplied with sufficient financial support for the establishment of the required infrastructure. These steps increase the duration and complexity of the course of reform and, because land is often an important issue for vested interests, generally makes land policy reform politically controversial.

PSIAs can assist in linking the general justification for land policy reform and the specific interventions that would be required to bring about changes on the issues. The availability of a method to assess the effects of policy reform based on a review of experiences with specific measures and demonstrated impacts in other countries makes it easier to take advantage of windows of political opportunity even if the policy must then be adjusted along the way. To achieve this outcome, the PSIA methodology will have to be rigorous, however, and it will have to be implemented in a transparent manner so that the results can be communicated and debated widely among all stakeholders. This approach will allow the PSIA to become a practical tool to guide policy makers during the design, implementation, and evaluation of land policy interventions.

The great deal of time often required before land policy interventions show their effectiveness means that, in some situations, a PSIA may already be useful at early stages of the policy dialogue. Thus, before the implementation of a policy, a thorough analysis can highlight the existing demand among target groups for specific measures, the feasible policy alternatives, the implications in terms of cost recovery and institutional design, the benefits that may be expected, and the way these benefits might be distributed among the population.

This can contribute to the generation of a consensus on the best path forward. Examples from Zambia (Jorgensen and Loudjeva 2004) and elsewhere demonstrate the possibility for employing PSIAs to evaluate the position of various stakeholders toward reform options, identify policy interventions for the benefit of the poor, determine the most appropriate sequence of initiatives, and reduce the potential for capture of the benefits by elites during full policy rollout.

In ongoing interventions, a PSIA evaluation conducted in a participatory manner can be used to assess the effect of pilot policy applications, make the case for the expansion of a particular model, fine-tune sequencing, make adjustments in implementation, improve the institutional design based on the innovations developed by beneficiaries, learn from differences

in performance across regions or other units of analysis to establish benchmarks for performance, and identify winners and losers to determine fresh options for dialogue and application.

After a policy reform has been fully implemented, it will be possible to draw out broader lessons through, for example, assessments of the extent to which the expected impacts on the poor have materialized, as well as scrupulous quantitative evaluations of costs and benefits. These lessons then can be incorporated into the design of interventions in other settings or regular government programs, for example, to ensure the permanence of the land titles that have been assigned during a systematic program of land distribution.

LAND TENURE SECURITY

The importance of the security of land tenure is widely recognized. The public provision of a framework that allows households or individuals to obtain and possess secure rights to the land they use or occupy has obvious benefits. These benefits include enhanced investment incentives, reduced potential for conflict, the use of land as collateral, and improved equity through increased bargaining power among social groups that have been traditionally marginalized. The establishment of such a framework requires legal recognition of land tenure rights; the social legitimacy of those rights; land institutions that are accessible, efficient, and responsive to clients; and incentives and structures to manage conflicts over land.

Principles

Land rights are complex multidimensional constructs that determine how the benefits of land use are distributed among various claimants. Access to and ownership of land historically have been marks of both economic and social status in communities. Indeed, discriminatory land policies have been a crucial element in attempts by colonists and others to impose their economic will and exclude parts of a country's population from economic opportunities. Countries such as Brazil, Guatemala, the Philippines, South Africa, and Zimbabwe have been saddled with inequitable landownership regimes. Another consequence has been the monopoly of the power of the bureaucracy over land rights in a much larger number of countries, where legal procedures are not transparent and there is little local accountability.

In addition to the economic dimensions, land access often performs an essential role as a social safety net. In this case, access to land is fre-

quently mediated through such social structures as tribes or clans, and the ability to access land forms an important part of the social and cultural identity of community members, making land much more than merely a commodity.

The control over land rights often resides with the community or with individual household members rather than with the household. The way in which this control over land (and other assets) is regulated within the household or the extended family affects the bargaining power and long-term security of other household or family members and, thus, their ability to manage and use resources. Numerous studies show that, within the household and the family, greater bargaining power among women normally translates into higher spending on nutrition, education, and children's welfare. Additionally, women who know they will be allowed to inherit ownership rights over the land belonging to the household upon the death of a husband are more likely to engage in independent economic activity and, thus, to support their families as equal partners. This is particularly relevant in Africa, where customary institutions act as barriers to the independent control over land by women despite the rampant spread of HIV/AIDS, which has decimated adult family members and led to a rise in the frequency of inheritance cases.

Land rights that provide tenure security for a period of time sufficiently long that landowners can reap benefits from their rights represent an important incentive for households to invest in the productive capacity of their land. Studies show that a shift from insecure to more secure forms of tenure can raise returns on land investments by more than 50 percent and boost land values by between 30 and 80 percent. Secure tenure, including the knowledge that tenants will not be able to claim the land, is required so that owners can temporarily or permanently transfer their land to outsiders who may be able to make better use of it and subsequently pursue activities, such as migration or local self-employment, that offer greater immediate economic benefits. In fact, sufficiently high levels of tenure security are required even for transfers (at no cost) to relatives or friends.

Because it is immovable and nearly indestructible over the short term, land represents an ideal type of collateral. The ability to draw on a formal registry to verify landownership can dramatically reduce the cost of providing credit relative to, say, microlending schemes, which rely on social pressure or other more costly sorts of collateral to ensure repayment. If there is a latent demand for credit-financed investment, the availability of formal land title can improve the operation of financial markets and enhance the access of producers to credit. At the same time, although eco-

conomic development is generally associated with a decline in the importance of land as an input into (agricultural) production, the importance of land as collateral for financial markets tends to rise with economic development. In advanced economies such as the United States, more than two thirds of small business loans are secured against land (Ibbotson, Siegel, and Love 1985). The ease with which the ownership of land can be verified and the reasonableness of the cost at which it can be transferred can have a major impact on the price of credit and, thus, the business environment for small and medium enterprises even in relatively advanced economies.

Public guarantees for property rights and land titles to ensure the security of tenure are justified because the public sector alone can readily and willingly bear the high fixed cost of the infrastructure needed to establish and enforce property rights. In this case, the abstract concepts of, for example, private ownership or full marketability are less important than the issue of whether, in a specific context, the rights provided to households offer an adequate level of tenure security at a realistic cost. This implies that the most appropriate land tenure system is likely to vary with time and location, that is, no single approach will always be relevant irrespective of specific needs and conditions.

In developing countries, the rapid growth of populations and the nonagricultural demand for land increase the potential for conflicts over land, which are unproductive and risk favoring inequitable solutions. The existence of sound, well-recognized arrangements for dealing with such conflicts quickly and decisively offer several advantages. First, conflict—and the prospect of losing land through the arbitrary pathways conflict implies—undermines the guarantees that encourage investment by users and outsiders in land, particularly the most productive tracts, thus depriving the economy of part of its resources for growth. Second, if people cannot trust the state to enforce their property rights or resolve conflicts over land, they will take measures to do so themselves, often in ways that are inefficient, drawing resources from more productive activities (for example, building walls and fences instead of planting perennials and establishing irrigation), and perpetuating the vicious circle of violence. Third, conflict tends to favor the powerful and wealthy, who normally have better access to the information and resources needed to sustain and resolve conflict. Finally, given that conflicts over access to land are frequently linked closely to issues of race, ethnicity, gender, or class, they can easily escalate into larger clashes (Colombia, Côte d'Ivoire, and Zimbabwe, for example), with damaging and far-reaching social and economic consequences.

Specific interventions

Interventions that can improve tenure security clearly provide significant and tangible benefits. However, the context-specific nature of land rights implies that merely transferring approaches among countries, especially if there are vast differences in culture or economic development, rarely will be appropriate. Indeed, unless they are adapted to local realities, interventions designed to enhance tenure security may well prove costly, bypass the poor, or, by countering local customs that work reasonably well, even increase insecurity.

A PSIA can draw attention to methods for establishing a proper legal framework in a specific situation, suggest ways that land administration institutions might implement needed measures in an efficient manner, and highlight mechanisms to resolve conflicts quickly and cost effectively. A PSIA demonstrates the potential or actual costs and benefits of these initiatives, making an important contribution to the policy dialogue.

Legal interventions to improve land tenure security

For guaranteeing property rights, several options are available that are easy to apply and enforce, facilitate the transfer of ownership, and offer a sufficient time horizon to represent an investment incentive. It is critical, however, that legal provisions be consistent with one another, be unambiguous, supply a menu of possible approaches depending on circumstances, and define the procedures for the transitions between different arrangements (for example, between customary rights and private property rights). In all parts of the world, ambiguous land legislation is a major source of conflict and inequality. The fact that individuals with sufficient means to hire lawyers may win, perhaps merely to settle personal vendettas, undermines the security of property rights and private investments. Although households and entrepreneurs are normally willing to spend scarce resources to fend off unjustified property claims, doing so is often socially wasteful, eats up capital, and detracts from more productive pursuits.

In many developing countries, the reach of the state is limited, and the allocation of land is governed by traditional institutions. This can result in gaps between formal and informal land systems. In such situations, the poor are often restricted to the informal system and deprived of the ability to use their assets as capital (de Soto 2000). For example, in Africa, titles to only 2 to 10 percent of the total land area are recognized formally, and the majority of urban and peri-urban settlements are in the informal system (Österberg 2002).

This should not be interpreted as an indication that there is no demand for more secure tenure. Nonetheless, it does demonstrate that, in some places, responding to the need for more secure tenure rapidly and at low cost may require a flexible approach consisting of several alternatives. Some of these alternatives may not involve full title, but rather offer the advantage of being easily and quickly implemented and expanded later to more formal systems. The challenge then would be to combine legal recognition with social legitimacy following, for instance, awareness campaigns and legal aid initiatives.

Regarding *customary systems*, the legal recognition of existing rights and institutions may be more effective as a first step rather than attempting to establish formal structures. Based on eligibility according to community membership and the creation or codification of internal rules and mechanisms for conflict resolution, the legal recognition of customary systems can significantly enhance the rights of the occupants of the land. The demarcation of community lands can remove threats of encroachment by outsiders. In this way, although private ownership rights might not be recognized, lease terms can be extended and leases can be inherited. The admission of oral evidence in customary proceedings can help open these processes to the participation of illiterate people and allow access to vacant land by outsiders (as in Mozambique). Recordkeeping on public customary transactions, even if they are informal, can remove a major source of uncertainty over contract terms later. Conflicts often erupt in connection with land transfers, particularly to outsiders. Where such transfers occur and are accepted, the terms of the transfers can be written down to avoid the ambiguity that may subsequently lead to conflicts over land (Lavigne Delville et al. 2002).

In many developing countries, a surprisingly large amount of good land remains the property of the state, which generally does not adequately exploit the land for productive purposes. Occupants of this land sometimes have undertaken efforts to increase the security of their tenure, in some cases through significant investments, but frequently remain vulnerable to the threat of eviction. Because of their limited rights, they may not be able to make full use of the land.

Giving these people the means to regulate their possession of parcels of land sufficient to support their families, but not large enough to encourage widespread corruption, can have substantial advantages. It can increase the welfare of these households and allow them to obtain services or undertake other investments. The importance of this principle, which rests on the assumption that land must be improved, is illustrated by the fact that most of the colonization of the western part of the United

States occurred in this fashion. Interventions to enhance tenure security are appropriate where informality or extralegality is substantial, such as in peri-urban areas of Asia and Africa where 40 percent or more of the population live under precarious informal arrangements.

Political and legal considerations may preclude the award of full private property rights. Nonetheless, bona fide long-term peaceful occupation of the land might be recognized, and the occupants might be assigned transferable, long-term leases, with provisions for automatic renewal, that would permit the realization of most, if not all, the benefits of ownership (Baker 2001). However, the privatization of ownership may be required if state institutions at the central or the local level cannot credibly commit to honoring lease contracts or are unwilling to enforce them.²

Traditional tenure regimes often fail to recognize women's rights. Specific attention to these rights can be paid in at least two ways. One low-cost approach that can greatly enhance the welfare of women is the provision of a secure legal basis for the joint ownership of land by spouses or, at least, the prevention of the disposition of a household's land assets by husbands without the consent of their wives. The second approach would involve the establishment of legal instruments so that women can maintain their rights to land upon the death of their spouses. Because many of the values represented by the traditional rules governing land use and land allocation are deeply engrained in society, the equality of women's rights to land cannot easily be legislated by the state or imposed by the stroke of a government official's pen. Instead, awareness must be raised and assistance should be supplied where needed until a legal space can be created for the equality of rights by, for example, constitutional recognition.

Enhancing the efficiency of land administration

Inefficiencies in the public institutions that administer land and are responsible for the demarcation of boundaries, land registration, record-keeping, the adjudication of rights, conflict management, and dispute resolution can forestall the realization of many of the benefits of secure land tenure. In most developing countries, the institutions responsible for administering rights to land are poorly coordinated and often have a reputation for being overstuffed, ineffective, and rife with corruption. If these institutions are not functioning properly, the related transaction costs will increase, and the poor will be excluded from the services they offer.

Overlapping or ill-defined institutional responsibilities; infighting among institutions; and the potential for arbitrary behavior, which arises if there are no clear boundaries in the role of bureaucracies, undermine confidence in the institutional framework and the value and authority

of titles and other certificates of ownership. Thus, in many countries, governments expropriate land without adequate compensation; government institutions establish incompatible claims or enforce contradictory regulations over the same pieces of land; and, because of unclear responsibilities, conflicts over land linger and litigious people search for institutions likely to be favorable to their cause or pursue several claims in parallel.

In such situations, institutional reform, including better coordination within the government and with the private sector, is required before institutions can effectively deliver property rights. Circumscribing the state's ability to intervene haphazardly and clarifying the responsibility of the various institutions are critical. The efficiency of land administration institutions can be significantly improved by drawing on the private sector, for example, in surveying.

Reducing conflict and the potential for conflict

A surprising number of conflicts over land involve members of single households. Disputes related to inheritance or the disposition of family land inundate land courts, which typically lack the resources, enforcement capacity, or consistent law with which to settle them. Moreover, land disputes often constitute a majority share of the civil caseload of an already overloaded judiciary. Consequently, judicial systems may achieve more by putting their weight behind mediation among the parties in disputes and encouraging negotiation based on compromise, mutual interest, and formal recognition of the results.

To deal with conflicts appropriately no matter the forum, three elements appear to be crucial: (1) the development of an incentive structure that rewards the settlement of conflicts and requires informal resolution as a first step; (2) the ability to confer legal validity on agreements reached as a result of these informal settlements; and (3) a system of conflict monitoring and information distribution to establish norms of acceptable behavior to assist individuals in resolving conflicts on their own.

Because land has been an important element in these conflicts, attention to land issues is critical in any postconflict reconciliation. Thus, attention must be paid to those whose control over land has been compromised by a conflict, particularly orphans, widows, and women who head households. In the context of the resolution of far-reaching strife over land, it may be necessary to address needs created by breakdowns in traditional social structures and the associated systems of informal secondary land and resource rights; the needs of refugees and other people who have been driven from their homes and whose documents have been destroyed or

lost; the livelihood needs of demobilized soldiers; and the needs caused by ongoing military operations or the presence of landmines.

Impacts of improved land tenure security

The economic and social advantages of improving the security of land tenure, making institutions more accessible, and reducing the incidence and impact of conflict have been demonstrated in numerous studies.

An early-1980s project in Thailand awarded land titles in areas where there was significant demand for credit that could only be satisfied through informal channels. The project helped increase land values, investment, and access to credit (Feder, Tongroj, and Tejaswi 1986). A large number of subsequent studies indicated that greater security in land tenure can double investment and boost land values by between 30 and 80 percent (Feder 2002).

The literature since the 1980s illustrates that availability of full title is not always necessary to raise tenure security. For example, in Ethiopia, it was the perception of more secure tenure, rather than formal titles, that was associated with productivity-enhancing investments (in terraces) (Deininger et al. 2003b). These and other cases demonstrate that such investments translate into higher levels of productivity and that households are willing to expend their own resources to improve tenure security, as was the case in Zambia (Deininger and Olinto 2000). This does not imply, however, that titles are irrelevant. In Nicaragua, for example, in an environment characterized by substantial tenure insecurity and pervasive conflict over land, the availability of registered land titles significantly augmented the propensity of households to undertake productivity-enhancing investments, and land values rose (Deininger and Chamorro 2004).

There is growing evidence in the literature that the control of greater shares of household assets, including land, acquired by women upon marriage influences household consumption patterns, especially in terms of food, education, and other welfare expenditures on children (Doss 1996; Fafchamps and Quisumbing 2002; Haddad 1997; Leroy de la Brière 1996). In Honduras and Nicaragua, the amount of land women own has a significant and positive impact on food expenditure, as well as on children's educational attainment (Katz and Chamorro 2002). The specific measures to give women greater tenure security are often quite simple technically, for example, as in Vietnam (World Bank 2004). They may rely more on effective awareness and capacity building.

The availability of a formal title registry to verify landownership may greatly reduce the cost of providing credit. Likewise, formal land titles

that are transferable at low cost can improve the access of producers to credit (Brits, Grant, and Burns 2002; Feder 1988). However, because the impact is likely to be differentiated by land size, distributional aspects, as emphasized in a PSIA, need to be taken into account (Carter and Olinto 2003). The effect of more efficient means of transferring land titles on the ability to access institutional credit in urban and peri-urban areas has been impressively demonstrated in transition countries. In the Kyrgyz Republic, for example, mortgage lending, which is confined to urban areas, has caught on quickly since the implementation of land titling in 2001. Although the latter initiative is still ongoing, land-backed mortgages already account for US\$4 million, or 3 percent of gross domestic product (Cook 2004).

One factor that was overlooked in earlier literature on land issues is the contribution of even moderate improvements in land rights. The computerization of 20 million land records in Karnataka, India, narrowed the scope for petty corruption and also raised the confidence rural dwellers felt in the government, although the records do not represent unambiguous legal certification and do not include precise boundary information (Bhatnagar and Chawla 2004). The modest fees charged for the delivery of certified copies of records allow the government to make a net profit through the computerized system. The privately run computer site used for the retrieval of the land records also acts as a center for a host of other services in rural areas. That such services to secure tenure and facilitate land transactions can be remunerative is illustrated as well in El Salvador, where the land register generates significant revenue.

Adequate tenure security reduces the need of a household to establish its land rights and fend off claimants. In Peru, the enhanced security of informal land rights increased participation in the formal labor market by up to 50 percent and contributed to a sharp drop in household enterprises. This increased participation was due to the fact that household members were no longer obliged to stay home as a precaution against squatters (Field 2002). Evidence on Uganda shows that conflicts over land often impose high costs in terms of foregone productivity among land users and that, similar to other African countries, legal and institutional innovations to reduce the potential for new conflicts and make it easier to resolve existing ones can have a large payoff, especially among women and widows, who are more likely to be affected (Berry 1997; Deininger and Castagnini 2004).

In Mexico, the creation of an accessible nationwide network of 42 special agrarian courts to deal with land conflicts, along with strong emphasis on formal and informal mechanisms to foster peaceful conflict resolution,

has reduced the enormous number of conflicts and the danger that these conflicts would cause more widespread social and political unrest among communities. The court system accepts only cases in which prior, non-judicial attempts to reach a settlement have failed. As part of the far-reaching legal changes, the government has launched an intensive program to provide legal assistance and make people aware of their rights. Despite the reduction in the number of cases, the judiciary has spent more than four years dealing with the accumulated backlog (Zepeda 2000). Nonetheless, the ability to limit the scope of arbitrary interference by village officials reportedly has been a key benefit of the improvements in land registration and in addressing conflicts over land (World Bank 2002).

In Mozambique, the government could quickly achieve the resettlement of about 5 million people following the peace agreement in that country because, instead of drawing up elaborate national plans, it relied on local institutional mechanisms to resolve related land conflicts as they emerged. Once the resettlements had been completed, the right to occupancy on the land by rural families, as well as the strong role for local institutions, was enshrined in a new land law, which was the subject of extensive public debate involving approximately 200 nongovernmental organizations and 50,000 individuals (Negrao 2002). Local people and outsiders recognize that the new law has contributed greatly to social and economic stability (Tanner 2002). Similarly, in Ethiopia, the ability to redistribute land quickly has played an important role in the rapid reintegration of demobilized soldiers into the economy (Ayalew, Dercon, and Krishnan 2000). The reliance on land rights granted through occupation and rapid resettlement was critical in Cambodia, where announcements calling on land users to register claims resulted in the lodging of nearly 6 million initial claims. Observers repeatedly identified the ability to deal quickly with these claims as an important element in the postwar reconstruction (Zimmermann 2002).

LAND REFORM, ACCESS TO LAND, AND LAND USE

Although it can contribute to the more efficient operation of markets for renting or leasing land, improving land tenure security works primarily to the advantage of those who already have access to land. Thus, it provides only limited benefits if the initial distribution of land is highly inequitable. If the current patterns of landownership and land use have not emerged voluntarily, but are the result of intervention by powerful landlords or the state, mechanisms for restitution and compensation should be debated. Greater emphasis should be placed on mechanisms to

transfer land in ways that help the poor and favor more appropriate and productive land uses.

Few topics have generated more passionate discussion than the issue of land markets. Land rental and sales markets are examined separately below; the focus then shifts to land distribution reform and land use regulation.

LAND RENTAL MARKETS

There is clear evidence in the literature that owner-operated family farms are more productive than farms operated by wage labor. For this reason, although the desire to obtain incomes comparable to the average incomes in the nonagricultural sector may push farmers to expand their farms during periods of economic growth, thus increasing average farm size, there may be less of a conflict between the objective of equity and the goal of efficient land use than is commonly thought. The example of China, where the average household has a per capita endowment of less than one-tenth or one-fifteenth of a hectare distributed over seven or eight plots, demonstrates that small farmers can achieve high levels of productivity and that broadbased access to land can act as a social safety net, but also drive growth in the nonfarm economy. The superior performance of individual owners relative to collective ownership, irrespective of the public goods that may be provided through the latter, is confirmed by the case of agricultural collectives throughout Eastern Europe before the 1990s.

If owners are old, ill, or nonfarming heirs; lack cash themselves; or wish to take advantage of opportunities in nonagricultural markets or temporarily migrate to cities or foreign countries, land rental offers considerable opportunities to transfer land to more productive users, while continuing to profit from land assets. Because the transaction costs are low, it is fairly easy to adjust the land area under cultivation in light of unexpected natural or market events without renouncing ownership and the advantages associated with it.

Rental markets require only modest initial capital outlays by the renters, especially if rents are paid after harvest (sharecropping, for example) or on a seasonal basis. Contractual arrangements can be flexible and made to suit the need that poor producers may have to use their limited working capital for production. This tends to increase the possibilities open to landless or land-poor farmers, allowing them to gain access to land, accumulate experience, and perhaps begin the transition toward landownership. Even in areas in which it was once outlawed, land rental can evolve rapidly if there is sufficient tenure security, the opportunities

exist, it is more effective than government programs in increasing land productivity and targeting the poor, and it can contribute to the evolution of nonfarm labor markets.

Rental provides large productivity benefits, but the associated equity benefits are normally more restrained than those obtained through land-ownership. Indeed, policy makers have been concerned that rental may lead landlords to exploit tenants who have few other alternatives, permitting the tenants only the minimum incomes required for survival. Such behavior is well documented, although reductions in farm sizes through inheritance and government intervention, as well as economic growth and the expansion of nonagricultural employment, suggest that the number of settings in which a monopolistic landlord can drive down the welfare of tenants to the absolute minimum may be decreasing. Moreover, to prevent exploitation, governments in many countries impose limits on the amount of rent that can be charged by landlords or are protecting tenants from eviction and strengthening their tenure rights.

Three considerations are relevant in this regard. First, implementing restrictions on the behavior of abusive landlords is not easy. Limits on rents, for example, only work if they are accompanied by additional protections for current tenants. Otherwise, rent ceilings are likely to prompt landlords to evict the poor tenants whose lot the ceilings are meant to improve. This was the case in Latin America and India following the passage of new tenancy laws.³ It has been shown that, possibly by increasing the bargaining power of potential tenants, such laws have a positive impact on equity (Besley and Burgess 2000). In cases where these laws have been implemented effectively, they have also helped raise productivity with respect to the prereform situation (Banerjee, Gertler, and Ghatak 2002). However, there is little evidence of the costs of implementation, and it would be useful to possess pertinent economic evaluations and a comparison of the benefits of this land reform over the short and longer term relative to the corresponding benefits of other interventions.

Second, even if such laws have a positive impact in the short term, this impact may be largely confined to tenants who were renting when the laws went into effect. The positive initial impact may eventually be outweighed by a negative reaction in land market activity and investment as the rent ceilings and other restrictions begin to cut into the rental and investment incentives for landlords. Consequently, landlords may seek other uses for their land and no longer rent land to the landless and the extremely poor for farming and housing.⁴ Policies to increase the bargaining power of potential tenants, for example, by expanding the range of livelihoods available to them through the provision of improved access to nonagricultural

labor markets, may be more sustainable and beneficial in the long term. Additional research should be conducted on this issue through PSIAAs.

Third, the productivity and equity impact of land rental will depend on the number of transactions. If land tenure rights are not secure or if households have little information about land rental prices and contractual alternatives, the transaction costs to enter into rental contracts will increase, reducing the number of efficiency-enhancing transfers. Governments can respond by improving tenure security to encourage a more open and competitive rental market; educating households about types of rental contracts and the obligations they involve; reducing the cost of establishing rental contracts through, for example, standardized contracts; and making information on rental prices more widely available to potential tenants.

For example, producers who rent land for only one year will not be able to make any significant investments or changes in land use. Thus, because most rental contracts in developing countries are limited term contracts (that is, annual), the opportunity is minimal for using land rentals as an effective tool for generational and structural change in rural areas. The promotion of long-term rentals can therefore be an important avenue for change.

Land sales markets

Because of its special characteristics, land tends to increase in value beyond the value of the profits gained by using it productively. For example, land values might rise because of an expansion in demand because of growing population density; the addition of public infrastructure, including transportation infrastructure; and the emergence of new uses besides agriculture. Furthermore, land tends to store its value despite recurring episodes of inflation and other economic and market phenomena. Thus, land sales transactions may be easily driven by speculation rather than a straightforward desire to tap into a profit stream derived from current productive uses.

To ensure survival, poor households that experience illness or disease, accidents, or bad harvests may be forced to sell their land at prices below fair market value. During widespread local calamities, substantial supply and low demand can lead to sharp swings in land prices. In these two cases, unscrupulous moneylenders and land speculators are provided with the possibility to amass vast amounts of land they do not plan to use productively.

The existence of these factors means that the prospects for productivity enhancements are of a different nature in land sales and land rentals.

The potential for redistribution for the benefit of the poor and landless is affected in the case of land sales not only because the poor are less likely to obtain financing for mortgages, as opposed to rental payments, but also because the sales market includes demand exerted by those who wish to employ the land for nonagricultural purposes. Additionally, sales are more readily affected than rentals by imperfections in other markets.

Regulation may undermine the potential positive impact of land sales markets because, even if they are justified on conceptual grounds, restrictions add to the transaction costs associated with land sales. These restrictions are significant in most developing economies because of limits on private sector participation, lack of capacity, and excessive implementation costs. The extra transaction costs may drive transfers of land away from the formal market system.

Most restrictions on land sales tend to undercut tenure security and investment incentives, and they increase the scope for arbitrary action by bureaucrats. The rationale for these measures has to be weighed carefully, taking into account not only the conceptual justifications but also the ability of enforcement and the costs of compliance.

Local communities, which are often more aware of the associated costs and benefits, sometimes impose their own restrictions on land transfers and land market sales that are otherwise in compliance with the law. This practice is similar to that of condominium associations with regulations that are binding only on their members. The restrictions may be customary and usually represent a means to preserve community identity and prevent landlessness among community members. In such communities, there may be little potential for efficiency-enhancing (as compared with speculative) land transactions. If the benefits of efficiency-enhancing transactions become more apparent and the costs go down, the community restrictions may be eliminated anyway without the need for outside intervention.

Whether or not land sales to foreigners should be allowed is a hotly debated issue in many locations. Doing so offers a number of advantages, including better access to capital through foreign direct investment and the technology that normally comes with it. However, if landownership by foreigners is politically contentious, there are many methods, especially long-term leases, that tend to work as well and, if handled appropriately, do not pose an obstacle to investment.

Redistributive land reform

Measures that do not rely on land sales markets probably will be needed to open access to land and bring about land redistribution for the bene-

fit of the poor. This is particularly true in situations in which inequities in the distribution of landownership and in productive opportunities translate into inefficiencies in the use of vast tracts of land in poor rural areas. Government interventions to prevent undesirable outcomes could, in principle, lead to efficiency and equity gains.

Policy makers have sometimes tried to impose ceilings on the amount of land that can be owned to force the breakup of large farms. If they could be enforced, such ceilings could help to achieve redistribution in a decentralized fashion. In most cases, however, they are easily circumvented. If ownership ceilings remain in place for a long time, they tend to undermine financial markets. Lenders who want to repossess land will be subject to similar restrictions and, even if they are exempted, will face greater difficulty in subsequently transferring the land. The ceilings also add to red tape and corruption. In India, ceiling legislation that has been in place for more than 30 years in most states has made available no more than 2 or 3 percent of the total land area even in states where the distribution of landownership is most unequal. Together with the experience of countries of the former Soviet Union in the aftermath of decollectivization, this supports the hypothesis that ceilings, even if they are set high (say, in thousands of hectares), are rarely effective in fostering land redistribution, although they may reduce the attractiveness of speculative land accumulation.

Meanwhile, at the other extreme, governments are also concerned about the breakup of landholdings. Zimbabwe still possesses laws that prohibit or complicate the subdivision of large farms. (The laws were originally enacted by colonists as a means to prevent blacks from gaining access to land.) However, there are sound reasons for controlling such fragmentation, which can increase the amount of land required for paths and roads and, through small plot sizes, may negatively affect the ability to mechanize agriculture. Minimum farm sizes and inheritance regulations have been imposed, generally with little impact, because they do not address the reasons leading owners to subdivide their holdings. Consolidation programs that aim to reduce the related transaction costs, and frequently provide infrastructure and spatial and land use planning, have been successful in some industrial countries and are currently being tested in the states acceding to the European Union. At lower levels of local income, such programs are unlikely to have an important role. This is illustrated by the case of China, where a high level of fragmentation has not prevented sustained growth and where consolidation programs have not always been successful. Reducing transaction costs for sales by building capacity and allowing private sector participation might be a better option.

As numerous successful land reforms show (for example, in Japan and Korea and in Taiwan, China), while the impact of such interventions can be far-reaching, they may face political and practical obstacles. Moreover, land speculation and land sales by households under duress, for example, are often symptoms of broader structural problems. Legislation that regulates land sales without confronting these problems may only drive the transactions out of the public eye and force those affected to engage in actions that are even less advantageous to them.

It is therefore important to choose appropriate instruments. Normally, this means reliance on a combination of measures—divestiture of state lands, land taxation, capital gains taxation, expropriation with compensation, support for land markets, direct negotiation, the provision of safety nets to cover household distress in certain situations, and so on—to maximize synergies, foster cost transparency, and set clear goals and performance indicators that make hijacking the process difficult. Governments need to ensure that the poor can use rental and other mechanisms, ideally in a way that is coherent with other reform initiatives. For example, the rental of a plot for one or two seasons might be made an eligibility requirement for land reform grants, boosting land rentals and eliminating spurious claimants who later sell the land.

If it is to be successful, land reform must establish secure, transferable rights to land. Those benefiting from land reform need to be able to access technology, output markets, working capital through grants and credit, and other nonland assets and infrastructure. The possible movement out of agriculture by the children in beneficiary households should be considered. The selection of the beneficiaries of reform should be transparent and participatory.

Rigorous, open, and participatory evaluation of ongoing experiences is important. This normally requires strong training and capacity-building components, as well as provisions for complementary investments to make land productive. These investments include incentives to maximize productivity gains, for example, by selecting underused land or favoring labor-intensive modes of land use.

Attention should be paid to fiscal viability, for instance, by financing parts of reform through land tax revenue. The cost of land reform can be substantial. Land may represent only a fraction of the total cost (often about one-third). To justify such an expense, redistributive land reform needs to be viewed and analyzed as an investment in sustainable poverty reduction. Indeed, land reform should be integrated into the broader context of economic and social development. A conducive policy environment is essential.

There are many examples of governments trying to avoid the costs of land reform by directly or indirectly expropriating from landowners. This tends to reduce the overall security of property rights and a country's attractiveness for (foreign) investment and to increase social conflict. Nicaragua and Zimbabwe offer examples. Often, because of the repercussions, the step is only undertaken on marginal lands. This does not mean that landowners should not contribute to the cost of reform, but a more transparent procedure, such as a land tax, will probably be less disruptive than expropriation.

Considerable amounts of land have been transferred through reform in recent decades (Table 5.2). Putting the land involved to productive use and dealing with the institutional legacies of reform—large agrarian reform institutes, the restrictions imposed by land reform legislation, and assisting beneficiaries to obtain working capital and skills that enable them to take proper advantage of their assets—are clearly not uncommon experiences.

There are several reasons for careful monitoring and evaluation of such initiatives. First, few good models exist upon which to draw, implying that fresh interventions will have to be refined. A transparent, rigorous evaluation system can contribute by providing information for adjustments during implementation. Second, history has shown clearly that land issues and land reform, in particular, are highly susceptible to political interference at all levels. Monitoring and evaluation are the only way to counter the tendency toward corruption and ensure that it is held in check. Third, monitoring and evaluation help prevent land reform from focusing only on beneficiaries and neglecting those people, such as farm workers, who may be negatively affected. In Zimbabwe, for example, workers on farms that were subjected to redistribution constitute one of the most vulnerable social groups. Integrated into a long-term effort at monitoring and evaluation, PSIA's can play an important role.

Adopting appropriate land use regulations

Governments have an array of fiscal and regulatory instruments at their disposal to supply incentives for land uses that maximize social welfare. They can ensure the availability of historic values, effective public service provision, and public goods such as landscapes, and they can prevent harmful externalities such as pollution associated with specific land uses. The case for government intervention resides in the argument that the aggregate social benefit is larger than the cost of regulation and the presumption that public action can enforce regulations at a minimum cost.

TABLE 5.2 Extent and Characteristics of Selected Land Reforms

Country	Area Total (hectares, '000s)	Arable land (%)	Beneficiary households			Years
			Number ('000s)	Rural households (%)	Area of land (hectares)	
<i>Africa</i>						
Egypt	390	15.4	438	10.0	0.89	1952–78
Kenya	403	1.6	34	1.6	11.85	1961–70
Zimbabwe	2,371	11.9	40	3.1	59.28	1980–87
<i>Asia</i>						
Japan	2,000	33.3	4,300	60.9	0.47	1946–49
Korea, Republic of	577	27.3	1,646	45.5	0.35	1948–58
Philippines	1,092	10.8	1,511	24.2	0.72	1940–85
Taiwan, China	235	26.9	383	62.5	0.61	1949–53
<i>Latin America</i>						
Bolivia	9,792	32.3	237	47.5	41.32	1953–70
Brazil	13,100	11.3	266	5.4	49.32	1964–94
Chile	9,517	60.1	58	12.7	164.09	1973
El Salvador	401	27.9	95	16.8	4.22	1932–89
Mexico	13,375	13.5	3,044	67.5	4.39	1915–76
Nicaragua	3,186	47.1	172	56.7	18.52	1978–87
Peru	8,599	28.1	375	30.8	22.93	1969–79

Sources: Eckstein and Horton 1978; El Ghonemy 1990; Grindle 1990; Hall 1990; Hayami, Quisumbing, and Adriano 1990; McClintock 1981; Powelson and Stock 1987; Prosterman, Temple, and Hanstad 1990; Scott, MacArthur, and Newbery 1976.

This implies that zoning and other land use regulations that promote relevant land uses should be supported by careful assessments of the nature and distribution of costs and benefits, the local conditions, and the implementation capacity available.

Concerning the distribution of costs and benefits, there are two considerations. On the one hand, land use restrictions may be highly regressive, forcing small landowners or the poor to make sacrifices (or even depriving them of their land) to the benefit of the wealthy (foreign investors, for example). On the other hand, benefits and costs change over time, and affordability plays a major role. Many developing countries maintain regulations that were imposed under completely different conditions (often by their colonial predecessors) and that may no longer serve the original purpose. Their removal may be opposed by landowners with vested interests, who are able to derive handsome advantage by using them as a source of rents. These owners with vested interests may

have to be confronted to establish a new regulatory regime, although the benefits, especially for the poor, can be significant.

It may not be necessary to implement regulations uniformly across all parts of a country. Attempts at land use planning should start with mechanisms benefiting the local communities that bear the costs, perhaps making a contribution to more effective decentralization, particularly because centralized bureaucracies often lack sufficient familiarity with local needs and issues to supply effective services and supervise the bureaucrats mandated to deliver them. Many developing countries rely on a regulatory approach that encourages arbitrary bureaucratic behavior. Greater reliance on fiscal instruments, such as fees and taxes or tradable permits, possibly in collaboration with the private sector, can help reduce the difficulties involved in monitoring and supervision.

The provision of infrastructure (roads, electricity, water, sewage, and so on) increases land prices and thus benefits those who own the land. The provision is much less expensive in planned settlements than it is in unregulated areas. This is a justification for zoning, particularly in urban areas, in which the government considers issues such as hydrology, congestion, air quality, traffic flow, and public safety. To reach decisions on these issues in an open and participatory manner is therefore appropriate, and, to finance the infrastructure, it is also appropriate to use fees and other charges levied on landowners, such as taxes on real estate improvements.

Land taxes have a number of conceptual advantages. They cause minimal distortions and are less regressive than taxes levied on consumption, which normally hurt the poor; they tend to discourage speculative accumulation and encourage more intensive land uses; and they strengthen the accountability of local governments before the public, thus enhancing fiscal discipline at the local level and making landowners pay for at least part of the benefits they receive because of local government investments in the land. Although the extent to which land taxes are used varies, revenues are generally well below the potential (Bird and Slack 2002). Greater emphasis on land taxes can have a significant impact on owners' incentives to put their land to the most effective use, as well as for the receipt of local government revenues, the type and level of public services provided, and governance. These taxes can help prevent decentralization from degenerating into a competition for rents from the central level.

The state should also be able to exercise its right of eminent domain to acquire land, with fair compensation, for broader public purposes (for example, for the construction of roads). However, the way many developing country governments exercise this right, particularly for urban expansion or to provide land to private entrepreneurs, undermines the principle

of tenure security. If no compensation is paid, which occurs frequently, the equity impact is negative, often leaving households landless. The possibility of expropriation without compensation can lead landowners to sell their property on informal markets at low prices, encouraging unplanned development and shady real estate practices down the line. The conditions under which the government can exercise its right should be explicit, as should the procedures for supplying fair compensation and the mechanisms for appeal.

In many developing countries, state ownership and public institutions have failed to ensure the protection of fragile lands and adequate land management in peri-urban areas. Large tracts of land continue to be held under unplanned arrangements, with far-reaching implications. In peri-urban areas, land with high potential productive value is unoccupied and remains unimproved because of bureaucratic tangles, mysterious title procedures, and corruption. Privatization through auctions would yield significant revenue for local governments and increase the effectiveness of land use. Likewise, if public lands have been occupied and improved by poor people acting in good faith, the rights of these people to the land should be recognized and formalized at nominal cost.

Examples

Macroeconomic distortions have a significant impact on land prices and activity in land rental markets. In Brazil, for example, land prices dropped by up to 70 percent in the early 1990s (Reydon and Plata 2002), making it easier to acquire land for productive purposes and providing the backdrop for a huge expansion in the government's land reform program. Over a period of less than five years, the government acquired and redistributed more land than it had acquired during the previous 30 years.

In some industrial countries, more than 70 percent of the cultivated land is rented, partly because renting lowers capital requirements and allows users greater flexibility. Rental was also important in the transfer of land during the initial phases of the transition to a market economy in Eastern European countries. It continues to show potential where land plots have been returned to original owners who have little inclination for farming, but where local economic uncertainty and shallow financial markets have slowed the development of land sales markets. In Moldova, for example, an emphasis on leases has enhanced the ability of the land market to develop more rapidly compared with the market in Estonia, which has discouraged the use of leases. More than 80 percent of the 440,000 registered private farms in Moldova operate through some type

of leasing arrangement (Lerman, Csaki, and Moroz 1998). Meanwhile, the purchase price for land has risen significantly above the capitalized value of possible agricultural profits. These price increases are caused by government restrictions that drive up land prices, as well as speculation about the benefits of joining the European Union and the demand for land among foreigners that might materialize with accession by Eastern and Central European countries. While peri-urban land markets and mortgage lending are starting to develop, agricultural land sales market activity remains moderate (Deininger, Sarris, and Savastano 2004).

In eastern Africa, because they are generally pro-poor and beneficial for women, temporary land transfers have had a positive impact on equity (Place 2002). Sales and rentals of land appear to be relatively active and are contributing to a rise in more equitable access to land even in terms of ownership, as confirmed in the case of Uganda (Baland and Platteau 1998; Carter and Wiebe 1990; Platteau 1996). The evidence from Uganda also suggests that activity in rental markets can rise sharply with economic liberalization and the associated growth of opportunities in the nonfarm economy. Indeed, in Uganda, the share of households renting land climbed from 13 percent in 1992 to 36 percent in 1999. By transferring land to more productive producers, rental markets are facilitating greater allocative efficiency in rural areas (Deininger and Mpuga 2002). Evidence from Ethiopia indicates that restrictions on land rental not only reduce the opportunity for more productive land use, but also may constitute an effective obstacle to the development of the nonfarm sector, because farmers who took nonfarm jobs perceived a significantly higher risk of losing land through redistribution than did those who engaged in cultivation (Deininger et al. 2003a).

Rental markets, including markets for long-term transactions that are often similar to sales, are active in West Africa, although they are mostly informal there. Land rentals have also started to emerge in Asian countries, such as China and Vietnam, characterized by the egalitarian distribution of land and the liberalization of land tenure. In China, where rental was not needed until recently because of frequent land reallocations, the share of households participating in land rentals rose from 2.3 percent in 1995 to 9.4 percent in 2000. Moreover, 22.4 percent of households indicate that, at the current market rental rate, they would be willing to rent (Deininger and Jin 2002). This suggests that, with economic development and the emergence of off-farm opportunities, there is considerable potential for further increases in rental market activity.

Analysis shows that decentralized market transactions have been more effective than state-sponsored redistribution at transferring land to

households exhibiting greater productivity and, surprisingly, have been better at targeting the poor (Deininger and Jin 2002). The case of Vietnam, where similar increases have been revealed in the incidence of land rentals, illustrates the differences between land sales markets and land rental markets. The share of rural households participating in rentals climbed from 3.8 percent in 1992 to 15.8 percent in 1998, a much more pronounced rise than the one occurring in the sales market. Although both renters and buyers tended to be more productive, the total magnitude of the effect of the greater productivity is bigger for the rental market. Additionally, there is evidence that, in situations in which credit markets were not functioning well, households that had been experiencing significant income losses were more likely to sell than to rent (Deininger and Jin 2003).

Although the highly unequal distribution of land in Latin America, where the distribution of landownership is known to be one of the most inequitable in the world, would make a mechanism to transfer land among different types of owners extremely relevant, rental activity is actually quite limited in many countries of the region. This may be due to informational imperfections and the resulting high transaction costs, as well as the effect of past restrictions on rental markets, which have weakened the perception of the security of property rights among landowners. The impact of rental restrictions has been significant in Brazil, for example, and also in Colombia, where the area of land rented through formal contracts decreased from 2.3 million hectares in 1960 to 1.1 million hectares in 1988 following the imposition of rent ceiling legislation (Jaramillo 2001). In 1998, more than a decade after the rental restrictions had been lifted, tenancy rates in Colombia were still only about 11 percent, well below the level of the 1960s, highlighting that the restoration of confidence in tenure security takes time. Also, rental markets have been more effective than government-sponsored land reforms in supplying land to poor, but productive producers (Deininger, Castagnini, and Gonzalez 2004), suggesting that government redistribution programs should build on mechanisms such as rental rather than trying to substitute for them.

Land sales markets in Latin America are active, with average annual turnovers of 5 percent in Colombia, 1.4 to 2 percent in Ecuador, 1 percent in Honduras, and 2 to 3.5 percent in Venezuela (Jaramillo 2001).⁵ However, markets are often found to be highly segmented, meaning that sales involve either transfers from large producers to other large producers, or from small producers to small producers, but rarely are such groups divided according to farm size. Similar segmentation also occurs in other Latin American countries (Carter and Zegarra 2001). This segmentation is due to the high transaction costs of subdividing large landholdings and

to the lack of long-term financing for the poor associated with the continent's dualistic landownership structure (Barham, Carter, and Sigelko 1995). Thus, although the sales market does not normally provide a mechanism of land access for labor-abundant, capital-constrained households, agents who are not capital constrained can translate the relative technical efficiency of the markets into effective demand for more land (Carter and Salgado 2001).

Land reforms in Japan and Korea and in Taiwan, China, all of which were accomplished under external pressure, have improved welfare and often also productivity (Jeon and Kim 2000). In India, the abolition of the land rights of rent-collecting intermediaries is widely judged to have been successful, in contrast to the more limited success of land ceilings and tenancy legislation (Appu 1997). In Kenya immediately after independence, the so-called million-acre scheme distributed about 300,000 hectares of large, formerly white-owned estates to small farmers, with positive economic results (Scott, MacArthur, and Newbery 1976). The program gathered momentum through, for example, the formation of groups by farmers to purchase larger farms. Nonetheless, the government discontinued it, partly for political reasons (Kinsey and Binswanger 1993). Following independence in the early 1980s, Zimbabwe initiated a land reform program that redistributed about 250,000 hectares. Participation in the program improved crop incomes and the ability of households to accumulate assets, and it reduced overall inequality (Deininger, Hoogeveen, and Kinsey 2004; Gunning et al. 2000). The first phase of land reform in the Philippines, based on a 1972 law, benefited about 500,000 households. Aided by the availability of green revolution technology, the reform led to significant improvements in household welfare and long-term effects on investment and human capital accumulation of considerable magnitude (Deininger, Maertens, and Olinto 2001; Otsuka 1991).

KEY CONSIDERATIONS ABOUT PSIAS

To make a PSIA as effective as possible, it is necessary to build on not only general principles and the experience of other countries but also on existing survey information for the country that is undergoing examination. Fortunately, standard surveys similar to the Living Standards Measurement Studies are now available for most of the countries where PSIAS on land issues are likely to be undertaken. Although the amount of relevant information is limited in most of these country surveys, using them can be helpful. They may provide important background information on the distribution of land among various income groups, on

land market activities, and on the productivity of land that can be employed to guide the formulation of hypotheses and the design of the PSIA approach.

Likewise, to be able to draw out the distributional implications of interventions, it is essential to have information on consumption that is sufficiently detailed to allow construction of an expenditure aggregate that can be related to a nationally representative survey and the poverty line. Collecting this information can significantly increase the cost of a PSIA given the time involved in administering expenditure modules. If a household survey is available, it may be possible to use the information from this source to identify a set of variables that can predict consumption, which would obviate the need to apply a full-blown consumption module.

In some instances, it may be possible to work with national agencies to obtain existing survey samples as a basis for PSIA. This would represent a considerable cost savings, as illustrated by the cases of China and Eastern Europe. One might then capitalize on the natural complementarities between standard household surveys and the analysis of land issues. At the same time, given the importance of land as a household asset, it would be quite easy to obtain information on land transactions and ownership over the years. The heads of most rural households usually know the amount of land they had when they started their families and are usually able to give a fairly accurate account of ownership changes that have occurred since then. Alternatively, one might build on earlier surveys to construct panel data, which could greatly enhance the possibility for many types of analyses.

Although existing data can further an understanding of the general conditions in a country, analysts wishing to carry out a good PSIA will invariably want to use quantitative and qualitative methods that complement each other. Initial quantitative data need to be complemented by more detailed information about the policy issues under discussion and the potential target groups. Focus group discussions, personal interviews, and other types of qualitative methods will be essential in plumbing the views of actual and potential beneficiaries to formulate or confirm hypotheses on the impacts of specific interventions or the demand or need among various groups for the interventions. These tools provide the flexibility to probe more deeply into, for example, the reasons for certain patterns of behavior that may appear to be inconsistent with expectations and to gain the sort of understanding that cannot be obtained through quantitative data, which do not provide the necessary cues to explain such unexpected behavior and therefore are not useful for policy makers.

The areas selected for qualitative study should be sufficiently diverse to encompass the various segments of the target population (by ethnic

group, size of landholding, poverty status, type of land use, and so on). The possible characteristics of interventions that may be relevant in subsequent analysis should also be considered. If the interviews are organized among similarly relevant groups (by gender, by agricultural and nonagricultural activity, and so on) that likely will be affected by the intervention in different ways, this will help ensure that the research team gains an appreciation of the potential impacts, can formulate and prioritize hypotheses on this basis, and can identify the questions to be employed to test these hypotheses.

Although often overlooked in practical applications, to be most effective, PSIA's should be based on a thorough understanding of the local political economy and the proposed arrangements for specific interventions. If the evaluators are unfamiliar with the expected outcomes of specific interventions and the politically feasible ways of bringing these about—or, in the case of *ex post* evaluations, with details on the procedures followed in project implementation, including beneficiary eligibility criteria—it will be difficult for them to conduct analyses that supply a basis for robust methodological conclusions on impacts and that speak to the needs of policy makers.

Methodological considerations

Importance of a baseline. Analysts must possess solid baseline information on the areas of intervention and other areas against which they can compare project outcomes. In addition to providing a yardstick for assessing impact, the availability of a baseline assists in the identification of intervention strategies that are adapted to the conditions at hand and respond to the needs of target groups.

The value of a control group. Like any good evaluation, a PSIA should demonstrate that the changes observed among the target population can be attributed only to a specific intervention rather than to other factors. For example, even if living standards, productivity, or other characteristics of interest may have declined among the target population, the intervention may have helped avoid a larger decline, as observed in a control group, and thus had a positive impact. Similarly, positive outcomes among the target group may be attributable to a general increase in living standards or in productivity rather than to the intervention. Of course, the control group must be selected to be similar to the group that is to be exposed to the intervention.

Random selection versus self-selection. Many analyses merely compare the value of certain variables before and after an intervention, while failing to account for the self-selection of beneficiaries, that is, the fact that interventions tend not to be targeted entirely randomly among an eligible population. It is likely that many of those who seek to benefit from an intervention aimed at facilitating the acquisition of land titles, for example, are people who already own high-quality land, have access to credit and markets, or are simply more entrepreneurial and willing to take risks to reap greater rewards. Any estimate of the benefits of an intervention that neglects to control for such inherent idiosyncrasies in the beneficiary selection process may overstate the positive impact. If the intervention is then expanded to other areas where the target groups exhibit fewer favorable initial qualities, the expected impacts may not materialize.

To deal with this issue, an effort might be made before program implementation to choose the members of the target group randomly among the applicants. However, because of political or ethical considerations, this may not always be feasible.

An attractive alternative, especially if the budget is limited, is to select beforehand one entire area as a target and a similar area as a control. This approach should work well for reforms, such as legal reforms, that have a nationwide outreach but require local inputs, such as the establishment of local offices or land tribunals. In this case, the control areas would subsequently be phased in as target areas.

If the PSIA is being undertaken to evaluate a program or a reform that has already been implemented and the generation of additional data is not appropriate, instrumental variable techniques can be employed. This requires the identification of instruments that are highly correlated with program participation but that do not affect outcomes, which may be difficult if program eligibility has not been tightly defined and enforced. This difficulty may be overcome through propensity score matching, which is increasingly being used for project evaluation in a wide range of settings (Ravallion 2001).

Questionnaire design. Changes in the ability of rural households to gain access to land or to ensure land tenure security have an impact on labor market participation, as well as on other variables that, at first sight, may seem unrelated to land issues and thus may not have been anticipated by project staff. For example, in a project in Peru, the formal recognition of informal settlements had little impact on the use of land as collateral by settlement households, the main expected benefit of the project, but significantly increased local participation in formal labor markets, an

impact that was rather unexpected (Field 2002). The participation of households in the labor market and the ability of households to access other factors of production have been shown to affect household decisions to participate in certain types of programs, for example, programs aimed at farm privatization in the countries of the former Soviet Union (Lerman, Csaki, and Feder 2002).

Surveys that do not place land-related issues into a broader framework of household behavior may arrive at erroneous conclusions or, at the least, errors of emphasis. Therefore, analysts must anticipate expected impacts and then adopt and implement questionnaires sufficiently broad to capture the relevant variables, including ones that may be only narrowly related to land.

Sample design. If the purpose of the PSIA is to evaluate the impact of an intervention targeted at a specific subset of the population, it may be more efficient and less costly to design the sample in a way that increases the probability of including the subgroup in a meaningful way. To the extent that the PSIA aims to trace the gender-differentiated impact of interventions, for example, it may be appropriate to split the household questionnaire into two parts: one administered to men and the other administered to women. Likewise, phenomena that may be of interest for a PSIA, such as conflicts over land or land transactions, may be infrequently experienced among the overall population, and, because of the limited survey budget, it may be cost-effective to stratify the sample into households that have bought land, have rented land, and have done neither. While doing so does not preclude the use of standard procedures for the selection of first-stage sampling units, it will require a listing among the selected primary sampling units that then serves as the basis for the selection of a household sample in the appropriate proportions, as well as the construction of sampling weights.

Specific elements of questionnaire design

The paucity of land-related surveys that can be drawn on by those interested in performing a PSIA may constrain the ability to design a good survey instrument. This might limit the scope of a policy-relevant analysis. This section therefore presents the elements of a questionnaire that would allow the collection of the information needed for much of the PSIA effort. Because the design of standard household questionnaires is covered in great detail in the available literature (Grosh 2000), the focus here is only on issues specifically related to land. Of course, only some of the

modules examined will be relevant in any given situation, and the analysts would have to make the proper selection and combine the information from the land modules with the information from the rest of the instrument, particularly production and credit.

Household questionnaire

In most cases, there are significant differences between the types of tenure under which land may be held (leasehold, freehold, customary, without a certificate, and so on), the modalities through which it was acquired (purchased, inherited, cleared, simply occupied, and so on), and the type of documentation that is available to demonstrate ownership (title, sales receipt, tax receipt, and so on). The PSIA team therefore needs to collect information on *plot characteristics* on a plot-by-plot basis, including a plot roster. If there are gender differences in land rights, the team also needs to identify in whose name documents for any specific plot are issued and whether the current user (or owner) has the right to transfer land through lease, sale, mortgage, and so on. In addition to tenure characteristics, plot-wise information on land quality and topography are of great importance. Of course, to the extent that one expects plot-specific land tenure arrangements to affect productivity, it is essential to ensure that information on production is obtained at the same level of disaggregation and can be linked to specific plots.

Historically, one of the main reasons for introducing more secure property rights has been to produce incentives for investment in maintaining land productivity. At the same time, land-related investments in improvements, such as fences or trees, can be used to establish and secure property rights in an environment in which enforcement by the state is perceived to be ineffective.

Surprisingly, the treatment of this issue in many questionnaires and, as a consequence, in many analyses of the topic is quite weak. It could be strengthened considerably by observing a few basic principles. First, although the details of the investments to be considered are likely to be specific to any given region or country, the basic categories of the investments in improvements—perennials; simple measures to maintain soil fertility for more than one year (bunding, leveling, drainage, irrigation, de-stoning, mulching, leveling); and the building of structures attached to a particular piece of land, such as animal sheds, processing facilities, and wells—are likely to apply for most situations. Second, it is necessary to distinguish the stock of structures from the amount of resources spent to maintain these and to assess the two separately. Third, if the aim is to evaluate the impact of an exogenous intervention in terms of a land-

related investment, information on at least two time periods is needed. The preparation of a good investment section requires familiarity with local practices, but the result should permit an assessment of the impact of tenure security on different types of investments (such as visible versus invisible ones). If an appropriate production section is included, the results should provide an empirical estimation of the impact of these investments on productivity.

Even in environments in which the frequency of land market transactions is limited, household members normally have a good idea of the price they would receive if they were to sell or rent their land to others. Such information on hypothetical land prices can be used to assign values for specific plot characteristics in a hedonic regression, allowing one to obtain a crude measure for the change in land values caused by restrictions on marketability or the benefits of more secure tenure. This would supply a rough-and-ready estimate that may be of great interest to policy makers who are concerned about designing a system that is self-sustainable. It would also allow one to assess differences in the ability to pay among the various groups in a population. If a project is eventually to award or update land titles or certificates, it may be worth considering this topic through direct questions about the demand of households for (updated) certificates and their willingness to pay for these on a per-plot basis. In this way, some of the biases that may affect hedonic estimates can be avoided.

Women's rights to control land and benefit from the associated income streams are often constrained by law or, in cases in which the law mandates gender equality, actual practice. In situations where this is relevant, one should obtain more detailed information about gender issues, that is, who normally works on a plot, who determines what outputs and inputs to apply, who decides how output is employed, and who benefits from the proceeds. In many customary systems, widowed and divorced women will not be able to obtain ownership rights to their share of the land or, in some cases, to continue using the land. This clearly affects their long-term economic security, but, because there may be differences between the letter of the law and actual implementation, their perceptions of the situation under the current regime may be important. However, to uncover gender differences systematically in inheritance and the extent to which these may be compensated through the transfer of non-land assets, one must ask about the inheritance of the assets of all parents among all children.

To obtain reliable estimates of conflict-related issues from a reasonably sized sample, the oversampling of households affected by conflicts

over land is necessary. Although a simple question about whether a plot is currently the subject of a conflict can, in situations where the level of conflict is sufficiently high, allow one to gauge the reduction in land values caused by conflict, it does not reveal much about the dynamics of the phenomenon. To accomplish the latter, additional information is needed on past conflicts, when the conflicts began, the consequences of the conflicts, how they were tackled, the formal and informal costs, whether the conflicts were resolved, and, if so, when they were resolved. This information should also be plot specific. Aggregating plot-level information to reveal the incidence of conflicts over land at the household level (for example, by gender or poverty status) can represent a key contribution to a land-related PSIA. It is not possible to ascertain the productivity impact of land conflict—an issue of great interest to policy makers—unless plot-level data are available.

Even in environments in which land markets are thin, information on the lifetime trajectory of land accumulation by each household can be descriptive of the way land stocks have evolved over time. Although the econometric analysis that may be performed employing this information may be limited because information on other variables from the same period is normally not available, there are a number of possible uses. In particular, such trajectory data would allow one to test whether only people with more substantial land assets at the beginning of the period were able to accumulate land during the period. One could likewise use the data to determine the extent to which tenants were able to acquire land or make the transition to landownership.

Information on current land rentals, including separate listings for the same plots considered as property rented by a landlord and property rented by a renter, can often be collected quite easily using the same plot-level format that is used for land currently under cultivation. For the landlord perspective, information on the landlord (total amount of land owned, social position, residence, occupation, and so on) and the rental contract (fixed or rent sharing, registration, duration, and date of commencement) provides a basis for a much richer characterization of the land rental market. For the renter perspective, information could be obtained about the social and economic characteristics of the renter and about the rental period for the current tenant or other tenants. Information on the titles for plots that have been rented out and for those that are being cultivated by the owners can be helpful in assessing whether insecure tenure is limiting the ability of households to engage in land transactions.

For current land sales, purchased plots automatically appear on the plot roster (unless they have been sold or otherwise transferred in the

meantime). This is not the case for land that has been sold or transferred in other ways. Although meaningful analysis of land sales markets invariably requires panel data to control for initial conditions and the characteristics of the land, a modest substitute can be obtained by the team. By asking questions about the reasons for the sale and by including a section on shocks (defined as events that have led to a loss of assets exceeding some minimum value, say, three monthly salaries), the team can make inferences at least about the sequence of events.

Fixed time limits on tenancy may lead to a rotation of tenants on a plot that is inconsistent with the goal of maximizing productivity and investment. Nonetheless, legislation that increases the security of sitting tenants, but prohibits them from subleasing, may reduce the supply of land available for potential tenants. Similarly, high transaction costs because of cumbersome procedures that are difficult to comply with, for example, may drive a wedge between what tenants pay and what landlords receive. As a result, even tenants who are willing to pay more than what the landlord would want to receive may not be able to get access to land through the rental market.

The collection of quantitative evidence on the importance of such restrictions, and thus the benefits of abolishing them, requires questions about hypothetical land market transactions. Questions include whether households have been trying to participate in rental markets, but have not been able to find land on offer, and whether households might rent more or less land if rental prices were to change. Similarly, if the government plans to conduct a program of redistributive land reform, the team could explore the willingness of potential beneficiaries to deploy resources to obtain land, whether they have a preference for land over other assets of similar cash value, and their plans for using the land should they acquire it. This data could provide important insight into the appropriate design and targeting of the government program.

In peri-urban settings, an important issue that rarely receives the attention it deserves is the expropriation of land by local or central bureaucracies. The neglect of this activity is partly due to the fact that this practice can constitute a major source of revenue (and corruption). Moreover, in a simple random household sample, one is unlikely to encounter a large number of such incidents. This suggests that one might wish to draw a specific sample of cases of expropriation. If this is possible, obtaining information for policy makers on the transaction costs involved (that is, the difference between the net value of compensation received by owners and the price paid by current land occupants) and the use to which the lands are now being put could be helpful in at least two respects. The

process could provide quantitative information on the amount of red tape with which outside investors must deal. If placed into the public domain, this information could enhance accountability and supply an impetus for initiatives to set local government finances on a sound and sustainable footing. This would represent a challenge to the myth that, in order to attract outside investment, the government must expropriate or nationalize land. The process would also highlight the extent to which the disposal of land that has already been acquired by the state could be offered to investors.

Considerable knowledge on the collection of land taxes and other fees could be gained by determining the amount paid directly by households. Similarly, asking household members their opinion about paying, under current circumstances, to update registries, records, land surveys, and other land-related documentation would provide insights into the extent to which the services that should be provided by land administrations respond to the needs of the public and whether users trust these institutions. Evidence on such administrative issues can be invaluable in arguing for bureaucratic downsizing based on client demand. If there is a value in assessing the impact of specific reforms that have already been implemented (as in the case of Mexico's *ejido* reform), then questioning households about their confidence in land certificates or the land administration (before and after the reform) can provide useful information for policy analysis. In environments in which the government still has the ability to redistribute land or intervene in land markets in other ways, questioning households about their perceived level of tenure security (for example, whether they expect still to possess the same plot of land in five years) has helped complement more tangible measures of tenure security (titles, for instance) to understand whether such documents are associated with tenure security.

In many developing countries, land laws are passed relatively easily, but there is little interest in implementing them; spreading awareness about them; or ensuring that old legislation, perhaps containing contradictory provisions, is abrogated. A direct way to expose such gaps is to assess the knowledge of the law among households, for example, by asking a series of simple questions about key legal provisions. Given that it is the beliefs revealed by the answers that are likely to affect day-to-day behavior, showing that men and women are ill-informed about land regulations can demonstrate the need for efforts to spread awareness and identify the target groups for such an effort. These answers, particularly among village leaders, can offer valuable hints about the ways such efforts should be structured.

Community questionnaire

A well-planned community questionnaire can provide a wealth of information about the procedures, regulations, and constraints encountered by individual economic actors before any changes may have been implemented. This information can be useful in explaining behavior. Furthermore, a comparison of the regulations and the perceptions of people about these regulations make it possible to assess the extent to which individuals (or village officials) are aware of the legal provisions, but also the effectiveness of the provisions from the point of view of the users.⁶

Exploring the institutional infrastructure of the land administration, including the way in which land administration services are delivered at the local level (staffing, fee structures, accessibility) and how the quality of delivery is perceived, allows one to overcome the supply-side focus of many current studies that give scant, if any, attention to the views of the public. Because only a fraction of households are likely to use these services at any point, a community survey is an appropriate tool to examine this issue. The survey could also identify changes over time in the functions performed by local and central institutions, their staffing and funding, and the accessibility of these services to the local population. Such a picture of institutional change is a precondition for gaining a precise estimate of the impact of the change.

The questions about the administrative services might be complemented by questions about the obligations incurred by property owners within the community (tax rates, the way taxes are assessed, zoning, and so on). Ascertaining changes in these variables over time should be relatively easy, and this may be revealing in situations in which there have been far-reaching shifts in the social, political, and institutional environment.

Rules and regulations related to land—such as inheritance laws, the access to land by women, and the conversion of land from public to private use or from agricultural to nonagricultural uses—normally vary significantly across localities. Some communities even impose restrictions on land transfers, especially through sales (Deininger 2003). The nature of the rules and changes in them over time have clear implications for land use decisions by individual households. Information about these rules could be combined with a general assessment of the characteristics of local land market activity that could be compared with the perceptions of households about this market.

A household questionnaire normally supplies information about whether a specific household has been affected by redistribution, expropriation, or conflict involving land. In a random household sample, however, there are usually few if any households from which land has been

expropriated. Nonetheless, one or two expropriations without proper compensation are probably sufficient to raise serious doubts in an entire community about the security of land tenure. It is therefore worthwhile to focus on this and other such administrative actions in community questionnaires.

How the capabilities of land administration institutions have been affected by administrative or institutional reforms in general governance is a key question of interest in PSIAs in many settings (for example, decentralization or the replacement of central government appointments by the democratic election of village leaders). Providing informed estimates of the impact of such reforms requires great familiarity with the underlying context. Therefore, a community questionnaire is an ideal tool.

Local leaders often have considerable discretion in decision making on land management issues. Lack of knowledge among these leaders about the proper legal provisions means that there is greater opportunity for legal inconsistencies, confusion, and abuses, especially if laws have changed recently. Testing the knowledge leaders possess about laws through straightforward questions represents an efficient method to determine whether, at the policy level, there may be a need for increased efforts at fostering awareness and capacity building. Indeed, the instrument might serve as a means to create awareness about legal provisions and a host of other land-related issues at the local level.

CONCLUSION: JOINING THEORY AND PROCESS

Reforms in land policy are an attractive candidate for PSIAs. They clearly have far-reaching distributional implications and consist of rather discrete interventions or policy changes that lend themselves to the type of before-and-after analysis that can be accommodated within the PSIA framework. Because land policy reform is often controversial politically and must usually be sustained beyond the term of individual governments, information from PSIAs can be employed to build a consensus and establish and monitor clear performance indicators to limit the possibility of corruption in the reform process.

To maximize the value and impact of PSIAs on land policy, the PSIA team should observe a few basic methodological principles. Drawing on the design experiences reflected in this chapter may also help reduce the costs and increase the credibility of the analysis performed. To have an impact on policy, the PSIA team should rely on the input from various stakeholders to identify the appropriate questions and develop indicators that command a broad consensus. The PSIA must be conducted and the

results of the analysis communicated in a transparent and credible way that is suitable so that it may contribute to the broader policy discussion. This chapter has achieved its purpose if it focuses managers' attention and energies on identifying the proper methodology so that the PSIA can reach the goal of improving policy.

NOTES

1. Studies that analyze the problem of an elite preventing human capital accumulation by the masses include Bourguignon and Verdier (2000) and Acemoglu and Robinson (2000). Although investments in human capital are socially and individually profitable and although actors who are unconstrained in credit markets are easily able to undertake these investments (Eckstein and Zilcha 1994; Galor and Zeira 1993), poor people who do not have access to assets may become caught in poverty traps. These people fail to escape poverty not because they are unproductive or lack skills, but because credit market imperfections prevent them from ever getting the opportunity to use their innate abilities. In such a situation, increasing the asset endowment of the poor can lead to permanently higher levels of growth (Aghion, Caroli, and Garcia-Penalosa 1999; Bowles, Bardhan, and Gintis 2000).
2. The commitment to such leases can be tested by ascertaining whether financial institutions accept the leases as collateral.
3. The numbers involved may have been quite large. In India, tenancy reforms are estimated to have been associated with the eviction of more than 100 million tenants (Appu 1997).
4. This result is illustrated by the case of Bombay, where, as a consequence of rent controls, real estate prices have shot up. Such a steep rise in prices forces people to commute from less-expensive residential areas (with the attendant cost in pollution, infrastructure, and so on) and makes it more difficult for entrepreneurs to establish enterprises based on less-expensive labor. In rural areas, the poor and landless are obliged to rely on more shadowy rental markets, for example, by subleasing from protected tenants, depriving themselves of the protections the law provides and also becoming accomplices in illegal activity (Bertaud, Buckley, and Owens 2003).
5. Activity varies considerably across regions of Venezuela. The share of land area involved in sales transactions is as high as 12 percent in places recently cleared for farming, about 2.5 to 3 percent on private lands, and only 1.5 to 2 percent on lands that have been subject to agrarian reform (Delahaye 2001).
6. The discussion here is limited to variables not typically covered in standard reference works. Note that community surveys are even more context specific than are household questionnaires. This means that the survey instruments should be subjected to thorough pretesting. It is possible to obtain a surprisingly large amount of accurate information even through retrospective questions if the survey definition of the community is unambiguous and

administrative records are kept that respondents can draw on to fill in the survey instrument. This will be impractical in situations where these conditions do not hold.

BIBLIOGRAPHY

- Acemoglu, D., and J. A. Robinson. 2000. "Why Did the West Extend the Franchise?: Democracy, Inequality, and Growth in Historical Perspective." *Quarterly Journal of Economics* 115 (4): 1,167–99.
- Aghion, P., E. Caroli, and C. Garcia-Penalosa. 1999. "Inequality and Economic Growth: The Perspective of the New Growth Theories." *Journal of Economic Literature* 37 (4): 1,615–60.
- Appu, P. S. 1997. *Land Reforms in India: A Survey of Policy, Legislation and Implementation*. New Delhi: Vikas Publishing House.
- Ayalew, D., S. Dercon, and P. Krishnan. 2000. "Demobilisation, Land, and Household Livelihoods: Lessons from Ethiopia." Working Paper WPS/00/25, Centre for the Study of African Economies, Oxford, UK.
- Baker, M. 2001. "Property Rights by Squatting: Land Ownership Risk and Adverse Possession Statutes." *Land Economics* 77 (3): 360–70.
- Baland, J. M., and J.-P. Platteau. 1998. "Division of the Commons: A Partial Assessment of the New Institutional Economics of Land Rights." *American Journal of Agricultural Economics* 80 (3): 644–50.
- Banerjee, A., P. J. Gertler, and M. Ghatak. 2002. "Empowerment and Efficiency: Tenancy Reform in West Bengal." *Journal of Political Economy* 110 (2): 239–80.
- Barham, B., M. R. Carter, and W. Sigelko. 1995. "Agro-Export Production and Peasant Land Access: Examining the Dynamic between Adoption and Accumulation." *Journal of Development Economics* 46 (1): 85–107.
- Berry, S. 1997. "Tomatoes, Land and Hearsay: Property and History in Asante in the Time of Structural Adjustment." *World Development* 25 (8): 1,225–41.
- Bertaud, A., R. Buckley, and K. Owens. 2003. "Is Indian Urban Policy Impoverishing?" Paper presented at Urban Research Symposium, Urban Development for Economic Growth and Poverty Reduction, World Bank, Washington, DC, December 15–17.
- Besley, T., and R. Burgess. 2000. "Land Reform, Poverty Reduction, and Growth: Evidence from India." *Quarterly Journal of Economics* 115 (2): 389–430.
- Bhatnagar, S., and R. Chawla. 2004. "Bhoomi: Online Delivery of Land Titles to Rural Farmers in Karnataka, India." Paper presented at Global Conference on Scaling Up on Poverty Reduction, World Bank, Shanghai, May 25–27.
- Bird, R. M., and E. Slack. 2002. "Land and Property Taxation around the World: A Review." Paper presented at Regional Workshop on Land Issues in Central and Eastern Europe, World Bank, Budapest, April 3–6.
- Bourguignon, F., and L. A. Pereira da Silva, eds. 2003. "Evaluating the Poverty and Distributional Impact of Economic Policies (Techniques and Tools)." World Bank, Washington, DC.

- Bourguignon, F., and T. Verdier. 2000. "Oligarchy, Democracy, Inequality and Growth." *Journal of Development Economics* 62 (2): 285–313.
- Bowles, S., P. Bardhan, and H. Gintis. 2000. "Wealth Inequality, Wealth Constraints, and Economic Performance." In A. B. Atkinson and F. Bourguignon, eds., *Handbook of Income Distribution*, 541–604. Amsterdam: North-Holland.
- Brits, A. M., C. Grant, and T. Burns. 2002. "Comparative Study of Land Administration Systems with Special Reference to Thailand, Indonesia, and Karnataka (India)." Paper presented at Regional Workshop on Land Policy Issues, Asia Program, World Bank, Phnom Penh, Cambodia, June 4–6.
- Carter, M. R., and P. Olinto. 2003. "Getting Institutions 'Right' for Whom? Credit Constraints and the Impact of Property Rights on the Quantity and Composition of Investment." *American Journal of Agricultural Economics* 85 (1): 173–86.
- Carter, M. R., and R. Salgado. 2001. "Land Market Liberalization and the Agrarian Question in Latin America." In A. de Janvry, G. Gordillo, J.-P. Platteau, and E. Sadoulet, eds., *Access to Land, Rural Poverty, and Public Action*, 246–78. New York: Oxford University Press.
- Carter, M. R., and K. Wiebe. 1990. "Access to Capital and Its Impact on Agrarian Structure and Productivity in Kenya." *American Journal of Agricultural Economics* 72 (5): 1,146–50.
- Carter, M. R., and E. Zegarra. 2001. "Land Markets and the Persistence of Rural Poverty: Post-Liberalization Policy Options." In R. López and A. Valdés, eds., *Rural Poverty in Latin America: Analytics, New Empirical Evidence and Policy Options*, 65–85. New York: Palgrave Macmillan Press.
- Cook, E. 2004. "Kyrgyzstan Land and Real Estate Registration Project." Paper presented during ESSD Week, Environmentally and Socially Sustainable Development, World Bank, Washington, DC, March 4.
- Deininger, K. 2003. "Land Policies for Growth and Poverty Reduction." World Bank Policy Research Report, World Bank and Oxford University Press, New York.
- Deininger, K., and R. Castagnini. Forthcoming. "Incidence and Impact of Land Conflict in Uganda." *Journal of Economic Behavior and Organization*.
- Deininger, K., and J. S. Chamorro. 2004. "Investment and Income Effects of Land Regularization: The Case of Nicaragua." *Agricultural Economics* 30 (2): 101–16.
- Deininger, K., and S. Jin. 2002. Forthcoming. "The Potential of Land Rental Markets in the Process of Economic Development: Evidence from China." *Journal of Development Economics*.
- . 2003. "Land Sales and Rental Markets in Transition: Evidence from Rural Vietnam." Policy Research Working Paper 3013, Development Research Group, Rural Development, World Bank, Washington, DC.
- Deininger, K., and P. Mpuga. 2002. "Land Markets in Uganda: Incidence, Impact, and Evolution over Time." World Bank Discussion Paper, Development Research Group, Rural Development, Washington, DC.

- Deininger, K., and P. Olinto 2000, "Why Liberalization Alone Has Not Improved Agricultural Productivity in Zambia: The Role of Asset Ownership and Working Capital Constraints." World Bank Policy Research Working Paper 2302, Development Research Group, World Bank, Washington, DC.
- Deininger, K., and L. Squire. 1998. "New Ways of Looking at Old Issues: Inequality and Growth." *Journal of Development Economics* 57 (2): 259–87.
- Deininger, K., R. Castagnini, and M. A. Gonzalez. Forthcoming. "Comparing Land Markets and Land Reform in Colombia: Impacts on Equity and Efficiency." *Journal of Development Studies*.
- Deininger, K., J. Hoogeveen, and B. Kinsey. 2004. "Economic Benefits and Costs of Land Redistribution in Zimbabwe in the Early 1980s." *World Development* 32 (10): 1,697–709.
- Deininger, K., M. Maertens, and P. Olinto. 2001. "Redistribution, Investment, and Human Capital Accumulation: The Case of Agrarian Reform in the Philippines." World Bank, Development Research Group, Rural Development, Washington, DC. Mimeo.
- Deininger, K., and P. Olinto 2000. "Why Liberalization Alone Has Not Improved Agricultural Productivity In Zambia: The Role of Assest Ownership and Working Capital Constraints." World Bank Policy Research Working Paper 2302, Development Research Group, World Bank, Washington, DC.
- Deininger, K., A. Sarris, and S. Savastano. 2004. "Rural Land Markets in Transition: Evidence from Six Eastern European Countries." *Quarterly Journal of International Agriculture* 43 (4): 361–90.
- Deininger, K., S. Jin, B. Adenew, S. Gebre-Selassie, and M. Demeke. 2003. "Market and Non-Market Transfers of Land in Ethiopia: Implications for Efficiency, Equity, and Non-Farm Development." Policy Research Working Paper 2992, Development Research Group, Rural Development, World Bank, Washington, DC.
- Deininger, K., S. Jin, B. Adenew, S. Gebre-Selassie, and B. Nega. Forthcoming. "Tenure Security and Land-Related Investment: Evidence from Ethiopia." *European Economic Review*.
- Delahaye, O. 2001. *Políticas de Tierras en Venezuela en el Siglo XX*. Caracas: Fondo Editorial Tropykos.
- de Soto, H. 2000. *The Mystery of Capital: Why Capitalism Triumphs in the West and Fails Everywhere Else*. New York: Basic Books.
- Doss, C. R. 1996. "Testing among Models of Intrahousehold Resource Allocation." *World Development* 24 (10): 1,597–609.
- Eckstein, S. D., and G. D. Horton. 1978. "Land Reform in Latin America: Bolivia, Chile, Mexico, Peru, and Venezuela." Staff Working Paper 275, World Bank, Washington, DC.
- Eckstein, Z., and I. Zilcha. 1994. "The Effects of Compulsory Schooling on Growth, Income Distribution and Welfare." *Journal of Public Economics* 54 (3): 339–59.
- El Ghonemy, M. R. 1990. *The Political Economy of Rural Poverty: The Case for Land Reform*. New York: Routledge.

- Fafchamps, M., and A. R. Quisumbing. 2002. "Control and Ownership of Assets within Rural Ethiopian Households." *Journal of Development Studies* 38 (6): 47–82.
- Feder, G. 1988. *Land Policies and Farm Productivity in Thailand*. Baltimore: Johns Hopkins University Press.
- . 2002. "The Intricacies of Land Markets: Why the World Bank Succeeds in Economic Reform through Land Registration and Tenure Security." Paper presented at Conference of the International Federation of Surveyors, Washington, DC, April 19–26.
- Feder, G., O. Tongroj, and R. Tejaswi. 1986. "Land Ownership, Security, and Access to Credit in Rural Thailand." Discussion Paper ARU 53, Agriculture and Rural Development Unit, World Bank, Washington, DC.
- Field, E. 2002. "Entitled to Work: Urban Property Rights and Labor Supply in Peru." Princeton Law and Public Affairs Working Paper 02-1, Princeton University, Department of Economics, Princeton, NJ.
- Galor, O., and J. Zeira. 1993. "Income Distribution and Macroeconomics." *Review of Economic Studies* 60 (1): 35–52.
- Grindle, M. S. 1990. "Agrarian Reform in Mexico: A Cautionary Tale." In R. L. Prosterman, M. N. Temple, and T. M. Hanstad, eds., *Agrarian Reform and Grassroots Development: Ten Case Studies*, 179–204. Boulder, Co: Lynne Rienner.
- Grosh, M. 2000. *Designing Household Survey Questionnaires for Developing Countries: Lessons from Fifteen Years of the Living Standards Measurement Study*. 3 vols. Washington, DC: World Bank.
- Gunning, J. W., J. Hoddinott, B. Kinsey, and T. Owens. 2000. "Revisiting Forever Gained: Income Dynamics in the Resettlement Areas of Zimbabwe, 1983–97." *Journal of Development Studies* 36 (6): 131–54.
- Haddad, L. 1997. *The Scope of Intrahousehold Resource Allocation Issues*. Baltimore: Johns Hopkins University Press.
- Hall, A. L. 1990. "Land Tenure and Land Reform in Brazil." In R. L. Prosterman, M. N. Temple, and T. M. Hanstad, eds., *Agrarian Reform and Grassroots Development: Ten Case Studies*, 205–32. Boulder, Co: Lynne Rienner.
- Hayami, Y., A. R. Quisumbing, and M. L. Adriano. 1990. *Toward an Alternative Land Reform Paradigm: A Philippine Perspective*. Manila: Ateneo de Manila University Press.
- Ibbotson, R. G., L. B. Siegel, and K. S. Love. 1985. "World Wealth: Market Values and Returns." *Journal of Portfolio Management* 12 (1): 4–23.
- Jaramillo, C. F. 2001. "Liberalization, Crisis, and Change: Colombian Agriculture in the 1990s." *Economic Development and Cultural Change* 49 (4): 821–46.
- Jeon, Y. D., and Y. Y. Kim. 2000. "Land Reform, Income Redistribution, and Agricultural Production in Korea." *Economic Development and Cultural Change* 48 (2): 253–68.
- Jorgensen, S., and Z. Loudjeva. 2004. "Poverty and Social Impact Analysis of Three Reforms in Zambia: Land, Fertilizer, and Infrastructure." World Bank, Social Development Department, Washington, DC. Mimeo.

- Katz, E., and J. S. Chamorro. 2002. "Gender, Land Rights and the Household Economy in Rural Nicaragua and Honduras." Paper presented at Regional Workshop on Land Issues in Latin America and the Caribbean, World Bank, Pachuca, Mexico, May 19–22.
- Kinsey, B. H., and H. P. Binswanger. 1993. "Characteristics and Performance of Resettlement Programs: A Review." *World Development* 21 (9): 1,477–94.
- Lavigne Delville, P., C. Toulmin, J. P. Colin, and J. P. Chauveau. 2002. *Negotiating Access to Land in West Africa: A Synthesis of Findings from Research on Derived Rights to Land*. London: International Institute for Environment and Development; Paris: Research and Technological Exchange Group.
- Lerman, Z., C. Csaki, and G. Feder. 2002. "Land Policies and Evolving Farm Structures in Transition Countries." Policy Research Working Paper 2794, Development Research Group, Rural Development, World Bank, Washington, DC.
- Lerman, Z., C. Csaki, and V. Moroz. 1998. "Land Reform and Farm Restructuring in Moldova: Progress and Prospects." Discussion Paper 398, World Bank, Washington, DC.
- Leroy de la Brière, B. 1996. "Household Behavior toward Soil Conservation and Remittances in the Dominican Republic." Working Paper, Development Research Group, Rural Development, World Bank, Washington, DC.
- McClintock, C. 1981. *Peasant Cooperatives and Political Change in Peru*. Princeton, NJ: Princeton University Press.
- Negrao, J. 2002. "Comments: Land as a Source of Conflict and in Post-Conflict Settlement." Paper presented at Regional Workshop on Land Issues in Africa and the Middle East and North Africa Region, World Bank, Kampala, Uganda, April 29–May 2.
- Nugent, J. B., and J. A. Robinson. 2002. "Are Endowments Fate?" CEPR Discussion Paper 3206, Centre for Economic Policy Research, London.
- Österberg, T. 2002. "Designing Viable Land Administration Systems in Africa." Paper presented at the Regional Workshop on Land Issues in Africa and the Middle East and North Africa Region, World Bank, Kampala, Uganda, April 29–May 2.
- Otsuka, K. 1991. "Determinants and Consequences of Land Reform Implementation in the Philippines." *Journal of Development Economics* 35 (2): 339–55.
- Place, F. 2002. "Land Markets in Africa: Preconditions, Potentials, and Limitations." Paper presented at Regional Workshop on Land Issues in Africa and the Middle East and North Africa Region, World Bank, Kampala, Uganda, April 29–May 2.
- Platteau, J.-P. 1996. "The Evolutionary Theory of Land Rights as Applied to Sub-Saharan Africa: A Critical Assessment." *Development and Change* 27 (1): 29–86.
- Powelson, J. P., and R. Stock. 1987. *The Peasant Betrayed: Agriculture and Land Reform in the Third World*. Boston: Oelgeschlager, Gunn and Hain.
- Prosterman, R. L., M. N. Temple, and T. M. Hanstad, eds. 1990. *Agrarian Reform and Grassroots Development: Ten Case Studies*. Boulder, Co: Lynne Rienner.
- Ravallion, M. 2001. "The Mystery of the Vanishing Benefits: An Introduction to Impact Evaluation." *World Bank Economic Review* 15 (1): 115–40.

- Reydon, B. P., and L. E. A. Plata. 2002. *Intervenção Estatal no Mercado de Terras: A Experiência Recente no Brasil*. São Paulo, Brazil: Universidade Estadual de Campinas and Instituto Nacional de Colonização e Reforma Agrária.
- Scott, M. F. G., J. D. MacArthur, and D. M. G. Newbery. 1976. *Project Appraisal in Practice: The Little-Mirrlees Method Applied in Kenya*. London: Heinemann Educational Books.
- Tanner, C. 2002. "Lawmaking in an African Context: The 1997 Mozambican Land Law." FAO Legal Papers Online 26, Food and Agriculture Organization of the United Nations. www.fao.org/Legal/Prs-OL/lpo26.pdf.
- World Bank. 2002. "Mexico, Land Policy: A Decade after the Ejido Reforms." Sector Report 22187-ME, Latin America and the Caribbean Region, Environmentally and Socially Sustainable Development Sector Management Unit, Colombia, Mexico, and Venezuela Country Management Unit, Washington, DC.
- . 2004. "Agriculture Investment Sourcebook," Agriculture and Rural Development Unit, World Bank, Washington, DC. <http://www.wesd.worldbank.org/ais/>
- Zepeda, G. 2000. "Transformación Agraria: Los Derechos de Propiedad en el Campo Mexicano Bajo el Nuevo Marco Institucional." Central Independiente de Obreros Agrícolas y Campesinos, Mexico City.
- Zimmermann, W. 2002. "Comments on Land in Conflict and Post-Conflict Situations." Paper presented at Regional Workshop on Land Policy Issues, Asia Program, World Bank, Phnom Penh, Cambodia, June 4–6.

Education Policy Reforms

Erwin R. Tiongson

Over the last decade, many developing countries have embarked on large education reforms aimed at rapidly expanding the supply of education, achieving equity in the provision of education, and significantly improving the quality of education. Some of these reforms have been far-reaching, transforming the budget priorities of many countries and altering in a fundamental way the manner in which governments have traditionally made education services available and how the public sector has operated in partnership with the private sector. In the process, new relationships of accountability have been introduced.

A number of developments have served as catalysts for reform. Changes in the world economy, the general dissatisfaction with the state of education in the 1980s, and findings emerging from academic research on economic growth, returns to education, and user fees, among many other phenomena, have delivered much of the impetus for education reforms.¹ Specifically, a more market-oriented world economy has encouraged initiatives aimed at creating a more market-oriented environment for the provision of education, including measures to foster public-private approaches. The new literature on endogenous growth theory, wherein a worker's productivity is seen as a function of both the worker's own human capital and the average stock of human capital, has offered a fresh perspective on the reasons education is critical for development. In addition,

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adverse macroeconomic conditions and the leaner public funds following the debt crisis have encouraged a more efficient use of scarce public resources. Finally, in recent years, a number of initiatives put forward by the international community have made education a priority on the development agenda. Through the World Conference on Education for All, held in Jomtien, Thailand, at the beginning of the 1990s, and, more recently, the internationally agreed Millennium Development Goals, the international community has reaffirmed its commitment to universal primary education.

This chapter provides a brief review of experiences with some of these reforms. In particular, it draws on country case studies and recent findings from the empirical literature on education policy to identify some of the poverty and social impacts of education reforms, the principal transmission channels through which stakeholders are affected by or affect the reforms, and the standard tools for poverty and social impact analysis in education.

While education policy reforms have long-term effects on poverty and income distribution, this chapter mainly discusses the distributional consequences of reforms in the short and medium run. Much of the documented impact of education reforms concerns the immediate distributional effects of the reforms rather than the effects of the reforms on the current poverty status of individuals or households. Whenever appropriate, however, we draw out potential immediate effects of reforms on poverty. We adopt a broad view of distributional consequences, allowing for the possibility that reforms redistribute resources, as well as access, quality, power, and authority.

This chapter is organized as follows. The first section provides an overview of reforms that have been carried out in the education sector and the rationale for these reforms. The effects of reforms on distribution are then reviewed, and an analytical scheme for understanding these distributional effects is presented, highlighting how the reforms vary, mentioning specific features of each reform, and documenting the transmission channels through which stakeholder groups are affected. A survey of empirical tools for both qualitative and quantitative poverty and social impact analyses is provided, and valuable empirical studies on each tool are singled out. Finally, the options for monitoring and evaluation are briefly discussed.

TYPES OF REFORM

There are several broad changes to education policy that are covered in this chapter. In general, these reforms concern policy changes to the expendi-

ture structure, the financing scheme, and management, although there may be significant overlap among these broad categories. We exclude from these categories a number of professional and management reforms (such as curriculum reform² or teacher training³) that do not have explicit documented impact on distribution. We also exclude financing schemes that are less common in developing countries, such as student loans.

- *Expenditure reform.* A government may choose to restructure its expenditures to reallocate spending from higher education to lower levels of education. Reforms aimed at increasing the supply of schooling may focus on targeted spending or the expansion of coverage in specific geographic areas through a mix of public and private sector support, including public support for private education in low-income areas.
- *Financing reform.* A government may choose to reform the financing of education by introducing user fees (cost recovery) or, as seen in a number of developing countries in recent years, by eliminating them. A related scheme is the introduction of community financing, whereby, for example, communities are entirely responsible for the construction and maintenance of buildings. Financing schemes may include schemes on the demand side, in which funds are channeled directly toward people who demand education rather than people who supply it to strengthen the client's power over providers. Demand-side financing schemes may involve transfers to households, vouchers, or payments given directly to students who may submit them to the schools of their choice.
- *Management and institutional reforms.* A country in which there is centralized management over the education system may choose to implement management reforms by decentralizing the administration of education. This may involve a shift in responsibility from the central government to local governments, communities, or schools. The shift might include a simple delegation of tasks from the central government to local governments or a complete transfer of authority and decision-making power. The changes may be viewed not simply as administrative adjustments, but as reforms that fundamentally alter relationships of accountability and the way in which services are provided. The classification of these changes as institutional reforms may then be appropriate.

There are, of course, alternative methods for classifying this family of education policy reforms. For example, one might contemplate a conceptual division between compensatory schemes or targeted policies that aim to increase educational opportunities for the poor and schemes or

policies that are universal in coverage. The reforms that have been implemented over the last decade may be broadly classified as those that are primarily aimed at expanding access (expanding supply, restructuring expenditure, abolishing fees) and those that are primarily aimed at improving quality, efficiency, and sustainability (decentralization, community management, vouchers).

Reimers (2000) suggests that it may be useful to think about education in terms of “levels of educational opportunities,” ranging from initial access to schooling through progression and completion to assimilation into local labor markets. Following this typology, one could then understand education reforms as specific interventions aimed at selected levels of educational opportunity.

These alternative typologies, however, also allow for overlap among categories. There are measures, such as the provision of textbooks, that blur the distinction between access (quantity) and quality. Poor children have been observed to drop out of school with greater frequency, for example, partly because the quality of schooling is low. Programs exist that are broad in scope (offering, for example, greater financing for primary education) but strategically directed at increasing the educational opportunities available to the poor (who may account for a disproportionate share of enrollment in public primary schools).

RATIONALE FOR UNDERTAKING REFORM

In an environment characterized by low education attainment and inequitable access to education, developing countries have typically implemented education policy reform to improve access to education, in general, and also to expand coverage among poorer households. Such is the rationale for significant additions to budgets for primary education, construction programs, and many compensatory programs targeted at the poor.

Efficiency considerations are also important. A substantial body of literature has emerged over the last three decades on the rate of return to education. While the methodology has come under scrutiny, there is general consensus that the returns to primary schooling are high, thus suggesting that spending could be switched from higher to lower education levels.

Some reforms are designed to improve public finances. Cost recovery schemes, for example, are designed to supplement government revenues when rapid education expansion has created significant pressure on the budget. The resources raised may also be used to improve quality and boost demand for education. In fact, some advocates of user fees (with waiver schemes built into certain proposals) have supported the institution of cost

recovery on the grounds that such a scheme may improve quality and increase demand without significantly raising cost barriers. Meanwhile, some reforms, such as voucher schemes, aim to create a market-oriented environment that encourages competition between public and private schools, enhances school quality, reduces costs, and adds to the choices available to students. Vouchers are also designed to allow students access to higher quality private education.

Management and institutional reforms, such as decentralization programs, are designed to improve efficiency, accountability, and responsiveness in education service provision. These reforms follow from the assumption that centralized systems often are not able to respond efficiently and adequately to local needs. Decentralization reforms are meant to encourage local participation and ultimately improve coverage and quality. Sosale (2000) has suggested that the strengthening of the private sector role in noncompulsory education is also aimed at releasing public resources for allocation to the compulsory basic education level.

Finally, political pressures from within and outside a country have profound effects on educational policies, such as Free Primary Education or Education for All. The call for Education for All and for measures to meet the Millennium Development Goals in the international community has been particularly influential. The enhanced Heavily Indebted Poor Countries Initiative has also led to a reallocation of public resources toward the social sectors.

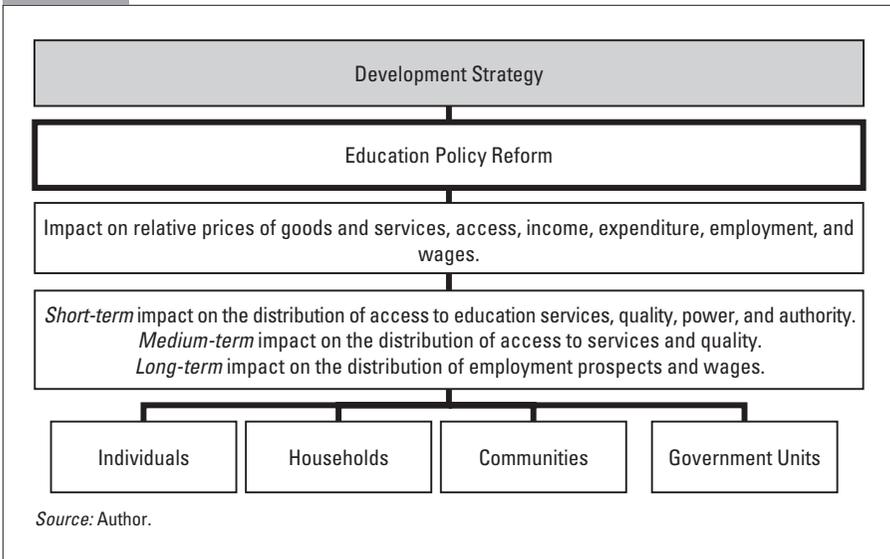
TYPICAL RANGE OF EFFECTS ON DISTRIBUTION

Figure 6.1 summarizes the analytical scheme of this chapter. It indicates that the broader development strategy determines the reform options. Through their impact on prices, income, employment, and wages, education policy reforms redistribute resources, access to education, and the quality of the services provided. They also redistribute authority and the relationships of accountability. These resources and services are all redistributed among individuals immediately as well as over time. They are redistributed both across and within households, communities, and government units.⁴

Immediate effects on the distribution of access to and quality of services

First, education policy reforms have immediate, short-term effects on the distribution of access to education services and the quality of these services. For example, reforms aimed at expanding the supply of education

FIGURE 6.1 Analytic Scheme: Education Policy Reform



by expenditure restructuring or targeted interventions may increase enrollment. Because these are targeted interventions and because these reforms are usually designed to increase the supply of basic education (typically assumed to have pro-poor benefit incidence) rather than higher education (typically assumed to be less pro-poor), such measures may disproportionately benefit the poor.⁵ The value of these education subsidies could be significant. Reforms designed to change the financing of education may boost enrollment among the poor by easing some of the financing constraints on the poor (for example, the elimination of user fees), improving access to higher quality schools (for example, through vouchers), or enhancing the quality of schooling. Other reforms run the risk of reducing enrollment, particularly among households with lower incomes (for example, the introduction or raising of user fees).⁶

Meanwhile, geographic variations in quality may be intensified by rapid expansions in the supply of education, because these require a capacity to absorb the expansions. Rural schools, for example, tend to have fewer qualified teachers. They may not have the same ability as their urban counterparts to quickly accommodate sudden surges in enrollment. Under some circumstances, management reform or decentralization may widen disparities in the quality of education to the extent that geographic differences in the availability of resources exist. Similar distributional consequences may follow from other reforms that lead to

greater community participation, such as community financing. In general, richer communities are in a better position to provide resources for education. However, some initiatives relying on community solidarity are considered more difficult to undertake in urban areas.

Even if the coverage of education among the poor was expanded, however, it would be important to assess the distributional dimensions of marginal changes in access within the poor households themselves. With respect to the demand for education, the price elasticity of households may vary by gender. That is, as their financing constraints fall, households may be more likely to enroll boys rather than girls. With respect to expanded choice, higher income households may have greater access to information and thus be in a better position to exploit voucher schemes fully (Carnoy 1997). Households in urban areas may also enjoy advantages (such as a wider choice among higher quality schools) not otherwise available to their rural counterparts.

Dynamic effects on the distribution of income and access to and quality of services

Second, reforms in education have important dynamic effects on distribution. In the long run, the expansion of education is generally designed to improve intergenerational employment opportunities and alleviate poverty. Other things being held constant, greater human capital accumulation improves income-generating capacity. To the extent that reforms are targeted at improving the human capital of the poor, reforms have long-term, progressive effects on the distribution of income. In fact, even if public spending on poor and rich were increased uniformly, it is likely that the marginal impact of each unit of spending on the human capital of the poor would be higher. Because aggregate human capital accumulation has positive effects on long-term growth, education reforms that expand the supply of education have long-term second-round effects on poverty reduction.

Still, the rates of return to levels of education change as the supply of specific levels of education expands. A number of studies have shown, for example, that returns to primary education fall, while returns to higher education rise, as a country rapidly expands access to primary education.⁷ In particular, global surveys of the returns to schooling consistently reveal a pattern of falling returns to education by level of economic development and level of education.

In the medium term, there are important (but often neglected) second-round effects that may mitigate or exacerbate first-round gains in

access. In the case of rapid increases in enrollment, the quality of schooling may subsequently fall. Should expansion lead to the rationing of limited class space, poorer households are typically worse off than wealthier ones. Enrollment rates across households may drop following some deterioration in quality in situations in which the demand for education is systematically linked to quality. Within households, this may have gender dimensions as well, as enrollments among girls may be the first to decline. The deterioration in quality may have distributional dimensions, as institutional capacity varies across geographic units. Urban schools, for example, may be in a better position to deploy qualified teachers quickly to accommodate rapid increases in enrollment. In the case of school vouchers, children from lower-income households may be penalized through “cream-skimming” (as better students, usually those from richer households, leave the schools that are accepting vouchers to attend higher-quality schools), because there may be spillover benefits from peer effects. Thus, while voucher systems may create incentives that lead to better performance among public schools, the loss of the better students to private schools may lead to an overall decline in public school performance (Hsieh and Urquiola 2003).

Effect on the distribution of power and authority

Third, reforms redistribute power and authority. In general, reforms redistribute resources in the form of transfers, opportunities, or the quality of education. However, another dimension of education policy reform is represented by the manner in which power and authority (through budgets, decision-making powers, and rights) are redistributed (Grindle 2001). In the case of institutional or management reforms, authority may be transferred from a central unit to local units. Relationships of accountability (such as between schools and local communities; among teachers, administrations, and parents; and between government and the private sector) may also evolve with education reforms.

RANGE OF VARIATIONS IN REFORM OPTIONS

There is wide variation in the options for policy changes in this family of reforms. The distributional consequences of these reforms—how quickly institutions and individuals adapt and whether sufficient capacity is in place—depend on these many variations. Reimers (2000) suggests that much policy is defined and often recreated at the implementation stage.

Expenditure reform

With expenditure restructuring, spending may be reallocated from one education level to another, central funds may be reoriented toward specific geographic units or households, or the norms for budgeting may have built-in, explicit pro-poor components.

- In South Africa, public resources are provided to schools sorted by need or poverty. The ranking is based on two equally weighted factors: the physical condition of the school and the relative poverty of the school.
- In Chile, the P-900 program provides direct material assistance to the most poorly achieving schools. These schools, numbering about 900 (hence the name), are selected based on whether their mean test scores have dropped below cutoff values.⁸
- In countries where gender gaps in schooling are significant, spending may be reallocated specifically to promote schooling among girls. Such reforms include the construction of separate schools for girls, the provision of sanitation facilities, or the hiring of more women teachers. For example, the construction of separate latrines for girls in Pakistan reportedly had positive effects on the enrollment of girls in primary schools (World Bank 2003).

Financing reform

With respect to cost recovery schemes, countries may choose to mitigate the regressive impact of user fees by offering targeted scholarships. Countries that have eliminated user fees have opted, at one extreme, for a “big bang” approach (Malawi in the early 1990s), while others have taken on a more gradual reform, such as the elimination of fees one grade at a time (Lesotho in recent years). In the 1970s, Nigeria implemented free primary schooling one state at a time. Some countries have eliminated formal fees for uniforms, textbooks, and examinations, while encouraging local communities to contribute to funds for construction and renovation.

A range of voucher programs also exists from quasi-voucher initiatives (for example, Bangladesh, Côte d’Ivoire, and the Czech Republic) to true voucher programs (for example, Chile and Colombia). Even in countries with true voucher programs, there are some important variations. The voucher plan in Colombia, for example, was restricted to very low-income pupils.

- Gauri and Vawda (2003) provided a survey of voucher programs in developing and transition economies. In Bangladesh, state subsidies for

nongovernment schools function as a sort of voucher: When schools attract enough students and the hiring of an additional teacher is warranted, the government pays for most of the extra teacher's salary. In the Czech Republic, private schools receive state funding equal to just below 80 percent of the per-student funding received by their public counterparts.

Management or institutional reform

Decentralization programs may involve a simple transfer of administrative tasks ("deconcentration") or a full transfer of authority from central units to local units ("devolution"). They may likewise involve transfers of responsibility from the central government to subnational governments or transfers of responsibility from central units to communities and schools. The financing schemes include centralized systems with the formula-based allocation of expenditures to schools (according to the number of teachers, the number of students, or some other criteria) and systems that require a significant degree of community cofinancing.

- In Nicaragua, for example, there was a shift from a highly centralized system in the 1980s to a more decentralized system beginning in 1993. School boards composed of parents, teachers, and student representatives were created and given important decision-making powers, including hiring-and-firing decisions over school principals and teachers, budget allocation decisions, and the authority to make adjustments to the national curriculum (Belli 2004).
- In Bhutan, according to official guidelines, local communities are held responsible for the construction and maintenance of buildings, including teachers' quarters (Bray 1996). In theory, teachers' wages are centrally financed, but some communities employ their own teachers to compensate for the shortage of government-employed teachers.

PRINCIPAL TRANSMISSION CHANNELS THROUGH WHICH STAKEHOLDER GROUPS ARE AFFECTED

There are several transmission channels through which stakeholders are affected by reforms, as depicted in Figure 6.1. There may be some overlap among channels. Relative price changes, for example, alter household expenditures and access to goods and services. It is possible that a specific policy reform may alter these channels. For clarity, however, we discuss each channel separately.

The relative prices of goods and services will change

Education policy reforms have significant effects on the relative prices of education goods and services. For example, cost recovery schemes elevate the price of education services. Consequently, these schemes may have regressive effects on distribution unless mitigation provisos, such as scholarships, are in place. In contrast, the elimination of user fees lowers the out-of-pocket expenditures of households for education services. The available evidence suggests that enrollments have risen rapidly following the abolition of fees. Similar effects have been observed following interventions explicitly designed to raise the supply of education, with especially sharp increases among poorer households.⁹

Other reforms have important auxiliary effects on the prices of goods and services. Private schools, for example, have been known to raise fees following the introduction of vouchers, effectively restricting access to that of richer households (Carnoy 1997). Meanwhile, management reforms may have important effects on relative prices. For example, community management may be seen as a “tax” on the time of a local community and is arguably regressive. In El Salvador, the contribution of parents to the Education with Community Participation Program (Educación con Participación de la Comunidad, EDUCO), the decentralization program aimed at expanding the supply of education in rural areas, has been estimated roughly as equal to 28 percent of the work done by the Ministry of Education (Cuéllar-Marchelli 2003). Among households, there may also be regressive effects, as relatively greater effort may be required of poorer households compared with richer households to reach the same outcome. An evaluation of El Salvador’s experience with community-managed schools suggests that the poorest children can obtain education results equivalent to those obtained by their richer counterparts only if their parents are prepared to work harder (Reimers 1997).

Household incomes and expenditures will change

The policy debates on the social impact of reforms have generally revolved around the issue of access and the way reforms, such as the institution of cost recovery, create financing barriers to education for households. Whether or not such barriers actually lower access to education, they certainly increase out-of-pocket expenditures (or decrease net income if user fees are counted as taxes) on education across all households. For the poorest households, this may have long-term adverse effects on welfare. There is evidence that user fees, as typically implemented, consume a dis-

proportionate share of the incomes of the poorest households (Reddy and Vandemoortele 1996, 30).

Access to goods and services will change

The changes in the relative prices of goods and services alter the access of households to education (see the section titled “The relative prices of goods and services will change”). Meanwhile, vouchers are designed to provide greater access to higher-quality education services, and construction programs have direct effects on the access of specific communities to education. Clearly, access to educational services is determined by many factors other than prices. Thus, reforms that reduce nonfinancial barriers to education, such as teacher training reforms or bilingual education initiatives, promote education without changing nominal prices or nominal household incomes and expenditures.

The quality of goods and services will change

Should the elimination of user fees weaken the fiscal stance, the quality of the goods and services provided may deteriorate. Experiences with initiatives in support of Education for All or Universal Primary Education indicate that “access shock” has usually followed the abolition of fees. Across a number of countries, the quality of schooling (measured in terms of pupil-teacher ratios, textbook-per-pupil ratios, the share of qualified teachers) has deteriorated following increases in enrollment. Yet, the quality of services is not exclusively a function of fiscal resources. Given the same amount of educational resources, management reforms may improve the quality of the services provided.

Human capital assets and employment prospects will change

Reforms aimed at raising access to education promote human capital formation. This increases the long-term employment prospects for those people who benefit from the expanded education opportunities. However, some educated workers may see the value of their education fall as the pool of educated workers grows (Knight and Sabot 1983). A recent country study by Duflo (2002) of education expansion in Indonesia through a significant program of school construction initiated in the 1970s (the Sekolah Dasar Instruksi Presiden [INPRES] Program) found that an increase in the proportion of primary school graduates in the labor force decreased the wages of older cohorts.¹⁰ All told, the greater supply of education both

boosts average incomes (by improving the employment prospects of the newly educated workforce) and reduces inequality (by bidding down the wages of the richer, higher-educated workforce.)

TYPICAL DIRECTION AND MAGNITUDE OF THE IMPACTS AND EVOLUTION OVER TIME

Expenditure reform

An expansion of supply achieved through expenditure restructuring, targeted spending, or school construction programs immediately promotes greater access, especially among poorer households. Over time, sharp rises in enrollment may lead to some deterioration in quality. Moreover, an expansion of supply at the lower levels of education may have little long-term impact if it is not matched by an expansion of supply at the higher levels of education and in the prospects for employment. There is evidence that households are forward looking and take into account the constraints on access to higher education when making decisions at the primary level (for example, see Lavy 1996).

Financing reform

Cost recovery schemes may have important dynamic effects, depending on whether fees are being introduced, reduced, or eliminated. The introduction of user fees has an immediate impact on households' out-of-pocket payments; if the impact is large enough, this may lessen the demand for schooling. However, greater resources may improve the quality of the services provided. For example, some schools have been known to use the proceeds from cost recovery for investment over time in quality (for the case of Mali, see World Bank 2003). These investments in quality may, in turn, increase the demand for education (see Kremer 1995). The revenues collected through cost recovery schemes may also finance education expansion directly.

In contrast, the abolition of user fees lowers the out-of-pocket payments of households (see the section titled "The relative prices of goods and services will change"). This promotes greater access to education, especially among the poor. In the medium term, if school facilities do not keep up with the rising demand, there may be deterioration in quality because of crowding.¹¹ If higher enrollments cannot be accommodated, rationing may take place. Changes in quality and rationing may each lead to reduced access, increased dropout rates, and more repetition, and poorer house-

holds are particularly vulnerable in these cases. A voluminous body of literature, some of which dates back to the 1970s, shows that rapid increases in enrollment following the abolition of fees have often been accompanied by deteriorations in quality (see Table 6.1), at times with significant geographic variation. Enrollments have sometimes decreased over time, partly because of declines in quality.

The elimination of fees reduces teacher accountability with respect to parents (Kadzamira and Rose 2003). Of course, this would be true only if the payment of the fees has been accompanied by greater accountability with respect to parents. Some fees may be reinstated in the absence of fiscal countermeasures, potentially reducing enrollment among the poor. Such was the case of Kenya in the 1970s (Nkinyangi 1982). Other countries have taken steps to finance expenditures that were previously financed by the fee revenues. For example, in the 1990s, Uganda added to the recurrent budget for education to compensate for the abolition of fees.

The introduction of school vouchers has several immediate effects. First, vouchers promote access to higher-quality private schools and thus lead to rapid growth in private school enrollments. Second, when the value of the voucher is insufficient or not automatically adjusted to inflation, households may face higher out-of-pocket payments (Gauri and Vawda 2003). Compared with richer households, poorer households may not make up for the shortfall in spending and are therefore less likely to use the vouchers for private schools. Third, assuming the value of the voucher is adjusted sufficiently to inflation, the vouchers may still benefit only select income groups. There is evidence that parents at a lower level of education attainment are less likely to conduct research and make school choices on the basis of quality. Moreover, the better private schools tend to be located in the urban areas where the more affluent families live. Finally, the experience in Chile suggests that the best voucher-schools charge higher tuition copayments, effectively restricting the access of the poor anyway.

Over time, vouchers may foster competition between private and public schools, assuming there are no capacity constraints on improving the quality of education (such as the external constraints in Côte d'Ivoire). Public schools facing greater competition from their private counterparts could make efforts to reduce costs and enhance quality (West 1997).¹² Cream-skimming may also occur as public schools lose their best-performing students to private schools (see the section titled "Dynamic effects on the distribution of income and access to and quality of services"). If there are important peer effects because of the presence of more advanced students in greater numbers in classrooms, vouchers may foster rises in inequality in achievement if the advanced

TABLE 6.1 What Happens When Primary School Fees Are Eliminated? The Main Results of Selected Country Studies^a

Country	Year(s) covered	Author, year of publication	Analysis	Change in		Measurement of quality	Comment
				Enrollment	Quality		
Botswana	1973, 1980	Mehrotra 1998	Descriptive	Increased	Not indicated	Not indicated	Primary school fees were halved in 1973 and were removed entirely in 1980.
India (Tamil Nadu)	1977–92	Duraisamy et al. 1997	Multivariate	Increased	Deteriorated	Pupil-teacher ratio, pass rates	None.
Indonesia	1977–78	Colletta and Sutton 1989	Descriptive	Increased	Not indicated	Not indicated	Embarked on its program with a pool of available teachers.
Kenya	1970–78	Nkinyangi 1982	Descriptive	Increased	Not indicated	Not indicated	In the absence of fiscal countermeasures, new fees were imposed under new names.
Kenya	1974–85	Colletta and Sutton 1989	Descriptive	Increased	Deteriorated	Not indicated	Low quality particularly acute in poorer districts.
Madagascar	2002	Fafchamps and Minten 2003	Multivariate	Increased	Not indicated	Not indicated	None.
Malawi	1994–97	MacJessie-Mbewe 2002	Descriptive	Increased	Deteriorated	Pupil-teacher ratio, textbook, repetition	Families and communities still involved in cost sharing.
Malawi	1994–97	Kadzamira and Rose 2001, 2003	Descriptive	Increased	Deteriorated	Pupil per qualified teacher, textbooks	None.
Malawi	1990–98	Al-Samarrai and Zaman 2002	Benefit incidence, marginal incidence	Increased	Not indicated	Not indicated	Gains in enrollment have been highest among the poor.

(continued)

TABLE 6.1 What Happens When Primary School Fees Are Eliminated? The Main Results of Selected Country Studies^a (Continued)

Country	Year(s) covered	Author, year of publication	Analysis	Change in		Measurement of quality	Comment
				Enrollment	Quality		
Nigeria	1954–63	Adetoro 1966	Descriptive	Increased	Deteriorated	Unqualified teachers	None.
Nigeria	1976–86	Prince Asagwara 1997	Descriptive	Increased	Deteriorated	Pupil-teacher ratio, facilities	None.
Nigeria	1973–83	Csapo 1983	Descriptive	Increased	Deteriorated	Teaching staff, dropout rates	Because of rising costs, government passed responsibility to local authorities. Proposal to levy parents.
Nigeria	1979–83	Chuta 1986	Descriptive	Increased	Deteriorated	Pass rates	Eventually led to less liberal education policy.
Tanzania	1974, 1976	Colletta and Sutton 1989	Descriptive	Increased	Deteriorated	Not indicated	Enrollment has decreased over time, in part because of low quality.
Uganda	1992–99	Deiningering 2003	Multivariate	Increased	Deteriorated	Pupil per qualified teacher	Gains in enrollment have been highest among the poor.
Uganda (Mukono and Kampala)	1998	Appleton 2001b	Multivariate	Increased	Deteriorated	Pupil-teacher ratio, average class size, test score	None.
Zimbabwe	1983–89	Edwards 1995	Efficiency analysis	Increased	No change	Pyramid rate, efficiency index	Fees introduced.
Zimbabwe	1979–89	Nhundu 1992	Descriptive	Increased	Deteriorated	Pass rates, transition rates	None.
Zimbabwe	1979–81	Colclough and Lewin 1993	Descriptive	Increased	Deteriorated	Facilities, textbooks	The increased dependence on local financing has led to variations in school quality.

Source: As indicated.

a. May not refer to the abolition of user fees alone, but to a broader program of the expansion of education.

students flee the schools accepting the vouchers (Carnoy 2000; Carnoy and McEwan 2001, 2003), and this may lead to an overall decline in public school performance.

Management and institutional reforms

The impact of decentralization on access, quality, and fiscal stance is indeterminate and largely a function of the extent of decentralization, the existing capacity at the local level, and the resources available to local communities. With respect to equity, the gap in quality between rich and poor districts may widen over time (Fiske 1996). An evaluation of El Salvador's experience with community-managed schools suggests that the existence of tuition fees in some schools (despite the fact that EDUCO schools are not supposed to impose fees) reflects inequities in the resources available to schools. It has also been proposed that decentralization may sometimes make it easier for discrimination against ethnic groups to occur at the local level (Fretwell and Wheeler 2001). Bhatnagar and Williams (1992) indicated that decentralization renders the resources for development particularly vulnerable to capture by local elites. These public resources may be used by the local elites primarily for private gain rather than for the intended beneficiaries.

IMPLEMENTATION MECHANISMS

To prepare for rapid increases in enrollment, countries often adopt teacher-training programs, including distance teacher education. In a number of Latin American countries, conditional transfers (in which the transfers are disbursed to households provided the children remain in school) represent a rapidly growing type of program aimed at ensuring that children stay in school and that initiatives focused on universal primary education are sustained.¹³

MAIN RISKS

Reforms aimed at expanding the supply of education or removing the financial barriers to education faced by households are susceptible to changes in the economic environment. In particular, negative or low economic growth, as well as deterioration in fiscal accounts, limits the scope for expanding education. In Uganda's case, success in reorienting public expenditures was made easier by stable macroeconomic conditions and the development of budget institutions (World Bank 2003). Budget reforms

have allowed Uganda's expenditure management system to evolve from a cash budget system to the medium-term expenditure framework to the Poverty Action Eradication Plan, ensuring that budgetary priorities receive sufficient funds. In contrast, under relatively more unstable conditions and with poorly developed budgetary systems, other governments have found programs for universal primary education difficult to sustain.

The political economy of education reforms implies that the political context is also critical for sustaining the reforms. In Uganda in the mid-1990s, for example, the president had to contend with dissatisfaction among newly elected members of parliament over rapid increases in enrollment unmatched by increases in resources (Moulton et al. 2001). In Latin America during the 1990s, encouraging greater parental involvement in education planning, where there was little tradition of parental and community participation, was a key challenge in implementing and sustaining reforms (Grindle 2004).

OTHER ISSUES

A number of intervening factors influence how well reforms are executed. The distributional consequences often depend on whether these factors advance or limit the intended effects of the reforms. For example, it is critical that programs aimed at expanding the supply of education, by constructing schools in or targeting spending toward poorer communities, also identify the necessary complementary measures.

Country experiences with the elimination of user fees suggest that the private costs (informal fees) are still high even after user fees have been abolished. In part, this reflects problems in implanting policies for free primary education, such as the problem of an inadequate allocation of resources to compensate for the loss of revenues from school fees. The capacity of school systems to absorb qualified teachers and the availability of such teachers for rapid deployment are also recurring issues in Universal Primary Education Initiatives. Conversely, for initiatives introducing cost recovery, it may be the timing of the implementation of fees, rather than the magnitude of the fees, that affects the affordability of education.

With respect to vouchers, universal schemes may increase cream-skimming or sorting. When the voucher scheme is restricted to poor households, the effects may be more positive.

With respect to decentralization, the financing scheme is important. For the formula-based allocation of expenditures, there are potentially perverse incentives whether the formula is grounded on the number of teachers or on the number of students (capitation-based financing). For

example, systems that use a formula involving the number of students have suffered from suboptimal pupil-teacher ratios, as well as misreporting in enrollment and retention statistics. There is also an issue of capacity within decentralization reforms, because local governments may not be fully prepared for their new responsibilities.

The mechanism to determine teachers' wages may undermine reforms that aim to introduce competition and rewards for good performance. It may compress the resources for education. In Nicaragua's experience with school autonomy, the Ministry of Education negotiates with the labor union on collective wage increases. It has been argued that such an approach may undermine merit-based wage increases and use up available incremental funds, making it difficult to allocate extra funds to schools in poorer municipalities (Belli 2004).

Decentralization or the introduction of new relationships of accountability presupposes the existence of local communities interested in holding service providers accountable and who are willing to do so. In a sense, a "culture of accountability" is a necessary condition if decentralization is to improve services.¹⁴ In addition, to hold service providers accountable, local communities need to be better informed about the level and quality of the services to which they are entitled and the level and quality of the services they actually obtain. There are a number of initiatives aimed at making local communities better informed, such as the school report cards program in Brazil.

STAKEHOLDERS

Education initiatives in this family of education policy reforms may affect stakeholders negatively or positively, or the impact may be indeterminate. Among the groups expected to be affected negatively are teachers' unions (under management reforms) and students in higher levels of education (who may lose subsidies when expenditure is reallocated). In contrast, reforms may positively affect funding agency actors and local elites through increases in their decision-making powers (supply expansion or management reforms). In some cases, reforms may augment the exposure of services to local capture. The impact on households and central government bureaucrats, meanwhile, is largely indeterminate. Among households, the impact depends on how reforms alter household incomes, the relative prices of goods, and the quality of the services provided. Among central government bureaucrats, the impact depends on whether the reforms enhance their authority (reallocation, supply expansion) or weaken it (decentralization).

However, a simple calculation of the winners and losers fails to reveal the many dimensions of the political economy of reform. Grindle (2001) has proposed that social sector reforms are best understood as dynamic, evolving processes in which some actors and institutional arenas are more relevant or more likely to be strategically important at particular phases. The phases include agenda setting, design, approval, implementation, and the efforts to sustain the reforms. An understanding of the political economy of reforms thus requires an understanding of the critical decisions made at each phase by specific actors within specific institutional arenas.

TOOLS FOR POVERTY AND SOCIAL IMPACT ANALYSIS

The section below discusses quantitative and qualitative tools that have typically been applied to evaluate education policy reforms. The tools are examined separately, although a combination of several techniques may be used simultaneously. Each tool provides a unique perspective, but they each may also have distinct drawbacks. The use of the tools in combination can provide a rich source of information on the diverse characteristics of the poverty and social impacts of education policy reforms.

The section on quantitative tools is arranged according to the increasing complexity of the tools. The tools become more technically demanding depending on the data desired, the assumptions about household behavior, and the assumptions about the links between households and markets (either all markets, or a subset of markets). However, there is a significant overlap among the methods. For instance, some types of marginal incidence analysis rely on estimates of demand based on reduced-form equations. In general, the tools described below are suited to the basic mapping depicted in Figure 6.1. The typical evaluation of a particular reform involves an assessment of the effects of the reform on individuals, households, communities, and government units separately or in combination with the beneficiaries. The evaluations are based on prior assumptions about the way the reform's impact on prices, income, and wages, for example, subsequently influences the distribution of access, quality, and authority.

Quantitative techniques

Public expenditure tracking. Some studies use various quantitative techniques to assess the efficiency of service provision. Public expenditure tracking surveys track the flow of resources through the bureaucracy from the central government down to the service facility. These surveys determine the share of the originally allocated funds that actually arrives at the

facility and the amount of time required for this journey to be completed. Tracking surveys of this sort might help determine the likely impact of, say, a reallocation of education expenditures, including whether the resources can be expected to reach the intended beneficiaries. They may also be cross-validated through service delivery surveys to gauge the perceived effectiveness of service provision. Such surveys may reveal significant geographic variations in service delivery. A tracking survey of this kind in Uganda (Reinikka and Svensson 2001), for example, drew on panel data from a survey of public primary schools to assess the degree of leakage of public funds. The results indicated that significant leakage existed and that the leakage varied according to the sociopolitical endowment of the schools.

Benefit incidence analysis. Benefit incidence analysis (BIA) relies on household survey data and information on public expenditure to assess the current distribution of benefits among different groups, such as households at various income levels. A standard BIA has two components: a measure of the value received by the unit of analysis (individuals or population groups) and a gathering of the sample along selected dimensions (normally expenditure or income quantiles). There are technical difficulties with the valuation of the benefits received by users; as typically implemented, BIAs therefore simply count the users. The analysis has generally been used to identify the beneficiaries of public spending on education and health care (see Demery 2003 for a review of the literature). It has also been employed as an *ex post* evaluation of education policy reforms (Al-Samarrai and Zaman 2002; Castro-Leal 1996). For a predictive analysis, a BIA may assist in making inferences about the likely distributional impacts of an increase in expenditure or the abolishment of user fees (assuming that the impacts are proportional to the current distribution of benefits). For any understanding of the distributional impacts of policy reforms, BIAs exhibit a more fundamental limitation: They do not account for quality differences in services. Many services in developing countries are disproportionately consumed by the poor because they are self-targeted services of inferior quality. If richer households abandon mediocre public schools for superior private schools, the benefit incidence of public education would be counted as progressive by a BIA. In this case, the progressivity is hardly a result of policy, but rather a result of neglect and poor outcome.

Marginal incidence analysis. Gauging the current average benefit incidence of public spending is helpful if one wishes to make inferences about

the likely effects of program expansion. There is evidence, however, that the marginal gains of the poor may be high even through interventions not currently showing a pro-poor average incidence (for example, see Lanjouw and Ravallion 1999). For this reason, marginal incidence analysis may be used to evaluate the marginal gains of poor households following, say, the expansion of education. Al-Samarrai and Zaman (2002) have employed such an analysis to evaluate retrospectively the impact of education policy reform in Malawi. Marginal incidence analysis may be applied predictively to simulate the likely impact of an increase in education expenditures. Younger (2003) reviewed the relevant methods that have been implemented to measure the benefit incidence of marginal expansions in services, including simpler versions that compare BIA at two points in time, versions that rely on regressions of program participation to reveal the ways expansions in coverage affect the participation of different population groups, and versions that calculate the variations in coverage necessary to compensate for policy changes. The data requirements differ. In some cases, a single cross-sectional survey produces a sufficiently reliable estimate of marginal incidence based on spatial variations in coverage. In other cases, at least two cross-sections are needed to observe the changes in benefit incidence as programs expand.

Reduced-form estimation. Regression analyses relying on reduced-form equations have been exploited widely in the literature on education policy reform to make inferences about the likely impact of reforms or evaluate the impact of past reforms, depending on the availability of appropriate data and the particular specification adopted. These regressions draw on both household survey data (or school-level data) and cross-country data and are generally of the form:

$$\text{Equation 6.1} \quad Y_{i,t} = \beta X_{i,t} + e_{i,t},$$

In Equation 6.1, $Y_{i,t}$ might be observed education outcomes or measures of access for individual i , wage for individual i , school quality, economic growth for country i , or average education indicators for country i , at time t . $X_{i,t}$ is a vector of individual, school, or country characteristics, which may include measures of policy reform (for example, a dummy variable for the prereform and postreform periods), the magnitude of fees, and years of education. β is a vector of coefficients, and $e_{i,t}$ is the residual. Depending on the particular specification of Equation 6.1, this reduced-form equation could be used to estimate (a) the household demand for education (Y is access; X includes user fees or measures of the

“price” of education); (b) the returns to education (Y is income; X includes years of schooling); (c) the impact of a selected reform on measures of educational outcomes; and (d) determine (a) and (c) by using a panel of households, a cross-section of households, a panel of countries, or a cross-section of countries, as appropriate.

The demand for education (a) has been estimated to evaluate policy reforms retrospectively or to predict the likely impact of education reforms, particularly those related to user fees or a potential financing barrier to household demand for education (for example, see Birdsall and Orivel 1996). Thus, a large body of literature has emerged from these demand studies on the price elasticity of demand for education. Proponents of user fees have used the results to argue that the aggregate price elasticity of demand for education is low (Appleton 2001a; Jimenez 1989; Reddy and Vandemoortele 1996), and cost recovery is unlikely to affect access significantly. However, critics have argued that (a) the price elasticity of demand varies by income and that the poorest households also show high elasticities,¹⁵ and (b) the experience with the removal of user fees (and the subsequent increases in enrollments) indicates that the aggregate elasticity is probably inadequately measured (Reddy and Vandemoortele 1996). Appleton (2001b) reviews some of the typical econometric problems associated with these demand studies, including endogeneity and reverse causality (for example, fees may be higher where the demand or enrollment is high).¹⁶

Using data drawn from household surveys, reduced-form regressions of the natural logarithm of individual wages on years of schooling have been estimated to make inferences about the returns to education (b). This particular specification is sometimes referred to as the “human capital earnings function” (or the “Mincerian wage equation”). It has been used to make education policy decisions based on how the rate of return to schooling varies by education level, for example, or by gender. In particular, there is now a large amount of literature on the rates of return to education investments (for example, see Psacharopoulos 1994) suggesting that the rate of return to investment in primary education is high and is higher than that of either secondary or tertiary education expenditure. Knight and Sabot (1981) have used this framework to show that the expansion of primary education may affect wage inequality. More recently, using a similar framework, Bouillon, Legovini, and Lustig (2003) showed that, in Mexico during 1984–94, changes in the levels of and returns to education were responsible for about two-fifths of the increase in inequality (as measured by the Gini coefficient). However, despite the paradoxical effects of the gains in education and in the distribution of education, they conclude that

little emphasis has gone to improving Education for All, particularly for those people who are least able to improve education on their own. They emphasize that education helps to reduce poverty, regardless of its consequences in distribution.

Equation 6.1 has been used to estimate the impact of specific education policy reforms (c), with Y as a measure of education outcome or student performance, for example, according to test scores or passing rates. Such retrospective evaluations of policy reform are typically based on a panel of households or a cross-section of households. Where the setting allows for a natural policy experiment or a random selection of schools for the reform, Equation 6.1 may be estimated through single-equation methods. In fact, there is now a growing amount of literature that uses randomized evaluations of education programs and exploits the randomized phasing in of programs to address the omitted variables bias common in standard retrospective evaluations (Kremer 2003). These include the following examples:

- Angrist and others (2002) evaluated the Colombian voucher program through which lotteries were used to distribute vouchers. Three years later, lottery winners were more likely to be attending private schools, completing the eighth grade, and scoring higher on standardized tests.
- Galiani and Schargrodsy (2002) evaluated the effect of secondary school decentralization on educational quality in Argentina. They exploited the exogenous variation in policy reform, whereby decentralization took place across all provinces, but at different periods and intensities. They showed that decentralization is generally associated with enhanced education quality, but the effect varies according to fiscal management capacity. In severely mismanaged districts, decentralization leads to negative outcomes. This provides evidence that, in some instances, decentralization may adversely affect the distribution of school quality. In cases in which education reform is assumed to be endogenous, Equation 6.1 is typically estimated using simultaneous equation models, such as two-stage least squares with appropriate instruments for the reform variable.¹⁷

Cross-country regressions analogous to (a), (b), and (c) have also been used to evaluate the impact of levels of education on growth and the impact of education resources on school quality (Barro and Lee 2001). Closely related to cross-country regression in the level of aggregation, time series techniques relying on aggregate macroeconomic data have likewise been employed to determine the causal impact of levels of edu-

cation on growth (Self and Grabowski 2004). While the results may potentially be used for predictive analyses or out-of-sample predictions, cross-country regression results are probably too broad and generally less handy for making country-specific decisions on education policy or for estimating the distributional impact of education policy.¹⁸

Computable general equilibrium (CGE). CGE models form a class of models wherein production activities, factors, and institutions and their links are fully specified. These require both national accounts and survey data. They are compiled into a single information matrix (the social accounting matrix [SAM]), in which the links among activities, factors, and institutions are organized. Because they are technically demanding and data intensive, they have been rarely applied in examining the impact of education policy reforms. Jung and Thorbecke (2003) have used multisector CGE techniques to look at the impact of targeted education expenditures on growth and poverty reduction in Tanzania and Zambia. Their simulations suggested that higher education expenditure raises economic growth and alleviates poverty. However, they also found that increases in expenditure need to be accompanied by better targeting of spending (through, for example, the construction of schools in rural areas), enhanced demand for labor, and sufficient levels of physical investment.

Qualitative techniques

Qualitative surveys draw on a variety of methods that can be broadly classified into three categories: participatory approaches, ethnographic approaches, and textual research methods. A widely cited example is a study of the current state of education in India that drew heavily on qualitative data and the personal observations of field investigators (Probe Team 1999). The methods may provide critical information about the context of reforms, assist in understanding the quantitative results, aid in determining the quantitative parameters, and shed light on dimensions of the distributional impact of reforms that are not easily quantifiable. For example, structured and semistructured interviews of head teachers, teachers, school administrators, members of parents-teachers associations, and parents may supply critical information about how education policies are implemented and perceived and the likely impact of reforms. Such surveys may help test the hypothesis that the timing of user fees, not user fees in themselves, is the primary determinant of access. It may be that the demands for fees are made during inconvenient periods, for example, between harvests.

Stakeholder analysis. This particular tool relies on qualitative data to describe the interests and level of influence of selected groups with respect to policy reforms. For example, Natriello (2001) identifies major stakeholders and their concerns in the use of privatization and vouchers to educate children from poor households. The stakeholders identified include education professionals, service providers outside the public sector, political leaders, local leaders, poor children and their families, and researchers and policy analysts.

Institutional analysis. An alternative approach, which is closely related to the other methods in its use of qualitative data, focuses on the decision-making and implementation processes. Case studies of transition economies have used this method to assess the implementation of the decentralization of education and identify country-specific challenges along three dimensions: the lack of clarity in the definition of responsibilities, the mismatch between responsibility and authority, and the mismatch between authority and accountability (Fizbein 2002).

Monitoring and evaluation

To monitor coverage, access, and quality, policy makers typically collect information on enrollment rates (net and gross), repetition rates, dropout rates, test scores, pupil-teacher ratios, the number of pupils per qualified teacher, textbooks per pupil, and desks per pupil. To monitor the distributional dimensions of these indicators, disaggregated information (for example, by gender, locality, income) are required.

As discussed in the section titled “Quantitative techniques,” the benefit incidence of public spending on education provides information about the share of education spending captured by households classified by income groups. As typically implemented, benefit incidence does not provide information about the absolute levels of benefits received by households. For this reason, the monitoring of aggregate expenditure levels by the government is critical.

The monitoring of household expenditures, meanwhile, may provide complementary information on the out-of-pocket payments made by households for education services. This may also provide information on the magnitude of both official school fees and informal user fees.

NOTES

1. Burnett and Patrinos (1997) review some of the developments that have created the conditions for reform.

2. It may be argued, however, that curriculum reform may enhance equity (Reimers 2000, 75). The choice of language of instruction may tend, for example, to exclude some ethnic groups. It has also been said that the school calendar has an urban bias and places rural children, who are forced to be absent during harvests, at risk of failure. There is, nonetheless, relatively weaker documentation on some of the distributional effects.
3. For readers with a particular interest in country experiences with incentives for improving teacher performance, studies conducted by Lopez-Acevedo (2004a, 2004b) are useful.
4. There is little existing documentation on the effect of policy reforms on ethnic groups, although there could be important disparities in educational achievement across these groups. There is evidence, for example, that important differences exist in the quality of the schools attended by indigenous and nonindigenous students (McEwan 2004).
5. See World Bank (2003) for a review of the benefit incidence of public education expenditure by level.
6. Higher user fees imply that households require higher out-of-pocket expenditures; because poorer households pay a larger share of their incomes for user fees, the fees are regressive.
7. See Bouillon, Legovini, and Lustig 2003; Knight and Sabot 1983; Psacharopoulos 1994; Psacharopoulos and Patrinos 2002.
8. Chay, McEwan, and Urquiola (2003) find the impact of the program positive for student achievement, but it is much smaller than generally believed. They suggest that the program may not have correctly identified the most poorly performing schools.
9. The price elasticity of demand for education may vary by income (Gertler and Glewwe 1989).
10. Duflo observes that, in Indonesia's case, physical capital did not adjust to the increases in human capital in the regions where schools were built. She is unable to explain why the stock of physical capital failed to adjust despite the public announcement of the program and the gradual implementation over 10 years. The experience nonetheless suggests that education reforms need to be designed within a broader framework of a country's development plans and growth strategy. See Jones (1998) for a discussion of the problems related to school expansion and the limited demand for high school graduates in poor regions of Indonesia.
11. Deolalikar (1998) provided interesting evidence that an expansion of school facilities in Kenya increased enrollments among poor but not rich children. Conversely, improvements in quality (in the teacher-pupil ratio) raised enrollments among rich children, while decreasing enrollments among poor children.
12. There is little evidence, however, that vouchers have actually led to greater competition (Carnoy 1997).
13. See Moulton and others (2001) for a discussion of the implementation instruments in education reform.

14. However, it is impossible in practice to estimate beforehand how much power communities will effectively be able to handle. In fact, the ability of communities to undertake collective action seems generally to be underestimated. Thanks to Luis Crouch for raising this point.
15. A recent retrospective evaluation in Uganda showed that the gains in enrollment following the elimination of user fees have been highest among the poor (Deininger 2003).
16. Assuming that a significant statistical relationship exists between fees and access, it may be possible to use the parameter estimates to produce a rough approximation of anticipated changes in quality (for example, projected changes in the pupil-teacher ratio) and, in turn, an approximation of the impact of changes in quality on student performance, assuming that a statistical relationship exists between quality indicators and student performance (for example, see Appleton 2001b).
17. For example, King and Özler (1998) estimated the impact of school autonomy on student performance in Nicaragua using a structural model for student performance, while taking into account the selection process in reform. They found that autonomy has been effective in raising performance. Jimenez and Sawada (1999) also used an exogenously determined formula to target schools as an instrumental variable to evaluate the impact of El Salvador's community-managed-schools program.
18. Of course, even reduced-form cross-country regressions may allow for some disaggregation to account for variation in outcomes across broad income groups. Bidani and Ravallion (1997) use a random-coefficients cross-country model to allow for the variance between the poor and non-poor in the impact of spending on social indicators.

BIBLIOGRAPHY

- Adetoro, J. E. 1966. "Universal Primary Education and the Teacher Supply Problem in Nigeria." *Comparative Education* 2 (3): 209–16.
- Al-Samarrai, Samer, and Hassan Zaman. 2002. "The Changing Distribution of Public Education Expenditure in Malawi." Africa Region Working Paper 29, World Bank, Washington, DC.
- Angrist, Joshua, Eric Bettinger, Erik Bloom, Elizabeth King, and Michael Kremer. 2002. "Vouchers for Private Schooling in Colombia: Evidence from a Randomized Natural Experiment." *American Economic Review* 92 (5): 1,535–58.
- Appleton, Simon. 2001a. "User Fees, Expenditure Restructuring, and Voucher Systems in Education." In Germano Mwabu, Cecilia Ugaz, and Gordon White, eds., *Social Provision in Low-Income Countries: New Patterns and Emerging Trends*, 157–85. Oxford: Oxford University Press.
- . 2001b. "What Can We Expect from Universal Primary Education?" In Ritva Reinikka and Paul Collier, eds., "Uganda's Recovery: The Role of Farms,

- Firms, and Government.” World Bank Regional and Sectoral Studies, Washington, DC.
- Barro, Robert J., and Jong-Wha Lee. 2001. “Schooling Quality in a Cross-Section of Countries.” *Economica* 68 (272): 465–88.
- Belli, Humberto. 2004. “Empowering Parents: The Case of School Autonomy in Nicaragua.” Paper presented at the International Conference on Governance and Accountability in Social Sector Decentralization, World Bank, Washington, DC, February 18.
- Bhatnagar, Bhuvan, and Aubrey C. Williams. 1992. “Introduction.” In Bhuvan Bhatnagar and Aubrey C. Williams, eds., “Participatory Development and the World Bank.” Discussion Paper 183, World Bank, Washington, DC.
- Bidani, Benu, and Martin Ravallion. 1997. “Decomposing Social Indicators Using Distributional Data.” *Journal of Econometrics* 77 (1): 125–39.
- Birdsall, Nancy, and François Orivel. 1996. “Demand for Primary Schooling in Rural Mali: Should User Fees Be Increased?” *Education Economics* 4 (3): 279–96.
- Bouillon, César Patricio, Arianna Legovini, and Nora Lustig. 2003. “Rising Inequality in Mexico: Household Characteristics and Regional Effects.” *Journal of Development Studies* 39 (4): 112–33.
- Bray, Mark. 1996. “Equity Issues in the Local Resourcing of Education: Community Financing of Primary Schools in Bhutan.” *International Review of Education* 42 (5): 495–514.
- . 1997. *Counting the Full Cost*. Washington, DC: World Bank.
- Bruns, Barbara, Alain Mingat, and Ramahatra Rakotomalala, eds. 2003. *Achieving Universal Primary Education by 2015: A Chance for Every Child*. Washington, DC: World Bank.
- Burnett, Nicholas, and Harry Patrinos. 1997. “Education and the Changing World Economy: The Imperative of Reform.” *Prospects* 27 (2): 223–30.
- Carnoy, Martin. 1997. “Is Privatization through Education Vouchers Really the Answer? A Comment on West.” *World Bank Research Observer* 12 (1): 105–16.
- . 2000. “School Choice? Or Is It Privatization?” *Educational Researcher* 29 (7): 15–20.
- Carnoy, Martin, and Patrick McEwan. 2001. “Privatization through Vouchers in Developing Countries: The Cases of Chile and Colombia.” In Henry M. Levin, ed., *Privatizing Education*, 151–77. Cambridge, MA: Westview.
- . 2003. “Does Privatization Improve Education? The Case of Chile’s National Voucher Plan.” In David N. Plank and Gary Sykes, eds., *Choosing Choice: School Choice in International Perspective*, 24–44. New York: Columbia University Press.
- Castro-Leal, Florencia. 1996. “Who Benefits from Public Education Spending in Malawi? Results from the Recent Education Reform.” Discussion Paper 350, World Bank, Washington, DC.
- Chay, Kenneth, Patrick J. McEwan, and Miguel Urquiola. 2003. “On the Use of Test Scores to Rank and Reward Schools: Direct Evidence from Chile’s P-900 Program.” University of California, Berkeley, CA. Mimeo.

- Chiswick, Barry R. 1997. "Interpreting the Coefficient of Schooling in the Human Capital Earnings Function." Policy Research Working Paper 1790, Human Development Department, World Bank, Washington, DC.
- Chuta, E. J. 1986. "Free Education in Nigeria: Socioeconomic Implications and Emerging Issues." *Comparative Education Review* 30 (4): 523–31.
- Colclough, Christopher, and Keith Lewin. 1993. *Educating All the Children: Strategies for Primary Schooling in the South*. New York: Clarendon Press.
- Colletta, Nat J., and Margaret Sutton. 1989. "Achieving and Sustaining Universal Primary Education: International Experience Relevant to India." Working Paper 166, Population and Human Resources Department, World Bank, Washington, DC.
- Corrales, Javier. 1999. "The Politics of Education Reform: Bolstering the Supply and Demand, Overcoming Institutional Blocks." Education Reform and Management Series Vol. 2, No. 1, World Bank, Human Development Network, Washington, DC.
- Csapo, Marg. 1983. "Universal Primary Education in Nigeria: Its Problems and Implications." *African Studies Review* 26 (1): 91–106.
- Cuéllar-Marchelli, Helga. 2003. "Decentralization and Privatization of Education in El Salvador: Assessing the Experience." *International Journal of Educational Development* 23 (2): 145–66.
- Dehn, Jan, Ritva Reinikka, and Jakob Svensson. 2003. "Survey Tools for Assessing Performance in Service Delivery." In François Bourguignon and Luiz A. Pereira da Silva, eds., *The Impact of Economic Policies on Poverty and Income Distribution: Evaluation Techniques and Tools*, 191–212. New York: World Bank and Oxford University Press.
- Deininger, Klaus. 2003. "Does the Cost of Schooling Affect Enrollment by the Poor? Universal Primary Education in Uganda." *Economics of Education Review* 22 (3): 291–305.
- Demery, Lionel. 2003. "Analyzing the Incidence of Public Spending." In François Bourguignon and Luiz A. Pereira da Silva, eds., *The Impact of Economic Policies on Poverty and Income Distribution: Evaluation Techniques and Tools*, 41–68. New York: World Bank and Oxford University Press.
- Deolalikar, Anil B. 1998. "Increasing School Quantity Versus Quality in a Less-Developed Country: Impact on Children from Low- and High-Income Households." *Journal of Policy Reform* 2 (3): 223–46.
- Duflo, Esther. 2002. "The Medium-Run Effects of Educational Expansion: Evidence from a Large School Construction Program in Indonesia." NBER Working Paper 8710, National Bureau of Economic Research, Cambridge, MA.
- Duraisamy, Palanigounder, Estelle James, Julia Ingrid Lane, and Jee-Peng Tan. 1997. "Is There a Quantity-Quality Tradeoff as Enrollments Increase?: Evidence from Tamil Nadu, India." Policy Research Working Paper 1768, Policy Research Department and Human Development Department, World Bank, Washington, DC.
- Edwards, Glyn. 1995. "Rapid Educational Expansion and Primary School Efficiency in Zimbabwe, 1983–89." *Development Southern Africa* 12 (1): 87–95.

- Fafchamps, Marcel, and Bart Minten. 2003. "Public Service Provision, User Fees, and Political Turmoil." CSAE Working Paper 198, University of Oxford, Department of Economics, Centre for the Study of African Economies, Oxford, UK.
- Fiske, Edward B. 1996. *Decentralization of Education: Politics and Consensus*. Washington, DC: World Bank.
- Fizbein, Ariel, ed. 2002. *Decentralizing Education in Transition Societies: Case Studies from Central and Eastern Europe*. Washington, DC: World Bank.
- Fretwell, David H., and Antony Wheeler. 2001. "Hungary: Secondary Education and Training." Departmental Working Paper, Secondary Education, World Bank, Washington, DC.
- Galiani, Sebastian, and Ernesto Schargrodsy. 2002. "Evaluating the Impact of School Decentralization on Educational Quality." *Economía* 2 (2): 275–314.
- Gauri, Varun, and Ayesha Yaqub Vawda. 2003. "Vouchers for Basic Education in Developing Countries: A Principal-Agent Perspective." Policy Research Working Paper 3005, Development Research Group, Human Development Network, World Bank, Washington, DC.
- Gertler, Paul, and Paul Glewwe. 1989. "The Willingness to Pay for Education in Developing Countries: Evidence from Rural Peru." Living Standards Measurement Study Working Paper 54, World Bank, Washington, DC.
- Grindle, Merilee. 2001. "Despite the Odds: The Political Economy of Social Sector Reform in Latin America." Kennedy School of Government Faculty Research Working Paper RWP01-021, Harvard University, John F. Kennedy School of Government, Cambridge, MA.
- . 2004. *Despite the Odds: The Contentious Politics of Education Reform*. Princeton, NJ: Princeton University Press.
- Hillman, Arye, and Eva Jenkner. 2002. "User Payments for Basic Education in Low-Income Countries." IMF Working Paper 02/182, International Monetary Fund, Washington, DC.
- Hsieh, Chang-Tai, and Miguel Urquiola. 2003. "When Schools Compete, How Do They Compete? An Assessment of Chile's Nationwide School Voucher Program." BREAD Working Paper 045, Bureau for Research and Economic Analysis of Development, Cambridge, MA.
- Jimenez, Emmanuel. 1989. "Social Sector Pricing Policy Revisited: A Survey of Some Recent Controversies." Proceedings of Annual Bank Conference on Development Economics, World Bank, Washington, DC, April 27–28.
- Jimenez, Emmanuel, and Yasuyuki Sawada. 1999. "Do Community-Managed Schools Work? An Evaluation of El Salvador's EDUCO Program." *World Bank Economic Review* 13 (3): 415–41.
- Jones, Gavin W. 1998. "The Expansion of High School Education in Poor Regions: The Case of East Nusa Tenggara, Indonesia." *Bulletin of Indonesian Economic Studies* 34 (3): 59–84.
- Jung, Hong-Sang, and Erik Thorbecke. 2003. "The Impact of Public Education Expenditure on Human Capital, Growth, and Poverty in Tanzania and Zambia: A General Equilibrium Approach." *Journal of Policy Modeling* 25 (8): 701–25.

- Kadzamira, Esme, and Pauline Rose. 2001. "Educational Policy Choice and Policy Practice in Malawi: Dilemmas and Disjunctures." IDS Working Paper 124, University of Sussex, Institute of Development Studies, Brighton, UK.
- . 2003. "Can Free Primary Education Meet the Needs of the Poor? Evidence from Malawi." *International Journal of Educational Development* 23 (5): 501–16.
- King, Elizabeth M., and Peter Orazem. 1999. "Evaluating Education Reforms: Four Cases in Developing Countries." *World Bank Economic Review* 13 (3): 409–13.
- King, Elizabeth M., and Berk Özler. 1998. "What's Decentralization Got to Do with Learning? The Case of Nicaragua's School Autonomy Reform." World Bank, Development Research Group, Washington, DC. Mimeo.
- Knight, J. B., and R. H. Sabot. 1981. "The Returns to Education: Increasing with Experience or Decreasing with Expansion?" *Oxford Bulletin of Economics and Statistics* 43 (1): 51–71.
- . 1983. "Educational Expansion and the Kuznets Effect." *American Economic Review* 73 (5): 1,132–36.
- Kremer, Michael. 1995. "Research on Schooling, What We Know and What We Don't: A Comment on Hanushek." *World Bank Research Observer* 10(2): 247–54.
- . 2003. "Randomized Evaluations of Educational Programs in Developing Countries: Some Lessons." *American Economic Review* 93 (2): 102–06.
- Lanjouw, Peter, and Martin Ravallion. 1999. "Benefit Incidence, Public Spending Reforms, and the Timing of Program Capture." *World Bank Economic Review* 13 (2): 257–73.
- Lavinas, Lena. 2003. "Encouraging School Attendance in Mozambique by Granting a Minimum Income to Parents." *International Social Security Review* 56 (3–4): 139–55.
- Lavy, Victor. 1996. "School Supply Constraints and Children's Educational Outcomes in Rural Ghana." *Journal of Development Economics* 51(2): 291–314.
- Lopez-Acevedo, Gladys. 2004a. "Teachers' Salaries and Professional Profile in Mexico." Policy Research Working Paper 3394, Poverty Reduction and Economic Management Division, Latin America and the Caribbean Region, World Bank, Washington, DC.
- . 2004b. "Teachers' Professional Development and Incentives for Teacher Performance in Schools in Mexico." Policy Research Working Paper 3236, Poverty Reduction and Economic Management Division, Latin America and the Caribbean Region, World Bank, Washington, DC.
- MacJessie-Mbewe, Samson. 2002. "An Analysis of Free Primary Education Reform Policy in Malawi." *International Journal of Educational Reform* 11 (2): 94–105.
- McEwan, Patrick J. 2004. "The Indigenous Test Score Gap in Bolivia and Chile." Wellesley College, Wellesley, MA. Mimeo.
- Mehrotra, Santosh. 1998. "Education for All: Policy Lessons from High-Achieving Countries." UNICEF Staff Working Paper 98-005, United Nations Children's Fund, New York.

- Mingat, Alain, and Jee-Peng Tan. 1986. "Expanding Education through User Charges: What Can Be Achieved in Malawi and Other LDCs?" *Economics of Education Review* 5 (3): 237–86.
- . 1988. *Analytical Tools for Sector Work in Education*. Washington, DC: World Bank.
- Mingat, Alain, and Jee-Peng Tan, with Stella Tamayo. 2003. "Analyzing Equity in Education." In Alain Mingat and Jee-Peng Tan, eds., *Tools for Education: Policy Analysis*, 139–62. World Bank, Washington, DC.
- Moulton, Jeanne, Karen Mundy, Michel Welmond, and James Williams. 2001. *Paradigm Lost? The Implementation of Basic Education Reforms in Sub-Saharan Africa*. United States Agency for International Development, Africa Bureau Information Center, Washington, DC.
- Natriello, Gary. 2001. "Vouchers Privatization and the Poor." In Henry M. Levin, ed., *Can the Marketplace Deliver Choice, Efficiency, Equity, and Social Cohesion?* 263–78. Boulder, CO: Westview Press.
- Nhundu, Tichatonga J. 1992. "A Decade of Educational Expansion in Zimbabwe: Causes, Consequences, and Policy Contradictions." *Journal of Negro Education* 61 (1): 78–98.
- Nkinyangi, John A. 1982. "Access to Primary Education in Kenya: The Contradictions of Public Policy." *Comparative Education Review* 26 (2): 199–217.
- Patrinos, Harry A., and David L. Ariasingam. 1997. *Decentralization of Education: Demand-Side Financing*. Washington, DC: World Bank.
- Prince Asagwara, Ken C. 1997. "Quality of Learning in Nigeria's Universal Primary Education Scheme, 1976–1986." *The Urban Review* 29 (3): 189–203.
- Probe Team, The. 1999. *Public Report on Basic Education in India*. Oxford, UK: Oxford University Press.
- Psacharopoulos, George. 1994. "Returns to Investment in Education: A Global Update." *World Development* 22 (9): 1,325–43.
- Psacharopoulos, George, and Harry Anthony Patrinos. 2002. "Returns to Investment in Education: A Further Update." Policy Research Working Paper 2881, Latin America and the Caribbean Region, Education Sector Unit, World Bank, Washington, DC.
- Reddy, Sanjay, and Jan Vandemoortele. 1996. "User Financing of Basic Social Services." UNICEF Staff Working Paper, United Nations Children's Fund, New York.
- Reimers, Fernando. 1997. "The Role of the Community in Expanding Educational Opportunities: The EDUCO Schools in El Salvador." In James Lynch, Celia Modgil, and Sohan Modgil, eds., *Equity and Excellence in Education for Development*, 146–62. London: Cassell.
- . 2000. *Unequal Schools, Unequal Chances: The Challenge to Equal Opportunity in the Americas*. Cambridge, MA: Harvard University Press.
- Reinikka, Ritva, and Jakob Svensson. 2001. "Explaining Leakage of Public Funds." Policy Research Working Paper 2709, Development Research Group, Public Services for Human Development, World Bank, Washington, DC.

- Roberts-Schweitzer, Eluned, Andrei Markov, and Alexander Tretyakov. 2003. "Achieving Education for All Goals: School Grant Schemes." World Bank, Washington, DC. Mimeo.
- Self, Sharmistha, and Richard Grabowski. 2004. "Does Education at All Levels Cause Growth? India, a Case Study." *Economics of Education Review* 23 (1): 47–55.
- Sosale, Shobhana. 2000. "Trends in Private Sector Development in World Bank Education Projects." Policy Research Working Paper 2452, Human Development Network, World Bank, Washington, DC.
- Thobani, Mateen. 1984. "Charging User Fees for Social Services: Education in Malawi." *Comparative Education Review* 28 (3): 402–23.
- Vawda, Ayesha. n.d. "Demand-Side Financing Schemes: Mechanisms for Improving Equity." World Bank, Washington, DC. Mimeo.
- West, Edwin G. 1997. "Education Vouchers in Principle and Practice: A Survey." *World Bank Research Observer* 12 (1): 83–103.
- World Bank. 2003. *World Development Report 2004: Making Services Work for Poor People*. Washington, DC: Development Economics Vice Presidency.
- Younger, Stephen D. 2003. "Benefits on the Margin: Observations on Marginal Benefit Incidence." *World Bank Economic Review* 17 (1): 89–106.

Analyzing the Distributional Impact of Reforms

A practitioner's guide to trade, monetary and exchange rate policy, utility provision, agricultural markets, land policy, and education

The analysis of the distributional impact of policy reforms on the well-being or welfare of different stakeholder groups, particularly on the poor and vulnerable, has an important role in elaborating and implementing poverty reduction strategies in developing countries. In recent years this type of work, labeled as Poverty and Social Impact Analysis (PSIA), is increasingly implemented in order to promote evidence-based policy choices and foster debate on policy reform options.

Although information is available on the general approach, techniques, and tools for distributional analysis, each reform area displays a series of specific characteristics. These have implications for the analysis of distributional impacts, including in terms of the types of impacts and transmission channels that warrant particular attention, the tools and techniques most appropriate, the data sources typically utilized, and the range of political economy factors most likely to affect the reform process.

Analyzing the Distributional Impact of Reforms covers six key areas of policy reform that are likely to have significant effects on distribution and poverty: trade, monetary and exchange rates, utility provision, agricultural markets, land, and education.

Each chapter is organized around the different transmission channels through which policy reforms can be expected to affect the population. The chapters provide an overview of the typical direction and magnitude of the expected impacts; the implementation mechanisms through which reforms are typically carried out; the stakeholders who are likely to be affected by the reform, positively or negatively, or who are likely to affect the reform; and the methodologies typically used to analyze the distributional impact. Each chapter illustrates these points with examples, applications, references, sources, and a bibliography.



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