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Democracy, Public Expenditures, and the Poor: Understanding Political Incentives for Providing Public Services

Philip Keefer • Stuti Khemani

The incentives of politicians to provide broad public goods and reduce poverty vary across countries. Even in democracies, politicians often have incentives to divert resources to political rents and private transfers that benefit a few citizens at the expense of many. These distortions can be traced to imperfections in political markets that are greater in some countries than in others. This article reviews the theory and evidence on the impact on political incentives of incomplete information for voters, the lack of credibility of political promises, and social polarization. The analysis has implications for policy and for reforms to improve public goods provision and reduce poverty.

Governments can accelerate economic development through their decisions on public expenditures. Allocated appropriately, public expenditures can overcome market failures that exacerbate poverty, such as the inability of poor people to borrow for education or to learn about preventive health care or the existence of externalities that increase the public health hazards that disproportionately hurt poor people. Allocation is often inappropriate, however. Public spending goes to wage bills for bulky state administrations, farm subsidies absorbed by the wealthiest farmers, or public works projects with limited public utility, all at the expense of the quality of public services. The Millennium Development Goals and many efforts around the world to “empower” poor people, whether through devolved decisionmaking or through participatory budgeting, are all responses to these failures of government expenditure policies.

Misallocation has persisted despite a sea change in the way in which governments are selected and remain in office. From 1990 to 2000 the number of countries governed by officials elected in competitive elections rose from 60 to 100 (Beck and others 2001). Low-income voters make up a large share of the electorate in many
countries, and democratization might be expected to benefit them. However, policymakers in poor democracies regularly divert spending away from areas that most benefit the poor or fail to implement policies that improve the services that are known to disproportionately benefit poor people.

In most countries, the distribution of income is skewed toward the higher end of the income spectrum. The median voter hypothesis (that the policy most preferred by the median voter can defeat any other policy proposal under majority rule) implies that when the income of the median voter is less than the average income of all voters, government should be larger and social services should be correspondingly more extensive (Meltzer and Richard 1981). This model evidently does not hold in many low-income countries, because in many countries where the median voter is poor, social services are especially deficient. Moreover, there is little evidence that redistribution is greater in countries with greater income inequality (Knack and Keefer 1997). Political market imperfections, which disrupt the translation of voter preferences into government policy, help explain this puzzle.

This article focuses on three political market imperfections that are particularly important for understanding government incentives to serve the poor: lack of information among voters about the performance of politicians, social fragmentation among voters manifested as identity-based voting, and lack of credibility of political promises to citizens. Efforts to improve the quality of public policy for the poor may fall far short of their goals unless efforts are expanded to address those political market imperfections.

One difficult conclusion of the analysis is that the broad public services most important to the poor—health and education—are the most vulnerable to these three distortions. Political pressures to improve these services are therefore weakest. With respect to information, citizens cannot easily evaluate the quality and efficiency of these services. Even when they can, they cannot easily determine whether service providers, higher-level ministry officials, or politicians are responsible for breakdowns or improvements. Similarly, politicians in many countries can make credible promises only to narrow groups of voters. It makes little sense for politicians to promise reforms that benefit large numbers of voters when only a few voters believe these promises. These politicians prefer to promise narrow targetable goods, such as infrastructure, rather than improvements in broad public services. Social polarization exacerbates these problems because it raises the possibility that one group may oppose a broad reform from which it would benefit if the reform would also benefit other groups.

Low demand for social services by poor people is an unlikely explanation for pervasive failures of social service provision, as the next section argues. The following sections assess the impact of each of these imperfections in political markets, particularly on social service provision, and then demonstrate how these political market imperfections help explain one of the more striking contrasts in government policymaking—the
famous cases of the states of Uttar Pradesh and Kerala in India. The lack of voter information, greater social polarization, and the noncredibility of political party platforms in Uttar Pradesh explain its poor performance on social services compared with Kerala. The final section explores some implications of this political economy analysis for policy initiatives to improve the allocation of public resources.1

**Politics and Social Services**

There is ample evidence that governments, particularly in poorer countries, prefer to spend more on targeted programs, such as government jobs or infrastructure investment, than on improvements in broad social services. Feyzioglu and others (1998) find that governments receiving foreign aid targeted to education are likely to offset the funds by reducing their own financing of education. When aid is used to support public infrastructure investment (transportation and communications), however, governments tend to maintain their own fiscal efforts in the provision of these goods. Foster and Rosenzweig (2001) and Pande (2003) show that when disadvantaged groups in India—the landless poor and scheduled castes—were newly able to elect their own representatives, more government resources flowed toward these disadvantaged groups. But the increased flows took the form mainly of increased access to government jobs and targeted welfare transfers, not of improved education or access to other broad-based social services—even though the resource cost of such improvements, relative to the likely welfare gains, might have been much smaller.2

The preference of politicians for “pork barrel” or targetable spending is not the exclusive province of developing economies. It has been widely documented in the United States (see, for example, Mayhew 1974). The problem for development is that many governments have exaggerated preferences for targeted expenditures. For example, a large and disproportionate share of expenditures in health and education typically flows to the salaries of teachers and health workers, yet absenteeism and shirking are rampant, so that no effective services are provided in many cases. In India, where recurrent expenditures account for 98 percent of government expenditure on primary education, salaries account for 96 percent of recurrent expenditures (Tilak 1993, p. 60). Yet field investigations in rural areas, particularly in the north, reveal that teacher absenteeism is endemic, with almost two-thirds of the teachers employed in the sample schools absent at the time of the investigators’ unannounced visits (Drèze and Gazdar 1996; Weiner 1991; Prasad and Eswara 1987).

Governments use resources to provide (targetable) jobs rather than (less targetable) high-quality services. Service delivery falls far below the levels that even poorer countries can afford, suggesting that the tradeoffs between targeted and nontargeted public expenditures are much steeper in developing economies than in developed countries.
The problem is not simply “capture” of the levers of government policymaking by the “rich.” Even explicitly propoor programs frequently take the form of targeted (and often unsustainable) redistribution programs, such as free food and temporary employment in public works, even when cheaper broad-based programs to improve basic health and education services would have a bigger impact on welfare. At the same time, apparently broad-based programs benefit mainly special interests or the rich. Bates (1981) has shown for Africa that agricultural subsidies, such as price protection and subsidized electricity, disproportionately benefit middle-size and large farmers, who grow the protected crops and are more likely to engage in capital-intensive, power-driven private irrigation. India provides a wealth of examples, ranging from power subsidies to fertilizer subsidies, exhibiting the same characteristics. Once again, such biases are well-known in all democracies but are particularly extreme in many developing areas.

It is similarly unlikely that failures of social service provision are rooted in lack of citizen demand. A common finding of village studies and household surveys in India is that members of disadvantaged groups widely view education as the most promising chance for a better life for their children (Drèze and Sen 1995).

A thought experiment also makes clear that demand-side considerations alone cannot explain why the landless poor, even if they are fully informed about the value of education, might still prefer targeted jobs. Suppose that a village with 30 families must choose between a single job for a randomly chosen individual in the village or the provision of a teacher from outside the village who would instruct one child from each family. Assume that literacy raises the present value of each child’s lifetime income by 30 percent, that literacy takes five years of education to achieve, and that the present value of each child’s income, absent education, would be the same on average as that of the average wage earner in any of the village families. Then the total value to all 30 families of having the teacher (assuming the teacher is guaranteed to stay for five years) would be 0.3 times 30 times the present value of the average wage earner’s lifetime income.

To match this wealth effect, and even assuming that the job offered in lieu of a teacher was guaranteed for the life of the beneficiary, the job would have to pay 10 times the average wage to make the expected value of the job to the village the same as the expected value of the teacher. The demand for education would therefore have to be extraordinarily low to explain the apparent preference of the poor in many developing economies for jobs and subsidies over schools and clinics. However, because the poor are often observed to make large sacrifices to educate their children despite imperfect credit markets and discount rates that are not particularly low, it makes sense to look beyond demand-side issues in asking why voters in some countries do not pressure politicians to provide high-quality education.
Why does Political Competition Fail to Induce the Optimal Provision of Public Goods?

It is easy to show the conditions under which, in a simple median voter model with no political market imperfections, governments always provide the optimal level of public goods. In the real world, where such imperfections are endemic, political incentives to provide public goods fall far below the optimum. One key imperfection that upsets the relationship between citizen preferences and politician decisionmaking is that citizens cannot easily observe the contributions that a specific politician makes to policy nor the connection between policy and their own welfare. Imperfect information makes it difficult for citizens to assign credit or blame. Politicians therefore have heightened incentives to seek rents rather than to provide public goods.

Another imperfection arises because citizens are heterogeneous with respect to income, ideology, religious belief, language, and the value they attach to different public goods, occupations, and locations. These differences affect citizen preferences for government policies and public goods. Moreover, if citizens prefer politicians from a particular ethnic group at all costs, these preferred politicians are not likely to face opposition if they perform poorly.

The lack of credibility of political competitors is the final major disruption in the relationship between citizens and government. In the worst case, when political challengers cannot make credible promises to any voters, the threat of political competition imposes practically no constraint on incumbent politicians. Incumbents, knowing that voters do not believe challengers’ promises to do a better job, feel freer to underperform and seek rents.

These imperfections—information asymmetries, social polarization, and non-credibility of political promises—undermine the role of elections in guaranteeing accountable and responsive government. Each imperfection is explored in greater detail in the sections that follow. Substantial evidence suggests that all are important sources of distortion in political markets. Reform efforts designed to improve the access of poor people to better-quality social services need to address them explicitly to be successful.

Impact of Imperfect Information on the Provision of Social Services to Poor People

Information constraints reduce the ability of citizens to hold politicians accountable and encourage politicians to cater to special interests, thus distorting incentives to provide social services to poor people. Even if poor people actively participate in the political process, imperfect information about individual politician’s contributions to social service improvements can distort incentives. Broad segments of the poor population might be particularly disadvantaged in accessing information—because of
illiteracy, limited mobility, and underdeveloped media for mass communications—creating space for organized and informed special interests to push for narrowly targeted policies at the expense of broad services.

Social services have several characteristics that present substantial information challenges to citizens attempting to assess a politician’s contributions and to structure punishments and rewards based on the quality of services available to them. Because of these information problems, politicians prefer to expend resources on constructing and staffing schools and clinics, even if they remain empty and unused, for example, than on improving the quality of services. Politicians get some credit for easy-to-observe buildings and jobs but little or no credit (or blame) for the quality of services available. Mani and Mukand (2002) show that if elections are intended to enable voters to select the most competent candidates, then resource allocation will be biased against public goods whose outcomes are more noisy and harder to use to assess politician ability, and politicians will have an incentive to provide goods that are better signals of high ability.

First, the quality of services that actually affect citizen welfare, such as health and education, depends more on the day-to-day behavior of providers than on any easily observable actions of remotely located politicians. Although policy decisions by politicians, such as in teacher management or preventive health care initiatives, can strongly influence provider incentives and behavior, citizens need specific and substantial information to determine which policies have contributed to better-quality services.

Second, measurable benefits (or costs) may not emerge until several years after the policy action has been taken, making it difficult for voters to reward (or punish) political agents within a particular electoral cycle. The effects of education reforms, for example, are typically difficult to verify until a cohort of students has been exposed to them over an extended period.

Third, providing service jobs for constituents is the sort of activity for which politicians in low-information societies can easily take credit. Like roads and buildings, jobs are easily targeted and highly visible. But it may be politically more rewarding to give jobs to unqualified people who have fewer other job opportunities and therefore owe a greater debt to politicians than do highly qualified people. Gazdar (2000) and the World Bank (1998, 2001) show that nonprofessional qualifications are key factors in the placement of teachers in Pakistan. Similar reports from the Dominican Republic suggest that the posting of teachers is highly discretionary and not clearly related to educational concerns (Keefer 2002b).

Fourth, if poor people are particularly uninformed participants in the political process, broad social services can also suffer as politicians make policy concessions to organized and informed special interests. Uninformed voters may be unduly swayed by political campaigns and advertisements rather than by independent evaluations of the performance records of competing candidates. Special interests—single
firms, groups of manufacturers, farmers, public sector employees, or subsidized retail store owners—purchase narrowly targeted policies by providing campaign finance (Baron 1994; Grossman and Helpman 1996). These special interests need not be rich, but they are, by definition, informed.4

There is little direct evidence on the information available to or used by voters who are poor. Indirect evidence demonstrates the general importance of information for political accountability, however. One piece of evidence concerns the impact of exogenous shocks on voter behavior. Voters regularly punish politicians when exogenous conditions are unfavorable and reward them when those conditions are favorable. In Indian states, governments tend to lose elections in years of poor rainfall. In the United States, voters in oil-producing states tend to reelect incumbent governors during global oil price booms and vote them out of office when oil prices drop (Wolfers 2002). Unobservable or difficult-to-observe shocks that disrupt the connection between electoral success and government performance can undermine government incentives to perform at a high level.

A second strand of evidence on the importance of information comes from the literature on electoral cycles in monetary and fiscal policies. Large and systematic electoral cycles in policies are more likely to occur when voters are ill-informed about the competence of politicians and their contributions to a voter’s welfare.5 Cross-country evidence indicates that electoral cycles in monetary and fiscal policy are significantly larger in developing economies (Block 2002; Schuknecht 2000; Shi and Svensson 2000). Shi and Svensson (2000) establish a direct link between electoral budget cycles and limited information available to voters. They show that some of the difference in the size of political budget cycles across countries is due to variations in access to free media—the greater the access, the smaller the observed budget cycles. Evidence of election cycles in the composition of public spending in India, a long-standing democracy, is also suggestive of the impact of information constraints on service delivery. Khemani (2004) finds that as elections near, state governments increase expenditures on easily observable public investment projects and decrease them on more broad-based public services. State governments in India also increase targeted tax breaks to narrow groups of producers before elections, actions that may be intended to elicit special interest contributions to campaign financing.

To mitigate information problems, the evidence suggests that improving accountability does not require that all voters be deeply informed, only that most voters share some information about political responsibility for key policy outcomes. Studies in the United States have shown that voters adopt simple voting criteria based on very limited information about politics and public policies (Ferejohn and Kuklinski 1990). Fiorina (1990) emphasizes that the information that people use when they vote comes from the ordinary performance of social and economic roles and is therefore “free.” Fiorina and Shepsle (1990) and Chappell and Keech (1990) argue that citizens can employ voting rules requiring very little information and still motivate politicians to pursue policies in their interest. Ferejohn (1990, pp. 8–9) captures this
process as follows: “Find a way to get the electorate to commit itself to act as though it is a simple principal with a one-dimensional set of rewards. In this way, incumbents will be prevented from taking advantage of the conflicting interests in the electorate.” This suggests the potential for citizens to coordinate information about particular policies and thereby coordinate voter responses for greater political accountability.

Coordination problems emerge when the information diverges greatly across the population or is unavailable. The content of “free” information can vary widely across the electorate depending on the differentiation of occupations and social settings in the economy and the reach of mass media. For example, do poor people listen to state-controlled radio while well-off groups read independent newspapers? Only when a large enough part of the electorate is exposed to the same information is there a threat of coordinated voter action in response to underperforming incumbent governments (Ferejohn 1990; Iyengar 1990; Ottati and Wyer 1990).

There is some evidence for the role of mass media in spreading and coordinating information among the electorate and thereby improving political accountability. Strömberg (2001) finds that between 1933 and 1935 in the United States federal assistance to low-income households was greater in counties where more households had radios and were thus more likely to be informed about government policies and programs. The spread of radio particularly improved information access for rural voters, accounting for as much as 20 percent more in social assistance funds to a rural county than an identical urban county. Besley and Burgess (2003) show that state governments in India respond more to declines in food production and crop flood damage through higher public food distribution and calamity relief spending where newspaper circulation, particularly in local languages, is greater.

Such evidence confirms that when voters are informed about particular policies they are able to extract greater resources and better performance from political agents. But it does not tell us whether an increase in media access improves government incentives either to target the neediest citizens with transfers or to invest in public goods benefiting large segments of the population. It could be that the mass media make it easier for politicians to take credit for targeted payoffs to particular constituencies, leading them to reduce expenditures on public goods or on broad-based social programs. In countries where the reach of information media is limited and difficult transportation and communications systems divide the electorate, coordination is less likely. The information base of poor rural citizens of developing economies might therefore be skewed in a way that diminishes their ability to hold elected officials accountable for the quality of public services.

This evidence suggests that reforms to solve information problems should include loosening restrictions on the media, including dependency on government advertising, and reducing barriers to entry for media firms. But promoting competitive media markets may not be enough to ensure adequate coverage of government performance. Competitive information media might provide inadequate information if the markets
they serve consist largely of better-off groups that do not consume public services. They also might not be able to solve the problem of voter coordination, because differentiated products providing different types of information might appear when barriers to entry are low. External interventions, such as journalist training, subsidized information transmission, or information campaigns by civic society organizations, may be useful in promoting the diffusion of the information needed for political accountability, particularly in poorer countries.

There are numerous examples of successful information campaigns on public services, but no rigorous evidence for what kinds of information dissemination strategies systematically alter the nature of political competition. A well-known example is the public service report cards developed by the Public Affairs Centre in Bangalore, India (www.pacindia.org). Still, some types of information and dissemination strategy would seem likely to make more of a difference in improving political incentives than others. Information about broad public sector performance aggregates, for example, whether based on surveys, budget studies, or report cards, is likely to be politically relevant only if it provides individual voters with some notion of how their own government representatives have hurt or helped them. Information is more likely to promote reform when information providers are able to coordinate voter responses to poor service provision by moving beyond information collection and dissemination and taking a more aggressive stance toward political accountability. Thus information campaigns need to tell citizens not just how bad services are and which are worse than others—information that citizens tend to have already—but also how bad the services are in their neighborhood relative to others, who is responsible, and whether specific policy reforms have resulted in improved services.

Finally, the information burden on voters is lightened if the key actors are political parties rather than individual politicians. It is difficult for voters in one electoral district to hold their elected officials responsible for problems in social service delivery that afflict the entire country. The influence of individual legislators on overall government policy is difficult to establish, and in any case voters know that individual legislators are likely to have little influence over public services. Where parties are institutionalized, however, and exercise substantial control over their members, voters can more easily assign responsibility for poor performance.

**Social Polarization and Provision of Services to Poor People**

Social services for poor people also suffer when societies are deeply divided, an acute problem in many developing areas. Studies of electoral politics in India show that identity characteristics along ethnic, linguistic, and religious lines dominate political behavior (Weiner and Field 1974). An experimental study in Benin confirmed that social cleavages along ethnic lines often play a prominent role in determining political behavior (Wantchekon 2003). In socially or ethnically fragmented societies voters
tend to vote for candidates that they identify with most closely, whatever their performance records. Political competition among parties also concentrates on identity issues, and candidates are nominated from constituencies largely on the basis of demographic calculations of ethnicity and religion. Like uninformed voters, polarized voters are less able to hold politicians accountable for their performance in office. There is compelling evidence to show that the provision of public goods suffers under these conditions because politicians in polarized societies rarely internalize the societywide costs and benefits of their policy decisions.

In a cross-country study, Easterly and Levine (1997) find that ethnic diversity is negatively correlated with the quantity and quality of such public goods as measured by the percentage of paved roads, the efficiency of the electricity network, and years of schooling of the population. For cities in the United States, Alesina and others (1999) show that shares of public spending on productive public goods—education, roads, sewers, and trash pick-up—are inversely related to the city’s ethnic fragmentation. Miguel (2001) concludes that higher levels of local ethnic diversity in Kenya are associated with sharply lower contributions to primary school funding and worse school facilities.

The effects of identity politics are especially dramatic when minority groups lack political power. In India, Betancourt and Gleason (2000) find that districts with a higher proportion of traditionally disadvantaged groups—scheduled castes and Muslims—receive lower public inputs in health and education. Similarly, Banerjee and Somanathan (2001) find that districts with a higher share of scheduled tribes receive significantly fewer desirable public goods. They also find some evidence linking ethnic heterogeneity and public goods delivery to underlying political incentives—districts that are ethnically fragmented are also likely to be politically fragmented, with elections in these districts having a larger number of contestants and a smaller vote share for the winning party.

There is also substantial anthropological and anecdotal evidence that disadvantaged groups in India are systematically excluded from using public goods within their own villages by social processes of discrimination. Micro-level case studies and survey evidence from India show that inequality in education access and achievement is significant within some villages, with privileged castes having enjoyed nearly universal adult literacy for several decades, whereas disadvantaged castes in the same village still have literacy rates close to zero (Drèze and Sen 1995).

Adverse policy effects do not emerge in all countries with profound caste, religious, tribal, racial, or other differences. The affinity-based voting patterns observed in India and Nigeria are not evident in the United States or Western Europe, for example. Surveys of voting behavior in the United States in the 1950s and 1960s (Campbell and others 1966) find that an overwhelming determinant of voting behavior is the ideological identification of voters with political parties. In this case, though, ideology has significant policy roots in citizen identification with the perceived position of political parties on a wide range of social and economic issues.
Devising interventions to soften the social divides in a country thus requires understanding why these divides drive politics in some countries but not in others. One possibility is simply that members of the same ethnic, religious, or social group may value each others’ welfare more than they do the welfare of members of other groups. Historic antipathies between groups may even mean that reductions in welfare for one group improve welfare for others. In the end such arguments simply say that group preferences are buried in the utility functions of citizens. To the extent that this is the case, the design of appropriate interventions is best guided by psychological and sociological insights into what sorts of information about and interactions between different groups would best reduce the animosity that divides them.

A second explanation, the focus of the next section, is that when political competitors are generally not credible, voters often believe only the promises of competitors with whom they have personal connections. In the United States parties have established credible positions on certain issues. Voters then appear to be “ideologically” committed to the party when they are simply committed to the policy positions with which those parties are credibly associated. In India and Nigeria, though, the problem is the reverse. Voters believe promises only from political candidates within their own ethnic or religious groups; those promises are therefore necessarily narrow and targeted to members of that ethnic group. Political promises for broad-based public services that cut across social groups are not credible.

Examination of the effects of increasing the political power of minority groups suggests that both animus and credibility may explain the role of social polarization in political competition. India, for example, instituted political reservations for scheduled castes and tribes in national and state legislative assemblies. Pande (2003) finds that mandated reservations in state legislatures resulted in increased public sector job quotas for scheduled castes, but significantly lower resources allocated to education. The antagonism of the majority toward the scheduled castes and tribes explains why benefits (jobs) grew along with political influence for scheduled castes and tribes. But because the new representatives of the disadvantaged groups could make credible appeals only to their own ethnic groups, they favored targeted rather than broad public goods, even when broad public goods would have brought larger benefits to their groups per rupee expended.

**Credibility and the Provision of Social Services**

As discussed, politicians may be unable to make credible promises to citizens because of imperfect information—when citizens cannot easily verify whether public goods have been provided, politicians have an incentive to underprovide relative to what they promise. Promises about social service provision are particularly difficult to verify. Knowing this, citizens disregard promises to improve social services, and politicians stop making such promises. Another reason for the inability to make credible promises
is the absence of penalties for reneging on promises. In particular, citizens do not believe the promises of a politician who would experience no reputational loss from reneging, such as a politician who is not expected to seek office in the future or who has no history of fulfilling promises.

When preelection promises are not credible, elections become less effective instruments for holding politicians accountable. Even in the best case, when voters can coordinate on ex post performance standards and turn out incumbents who fail to meet them, public goods are still underprovided, targeted transfers are not provided at all, and rent-seeking is high (Persson and Tabellini 2000). In the worst case, if voters cannot coordinate, elections are useless and rent-seeking prevails (Robinson and Verdier 2002).

**Clientist Governments.** In low-credibility environments, elections would thus have little meaning and politicians would never authorize narrow, targeted expenditures. In countries lacking established political parties with clear policy reputations, however, politicians typically feel threatened by elections and are deeply concerned about their ability to deliver targeted transfers to constituents. Keefer (2002a) suggests that these outcomes emerge when politicians can make credible promises only to voters with whom they have built a personal reputation. Such ties emerge most clearly in the “patron-client” relationships that a large body of literature identifies with the politics of developing economies. Credible politicians are, for example, locally influential people who have helped families with loans or jobs or assistance with legal or bureaucratic difficulties. In the absence of well-developed political parties or national party leaders who are more broadly credible to voters, the promises of such influential people are all that voters can rely on in making electoral choices.

Patrons have relatively weak incentives to provide public goods because they benefit nonclients as well as clients. Promises of buildings and government jobs become the currency of political competition at the expense of universal access to high-quality education and health care. Narrowly targeted goods can be provided to individuals and small groups of voters and therefore are clearly seen as evidence of political patrons fulfilling their promises to clients—recalling that only clients believe promises in the first place. Universal access by definition is not easily targeted. Improvements in quality are also difficult to target, both because they tend to involve managerial improvements that spread throughout the system and because they are difficult for voters to attribute to politicians. For example, if teacher quality or attendance has improved, voters cannot distinguish whether that happened because of their own pressure on the teacher, because the teacher decided to do a better job, because of a generalized reform in teacher quality that is affecting all teachers, or because of the targeted intervention of a particular politician.

Evidence supports the notion that clientelist governments have a stronger than average preference for targeted infrastructure provision, are more corrupt than
average, and underprovide education. For example, Keefer (2000a) argues that in young democracies political competitors, especially political parties, are less likely to have built up reputations through repeated electoral cycles. Political competitors in young democracies are therefore less likely to be able to make credible promises to all voters and are more likely to rely on clientelist promises. Targeted spending—public investment—is higher in young democracies than in old, secondary school enrollment is lower, and corruption is greater.

Qualitative evidence from Pakistan supports this logic. Competitive elections were a regular feature of the political landscape of Pakistan during the 1990s, but credible promises by political parties or political leaders to voters were supported largely by clientelist relationships and related to targeted transfers rather than broad public policies. There is little evidence of political competition on the basis of broad policy promises, nor of distinctions among the major parties by their stances on broad policy issues. In this kind of environment the provision of broad-based public goods would be expected to be low and the provision of targeted goods to be emphasized.

Indeed, compared with countries with similar incomes per capita and demographic characteristics (age and proportion rural), primary school enrollment in Pakistan in 2000 was 20 percentage points less than would be expected. Access to potable water, however, was 25 percentage points higher than expected. Investments in potable water, particularly in rural areas where they consist largely of well-drilling, are particularly easy to target and their benefits are immediately accessible and observable (World Bank 2002).

**Short Time Horizons.** Pakistan also illustrates the importance of a long time horizon for ensuring the credibility of political promises. For decades Pakistan has been marked by political instability, with the tenure of incumbent leaders frequently cut short. During the 1990s, no elected government completed its term, so voters and elected officials had short time horizons. This would have generated a marked preference for government provision of goods that generate benefits immediately and would not be dependent on the decisions of future governments. Political competitors with short time horizons are unable to credibly promise to implement projects that require a long time to bear fruit. Promises that concern jobs or public works projects, by contrast, can be fulfilled with little delay after an election, and their benefits can be quickly realized and recognized by voters. Government services, such as education, become considerably less useful to politicians because these services have long time horizons.

Schooling yields few benefits until students achieve literacy and numeracy, which may not occur before grade 4. In Spain, returns to education are low before grade 10, but returns spike after completion of grade 4 (Sanmartín 2001). Glewwe and Jacoby (1994), in examining the determinants of student achievement in Ghana, gave subjects a basic reading and mathematics test. Performance was so poor for students who had not advanced beyond grade school that they were excluded from the sample, and
The study focused on middle school achievers only. To the extent that education also serves a signaling function, the horizon problem worsens: Receipt of formal credentials generates a discrete jump in the returns to previous years of schooling, but the credential is received only after a certain number of years of schooling.7

The horizon problem can have a significant impact on voter decisionmaking. Consider again the hypothetical case of the 30 families, each with a school-age child. These families can choose between a politician who promises to provide a job for one member of the community and one who promises to staff the school with a qualified teacher who is unrelated to the 30 families. Before the election the families do not know which one will get the job, so the expected value of the job to each family is $1/30$ of the salary. If they know that the teacher will stay for five years, long enough for each child to become numerate and literate, then each family benefits from a 30 percent increase in lifetime income. If the teacher will stay less than five years, there is no benefit to education. These families prefer the politician who promises the teacher only if the promise is credible over the entire five-year period.

**Institutionalized Parties.** There is no direct evidence of the horizon effect on social service delivery, but there is documentation related to other long-term promises of governments. Arguing that the older a regime (number of years as a democracy or dictatorship) the longer the horizon of the political decisionmakers, Clague and others (1996) consider the security of property rights, which is clearly sensitive to the horizons over which government actors can make credible promises. They present evidence suggesting that the security of property rights is higher in both older democracies and older dictatorships. Keefer and Knack (2002) find that productive public investments, whose payoffs are largely in the future, fall when property rights are weak, whereas unproductive public investments (corruption and rent-seeking) rise. These results suggest that social service provision, particularly education, is likely to suffer when government officials can make credible promises only over short time horizons.

There is nothing inevitable about the formation of policy reputations, however. Although young democracies are less likely to exhibit institutionalized political parties, institutionalization is far from an automatic development as democracies age. For example, though political parties could gain by attempting to build strong policy reputations, there are strong political incentives in the opposite direction. In socially polarized countries, for example, there are political rewards to developing a reputation for favoring one group at the expense of another. As Glaeser and Shleifer (2002) show for the city of Boston and as the experience of Zimbabwe and countless other countries throughout history has clearly shown, politicians can often gain political advantage by fanning ethnic divisions. In the limit, as in Boston or Zimbabwe, electoral advantage is cemented by simply pushing the out-of-power ethnic group out of the jurisdiction.

The difficulties of developing political party reputations are more general than this, however. In an environment where no party is credible, the most successful
parties have leaders who are personally credible and have national reputations. If these leaders build up the party’s apparatus and reputation separate from their own, they cement their party’s hold on power but loosen their personal hold. Once the party is institutionalized, the barriers to entry for party leadership fall. Competitors no longer need the national profile that is required for success in the absence of institutionalized political parties. Given this tradeoff, it is not surprising that so many parties, for example, in Pakistan or Bangladesh, have failed to institutionalize.

Finally, reputation can develop for the “wrong” policies when there is uncertainty about the most effective instruments for achieving particular public objectives. Political competition may lead to a bad equilibrium in which only promises for inefficient policies are credible. New democracies established in poor, agricultural economies have historically adopted poverty-reduction strategies focusing on subsidies for consumption and agricultural production, at the expense of broad public services that may have higher returns in terms of poverty impact and economic growth. Once political reputations are established for particular policies, even if the policies are suboptimal, they will receive greater public resources than they would if all political promises were credible.

Given the obstacles to reputation building, interventions to strengthen the credibility of preelectoral promises of political competitors are difficult to devise. Many organizations seek to improve the professionalism of political parties. This can be important as long as it advances the policy basis of the party. Professionalization can also enhance the development of party machines, however. This may not be entirely bad: Relative to a personalized political system, a patronage-based party is likely to have a longer horizon and is more likely to provide public goods. However, competition between credible, policy-based parties that engage in some patronage is almost certainly better for public policy than competition between more purely machine-based parties.

The Dynamics of Political Competition and the Provision of Social Services: Uttar Pradesh and Kerala

Some of the most striking contrasts in basic health and education outcomes exist between neighboring countries or regions within the same country with comparable levels of economic development—between Sri Lanka, Thailand, and the southern states of India on the one hand, and Pakistan, Bangladesh, and the northern states of India on the other. Drèze and Sen (1995, 1996) have examined this contrast between the northern state of Uttar Pradesh and the southern state of Kerala in India. The two states have almost identical per capita income and poverty rates, but dramatically different outcomes in health and education (table 1). Human development outcomes are comparable to those in some of the richest nations of the world in Kerala but to some of the poorest in Uttar Pradesh.
Drèze and Sen attribute these stark differences in outcomes to differences in public action. Their analysis is reinterpreted here to emphasize the differences in political incentives between policymakers in the two states to provide social services to all. There are striking differences in real per capita public expenditures on health and education in the two states (figure 1). In each decade between 1960 and 1995, average real per capita spending in Kerala has been more than double that in Uttar Pradesh.

Kerala allocated 45 percent of public expenditures to education and health services in the early decades of democracy, and less than 30 percent to state administration—largely for jobs for nonservice providers (figure 2). During the same period, Uttar Pradesh (and most other Indian states) did the reverse, allocating

<table>
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<th>Contrasting Experience in Social Services, Kerala and Uttar Pradesh</th>
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<td><strong>Indicator</strong></td>
<td><strong>India</strong></td>
</tr>
<tr>
<td>Per capita income in current prices, 1991–92 (rupees)</td>
<td>5,583</td>
</tr>
<tr>
<td>Poverty headcount ratio, 1987–88 (%)</td>
<td>44.9</td>
</tr>
<tr>
<td>Real per capita public spending on education, 1985–92 (1992 rupees)</td>
<td>228</td>
</tr>
<tr>
<td>Real per capita public spending on health, 1985–92 (1992 rupees)</td>
<td>70</td>
</tr>
<tr>
<td>Literacy rate, ages 7 and older, 1991 (%):</td>
<td></td>
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<tr>
<td>Female</td>
<td>39.3</td>
</tr>
<tr>
<td>Male</td>
<td>64.1</td>
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<tr>
<td>Share of rural children ages 12–14 never enrolled in school, 1986–87 (%):</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>51</td>
</tr>
<tr>
<td>Male</td>
<td>26</td>
</tr>
<tr>
<td>Share of people ages 6 and older who have completed primary education, 1992–93 (%):</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>28.1</td>
</tr>
<tr>
<td>Male</td>
<td>48.6</td>
</tr>
<tr>
<td>Share of children ages 12–23 months who have never been vaccinated, 1992–93 (%):</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>30</td>
</tr>
<tr>
<td>Male</td>
<td>49</td>
</tr>
<tr>
<td>Share of recent births preceded by an antenatal check-up, 1992–93 (%):</td>
<td></td>
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<tr>
<td>Infant mortality rate (per 1,000 live births), 1990–92:</td>
<td></td>
</tr>
<tr>
<td>Proportion of villages with medical facilities, 1981:</td>
<td>80</td>
</tr>
<tr>
<td>Proportion of villages with medical facilities, 1981:</td>
<td>14</td>
</tr>
</tbody>
</table>

*Source: Drèze and Sen (1995, 1996); public spending numbers from annual publications of the Reserve Bank of India Bulletin on state finances in India; India-wide numbers on public spending only for 15 major states.*
Note: Public spending data refer to the current account, which includes the bulk of spending on health and education.
Source: Nominal public expenditures, Reserve Bank of India Bulletin (various issues); price deflator and population, Ozler and others (1996).

Note: Public spending data refer to the current account, which includes the bulk of spending on health and education. State administration includes interest payments.
Source: Reserve Bank of India (various issues).
almost 50 percent of public resources to state administration and less than 25 percent to health and education (figure 3).

The quality of public services is indisputably harder to target, but here the evidence is clear: The quality and effectiveness of public spending are higher in Kerala. Drèze and Sen review extensive evidence showing that public schools and health clinics in Kerala have high teacher and physician attendance and are well supplied, adequately maintained, and widely used. Many facilities in Uttar Pradesh simply lie abandoned.

Why did these differences emerge? Why do they persist? Why, for example, can a village school in Uttar Pradesh be nonfunctional for as long as 10 years because of teacher absenteeism and shirking, without any collective protest, whereas in Kerala there are massive demonstrations at the nearest district office if a primary health center is unstaffed for a few days (Dreze and Sen 1996)? Both states are in the same sovereign nation, and both have the same formal political and legal institutions. Both have had regular elections to their legislative assemblies since the 1950s in accordance with constitutional procedures and monitored by the Election Commission of India.

The answer must lie in the dynamics of political competition rather than in differences in the political institutions themselves. These include differences between the two states in access to information, social polarization, and the credibility of political promises. Kerala’s voters have been better informed and less polarized on nonpolicy dimensions than voters in Uttar Pradesh, and Kerala’s political parties compete on credible platforms for delivering broad social services, rather than on clientelist platforms as in Uttar Pradesh.
Kerala entered the era of democratic elections with a politically active electorate and a literacy rate of about 40 percent, whereas Uttar Pradesh did so with a population of largely illiterate voters (less than 18 percent even in 1961) with limited access to widely published information. Massive voter illiteracy suggests that voters were poorly informed about the connection between political decisionmaking and their well-being, undermining the ability of any party to make credible promises to voters. Reputation is difficult to establish if voters are poorly informed. Under conditions of visible and often coercive social discrimination, organization of the victims of discrimination was very costly. Active institutions of social discrimination effectively prevented so-called backward castes from accessing public services or participating in political processes. Although caste issues also existed in Kerala, poor and socially disadvantaged voters were more likely to participate in political processes to influence policy issues affecting their welfare (Chander 1986; Nossiter 1982). These differences affected political party competition and the likelihood that credible political competitors would emerge to contest elections.

Another key political variable was political party competition. Following independence, the Congress Party was the dominant party in India. It had the widest national presence, the most solid reputation based on its association with the fight for independence, and the longest history as a political party. Congress espoused a common socialist platform throughout India, focusing on government-led development and redistribution to the poor. At the state level, however, there was substantial variation in voters’ perceptions of the Congress Party, the extent of competition from other parties, and the types of credible promises to voters that the party could or had to make to be successful.

In states like Uttar Pradesh the Congress Party did not confront vigorous competition from other credible and well-organized parties. In other states, like Kerala, regional parties and emerging communist parties mounted credible challenges to the Congress Party. The Communist Party was particularly active in Kerala and invested substantially in mobilizing the poorest voters. By interacting repeatedly with these voters, the party was able to make credible promises to them (Chander 1986; Nossiter 1982). This was not inevitable. First, the ability of the Communist Party to mobilize large numbers of activists to establish personalized contact with voters is unusual. Without this asset, the party would have been less able to establish its credibility in competition with the Congress Party. Second, leaders of the Communist Party could have chosen to use these personalized contacts mainly to focus on jobs and targeted services to core constituencies or to strengthen their own positions in the party. Although these activities were certainly a part of the message to voters, these activities were also used to establish the party’s policy credentials.

Competition in Kerala was therefore between two credible political parties, the Congress and Communist Parties, both able to make promises to broad segments of society and both driven by elections to make promises that would best serve the
needs of broad segments of the population—such as high-quality social services. This diminished the importance of patron-client relationships to an extent that was unparalleled in any other state.

In Uttar Pradesh, such competition did not develop. The Congress Party in Uttar Pradesh confronted opposition only from personalized parties rather than from more institutionalized parties. Because the opposing parties were not broadly credible, the Congress Party could win elections with exceedingly modest promises—winning on average more than 70 percent of the seats in the state assembly (Butler and others 1995).

In Kerala, political credibility was reinforced as promises were kept. The first two decades of elected state government saw dramatic improvements in human development indicators. Infant mortality fell 43 percent between 1956 and 1966 (Krishnan 1991). Much of this decline has been attributed to high rates of female literacy (expanding through state education programs), but it was clearly facilitated by access to public primary health care and state-sponsored programs of infant and child immunization (Zachariah 1992). In Uttar Pradesh, meanwhile, absenteeism and other indications of widespread shortfalls in service delivery have persisted since the beginning, suggesting that there have been few political pressures to use resources for purposes other than political patronage.

Perhaps as a reflection of more informed voting along policy dimensions in Kerala, and greater credibility of political parties, voter turnout has been higher than in any other state, averaging more than 75 percent even in the first few state elections. In Uttar Pradesh, turnout averaged 55 percent in the first few elections, suggestive of greater voter apathy on policy issues because of a combination of lack of information, greater social polarization, and lack of credibility of political parties.

Literacy has slowly climbed in Uttar Pradesh, and democratic institutions have penetrated the social fragmentation bit by bit over the past 50 years, especially through the political mobilization of traditionally repressed lower castes. However, consistent with the earlier discussion of the obstacles to building reputation, social services have not improved with more competitive elections, the emergence of new parties, the increased integrity of elections, and the representation of lower castes. Instead, new parties have either been personal vehicles for party leaders or have built themselves up as vehicles for representing narrow segments of the population. In either case political incentives to improve broad-based access to quality social services remain weak.

Ethnic or caste-based political parties are an important new development in Uttar Pradesh. In an otherwise noncredible environment there is political advantage in mobilizing voters along caste or ethnic lines, because the credibility of promises is greater when directed to a single group. Among the three main parties competing in the state today, the Bharatiya Janata Party appeals to upper caste Hindus; the Bahujan Samaj Party to so-called backward castes, scheduled castes and tribes, and minority religion groups; and the Samajwadi Party to similarly
marginalized religious and caste groups. These parties compete on explicitly clientelist platforms. The Bahujan Samaj Party, for example, does not print any election manifesto to explain its platform, but it does publicize the ethnic profiles of its candidate list to demonstrate commitment to its single-point program of proportional representation for every ethnic group in the bureaucratic institutions of the state (Chandra 1999).

The contrast between Kerala and Uttar Pradesh demonstrates that the same formal institutions of democracy can sustain very different forms of electoral competition with substantial impact on the quality of public services. It also demonstrates that the sheer endurance of democracy is no guarantee that political market imperfections will disappear. In fact, path dependency in public policies or persistence of differences in the nature of electoral competition is exactly what would be expected when there are credibility problems in political markets. The analysis here suggests that external interventions to break this path dependency, change the process of political competition, and hence affect the quality of social services should focus on the information processing capacity of voters, social fragmentation, and the capacity of politicians to make credible commitments.

Further research is needed to evaluate the impact of ongoing political and institutional reforms in the developing world and draw lessons from the variations in institutions across countries. Where poor voters are already politically active, the real issue is to bolster the credibility of political candidates to provide broad social services while reducing political pressures to pursue clientelist policies.

Policy Implications and Further Research

The Millennium Development Goals call for dramatic improvements in the condition of the poor. A large body of literature suggests that institutions are likely to matter a great deal in this endeavor. How they matter is the subject of this article. The specific circumstances of electoral competition and political decisionmaking have a large effect on social service outcomes for the poor. Information gaps, social polarization, and the absence of credible political competitors lead to the underprovision of government services to the least informed, the most polarized, and the vast majority who do not have personal connections with a powerful patron.

There are many examples of reforms intended to improve the ability of poor people to secure their own interests in government decisionmaking (to empower them), including decentralization, legislative reservations for minority groups in India, decentralization in Pakistan, and participatory budgeting in Brazil. These are all effective to the extent that they overcome the underlying political market imperfections that impair government services to the poor. However, as the discussion of the effects of reservations in India suggests, the improvements wrought by these reforms
may be only partial if they leave many important aspects of the political marketplace unchanged.

Two types of decentralization in particular are often seen as responses to inadequate central government attention to social service delivery. One is decentralization of responsibilities for the provision of local public goods to locally elected village and municipal governments. A second is greater autonomy of decisionmaking for service providers, such as schools and clinics, combined with greater participation of citizens through community-based organizations, such as parent-teacher associations and health committees. The political economy analysis here has implications for both.

Decentralization is likely to have a positive impact on social services if it enables voters to become better informed about political responsibilities for local public good provision, if local public good provision is more salient in local elections than in central government elections, and if promises by political competitors are more credible in local elections than in central government elections. This type of decentralization may not succeed if local voters are apathetic to local elections and have little or no information about the resource availability and capability of local governments, if social polarization is more intense at the local level, or if clientelist promises to a few voters are easier to make and fulfill at the local level because of closer social relations between the elected representatives and their clients (Keefer and others 2003 provide a more extensive discussion of these issues).

Decentralization of authority to service providers and communities can solve both credibility and information problems, although again not necessarily. Remotely located political agents are not able to credibly promise to improve the quality of services in such transaction-intensive sectors as health and education, because agents are unable to closely monitor service providers. By shifting monitoring to communities, this form of decentralization reduces the information voters need to hold politicians accountable: They need only verify whether political agents have made resources available for schools and clinics. But such policies are difficult to enforce because they require politicians to rein in their claim on public employment as political patronage. Complementary efforts to generate and widely disseminate information about the impact of policy changes on social services would make it easier for politicians to take credit for successful policies that increase benefits to broad sections of the population, thereby reducing the need for targeted patronage.

Reforms other than decentralization can also reduce political market distortions caused by incomplete information. Independent validation of the quality of public goods and the scope of accomplishment and failure of individual political decision-makers, by clearly communicating to citizens that the information is widely shared, could provide a vehicle for voter coordination. Not only can the press provide this type of validation and coordination but so can external agencies and civil society groups. Survey instruments (such as citizen report cards that consolidate public
feedback on the state of government services) are potentially powerful vehicles for mobilizing voters around the issue of quality of public services.

Credibility, like information, is likely to be particularly problematic in developing economies. Reforms designed to directly improve social service delivery can strengthen credibility by making it easier for politicians to take credit for public goods improvements. Social service reforms are more sustainable if they help politicians build a reputation for broad-based service delivery, as in Kerala. This is challenging, however. It would require that external aid be provided specifically for education and health when politicians have made emphatic, public, and verifiable promises regarding health and education services. This is not common in developing democracies.

Finally, social polarization can have harmful effects on social service provision, just as it does on other aspects of civic life. When considering the design of external assistance to support reform, a key consideration should be that criteria unrelated to social cleavages determine access to resources. This may not always be practical, however, as when one group is poorer than the other—redistributinal transfers based on income will always favor the poorer group.

When social cleavages are purely “taste-based” (a preference for one ethnic group or tribe and a dislike for others), a two-pronged, long-term approach is necessary: educational responses to moderate these tendencies and strong signals from the center that such preferences are inappropriate. Ample experience suggests that this approach can soften such cleavages over time. Where polarization is in response to grave imperfections in political and economic markets, however, causing people to retreat into groups with which they have the strongest personal links and the greatest hope of accessing resources, the appropriate response is to remove those imperfections.

The profound role that political market imperfections play in development is just beginning to be understood. More research and practical experiments are needed to discover how best to alleviate these imperfections. The decentralization reforms that are taking root in a variety of contexts and with significant institutional variation provide an important opportunity to evaluate one strategy for addressing them. Systematic research on experiences around the world with information campaigns for improving public services is likely to be feasible and promising. Further research would be valuable on information availability and processing by poor voters and on how information provision mechanisms can be institutionalized to enable these voters to create stronger incentives for politicians to improve the performance of public services. Finally, more innovative research is required on credibility in politics. Under what conditions do politicians shift their promises from targeted transfers to broad and continuous improvements in service quality? The rewards to such admittedly difficult research are likely to be enormous, because it would vastly improve our understanding of the extensive differences in government performance around the world.
Notes

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1. This focus on fundamental characteristics of electoral competition is complementary to another strand of the literature (reviewed by Persson and Tabellini 2000) looking at the impact of electoral and political institutions—presidential or parliamentary regimes, majoritarian or proportional electoral rules—on government decisionmaking and spending. Preliminary work suggests that the magnitude of the institutional results varies significantly with the underlying electoral characteristics of countries, the focus in this article. For example, in poorer or younger democracies, where voters are less likely to be informed and political competitors are less likely to be credible, the difference in government spending between presidential and parliamentary systems is less than half the difference in richer or older democracies. The analysis here is therefore a logical first step in a full and comprehensive analysis of the political economy of government expenditures and the poor.

2. In a review of research on public spending and the poor, Van de Walle and Nead (1995) find that resources spent on basic health and education services (broadly targeted fiscal policies) have higher payoffs for the poor than finely targeted food subsidies or other redistribution schemes, in part because of the greater administrative costs and behavioral consequences of the targeted schemes.

3. Demand might be low because returns to education are low, discount rates are high, or severe credit market constraints block access to complementary inputs (books, forgone child labor).

4. Alderman (1988) describes protests in Pakistan by retailers of government subsidized wheat and flour when their livelihood was placed at risk by amendments to the subsidies program.

5. The most persuasive theoretical explanation for electoral cycles emerge from rational expectations models in which asymmetric information and shocks to politician competence over time create conditions under which it is rational for voters to focus on performance closer to elections (Persson and Tabellini 2000; Rogoff 1990).

6. Several studies have examined the conditions of competition in political and economic markets and the resulting incentives for the kind and quantity of information disseminated by the media industry (Djankov and others 2002; Mullainathan and Shliefer 2002; Strömberg 2004).


8. This solution is limited to the extent that central government intervention is needed to remedy disparities in performance or funding across jurisdictions, however.

References


Evaluating the Impact of Conditional Cash Transfer Programs

Laura B. Rawlings • Gloria M. Rubio

Several developing economies have recently introduced conditional cash transfer programs, which provide money to poor families contingent on certain behavior, usually investments in human capital, such as sending children to school or bringing them to health centers. The approach is both an alternative to more traditional social assistance programs and a demand-side complement to the supply of health and education services. Unlike most development initiatives, conditional cash transfer programs have been subject to rigorous evaluations of their effectiveness using experimental or quasi-experimental methods. Evaluation results for programs launched in Colombia, Honduras, Jamaica, Mexico, Nicaragua, and Turkey reveal successes in addressing many of the failures in delivering social assistance, such as weak poverty targeting, disincentive effects, and limited welfare impacts. There is clear evidence of success from the first generation of programs in Colombia, Mexico, and Nicaragua in increasing enrollment rates, improving preventive health care, and raising household consumption. Many questions remain unanswered, however, including the potential of conditional cash transfer programs to function well under different conditions, to address a broader range of challenges among poor and vulnerable populations, and to prevent the intergenerational transmission of poverty.

Conditional cash transfer programs are an innovative approach to the delivery of social services. They provide money to poor families conditional on investments in human capital, such as sending children to school or bringing them to health centers on a regular basis. That conditionality makes this new generation of social programs an instrument for longer-term human capital investments as well as short-term social assistance. Additionally, along with school voucher programs and certain subsidized health insurance schemes, conditional cash transfer programs are part of a growing policy emphasis on the use of market-oriented demand-side interventions to directly support the poor. They complement traditional supply-side mechanisms, such as
general subsidies or investments in schools, health centers, and other providers of social services.

Conditional cash transfer programs aimed at improving children’s human capital have been established in numerous countries in recent years. Six are reviewed here. The first large-scale program to incorporate both health and education components was Mexico’s Education, Health, and Nutrition Program (Progresa), launched in 1997. Following a similar model, Colombia has the Families in Action (FA) program, Honduras has the Family Assistance Program (PRAF), Jamaica has the Program of Advancement through Health and Education (PATH), Nicaragua has the Social Protection Network (RPS), and Turkey offers the Social Solidarity Fund (SSF).

Each program promotes long-term human capital accumulation as a primary objective, recognizing its role in breaking the intergenerational transmission of poverty (table 1). The programs focus primarily on children as the recipients of the human capital investments promoted by the programs and closely monitor compliance with conditions as a prerequisite for receiving the transfers. Traditional social assistance strategies have focused on short-term poverty alleviation through redistribution during times of crisis.

Implementation of conditional cash transfer programs has been accompanied by systematic efforts to measure their effectiveness and understand their broader impact on households’ behavior, a marked departure from the limited attention to rigorous impact evaluations in the past. This article reviews the experience to date of six countries in setting up and evaluating the impact of such programs. The programs were selected to include those that provide conditional cash transfer for both health and education because policy and evaluation experience exist for such programs, as well as for those that provide in-kind conditional transfers. This review draws from program documents provided by administrators and evaluation reports produced by research institutions. Evaluation results are analyzed to draw conclusions about the welfare impact of this type of program and about how the evaluations have been used to inform policy decisions. Expected insights from forthcoming evaluations are briefly considered, followed by some reflections on the future direction of evaluations of social sector programs.

Conditional Cash Transfer Programs: A New Approach to Social Assistance

Conditional cash transfers together with other social assistance programs constitute a country’s formal, publicly provided safety net system. Conditional cash transfer programs represent a new approach to social assistance that explicitly addresses several criticisms often levied at more traditional social programs, including weak poverty targeting; high administrative or component costs, such as materials in workfare
<table>
<thead>
<tr>
<th>Program</th>
<th>Objectives</th>
<th>Components</th>
<th>Education</th>
<th>Health and nutrition</th>
<th>Target population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colombia FA</td>
<td>Increase human capital investment in extremely poor families in smaller municipalities; serve as a safety net</td>
<td>Bimonthly school subsidy</td>
<td>Nutrition subsidy; health education</td>
<td>Poor households with children ages 7–17 enrolled in school (grades 2–11)</td>
<td></td>
</tr>
<tr>
<td>Honduras PRAF II</td>
<td>Increase the accumulation of human capital among children of the poorest families and help break the circle of poverty</td>
<td>Demand incentives (educational voucher); supply incentives for primary schools</td>
<td>Demand incentives (nutrition and health voucher); supply incentives for health care centers; nutrition training for mothers</td>
<td>Poor households with children ages 6–12 who have not yet completed grade 4</td>
<td></td>
</tr>
<tr>
<td>Jamaica PATH</td>
<td>Increase educational attainment, improve health outcomes, and thus reduce poverty; reduce current poverty; reduce child labor; serve as a safety net</td>
<td>Education grant</td>
<td>Health grant; health education</td>
<td>Poor households with children ages 6–17</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Poor households with children ages 0–6 not participating in other programs</td>
<td></td>
</tr>
</tbody>
</table>

(Continued)
Table 1. (Continued)

<table>
<thead>
<tr>
<th>Program</th>
<th>Objectives</th>
<th>Components</th>
<th>Target population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mexico</td>
<td>Improve the educational, health, and nutritional status of poor families,</td>
<td>Education: educational grants; support for school materials; supply and</td>
<td>Poor households with children 8–18 enrolled in primary (grade 3 and higher) and secondary (grades 1–3) school; age limit raised to 20 in 2001 to include upper secondary students; nutrition supplements: pregnant and lactating women, children ages 4–24 months, and malnourished children ages 2–5 years</td>
</tr>
<tr>
<td>Progresa</td>
<td>particularly children and mothers</td>
<td>quality of education services</td>
<td></td>
</tr>
<tr>
<td>Nicaragua</td>
<td>Promote human capital accumulation in households living in extreme poverty</td>
<td>Education grant; support for school materials; supply incentive</td>
<td>Poor children ages 6–13 enrolled in primary school grades 1–4; health care services: children ages 0–5</td>
</tr>
<tr>
<td>RPS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turkey SSF</td>
<td>Increase the human capital investment in extremely poor families nationally; serve as a safety net</td>
<td>Education grant</td>
<td>Poor households with children ages 6 and older enrolled in grades 1–11; Poor households with children ages 0–5</td>
</tr>
</tbody>
</table>

Source: Authors' compilation based on FISE (2001), IFPRI (2000a), Skoufias (2001), World Bank (2001c, d, 2002).

*aIn March 2002 Progresa changed its name to Oportunidades and broadened its objectives. The renewed program aims to create income-generating opportunities for poor households through preferential access to microcredit, housing improvements, and adult education.*
programs; lack of integration of disparate projects with a multiplicity of overlapping or unrelated goals; accusations of paternalism and clientelism; and excessive focus on reducing current poverty with little attention to long-term, structural poverty.

The traditional role of social assistance programs has been to redistribute income and resources to the needy, helping them overcome short-term poverty during periods of crisis. Social policies and programs are changing, however, and are beginning to encompass objectives of longer term economic growth and human capital development. As Ravallion (2003) explains, by making insurance available, helping credit-constrained poor people become productive workers, and providing incentives for long-term investments in human capital, safety nets are now seen to have a potentially important role in compensating for the market failures that help perpetuate poverty, particularly in high-inequality settings.

With an emphasis on human capital accumulation and long-term poverty reduction, conditional cash transfers are perhaps the clearest policy manifestation of this new thinking on social assistance programs. Conditional cash transfer programs address both future poverty, by fostering human capital accumulation among the young as a means of breaking the intergenerational cycle of poverty, and current poverty, by providing income support for smoothing consumption in the short run.

Conditional cash transfer programs have also introduced other key design features that depart from traditional social assistance programs. First, they provide grants directly to poor households, thereby changing accountability relationships among the national government, service providers, and the poor. The conditions required by the grants provide an incentive for poor households to use available health and education services, strengthening the link between service providers and the poor. Conditional cash transfer grants also allow national governments to forge a direct relationship with poor families, seeking to foster coresponsibility by requiring families to assume responsibility for schooling, health care, and the appropriate use of the cash grants. The programs reviewed here designate mothers as recipients of the grants in recognition of the international evidence that suggests that women often make more optimal household spending decisions affecting children’s welfare. Second, they seek to exploit complementarities between elements of human capital development through their inclusion of health, nutrition, and education components. Third, the use of cash is promoted as efficient and flexible. It gives households spending discretion and avoids the price distortions and creation of secondary markets that are often associated with in-kind transfers. Finally, many conditional cash transfer programs also incorporate good technical program design features, including explicit poverty targeting criteria, often based on proxy-means tests, and strong monitoring and evaluation systems.
Education and Health Components

The programs reviewed here have both an education component and a health and nutrition component. The education component consists of a cash grant conditioned on school enrollment and regular school attendance (usually 80–85 percent of school days). The size of the grants varies considerably across countries (table 2). In Honduras, Mexico, and Turkey, the education grant covers both direct costs (school fees, school supplies, transportation costs) and opportunity costs in lost income from sending children to school rather than work. In the other countries the grant generally covers only part of the opportunity cost. In Colombia and Mexico education grants are higher for secondary school than for primary school, to reflect the increasing opportunity cost of work as children grow older. In Mexico grants at the secondary level are higher for girls, to provide an added incentive for reversing a pattern of unequal gender participation in secondary education and to internalize the education externalities that accrue as they raise families of their own (Skoufias 2001). In Turkey the value of the grant decreases proportionally according to the number of children in the family.

Health and nutrition grants are targeted to children up to the ages of 2 or 3 years and in some cases up to the time they enroll in primary school. In Honduras, Jamaica, and Mexico, pregnant and lactating women are designated as program beneficiaries, and their inclusion is being discussed in Turkey. This component consists of a cash transfer aimed at food consumption, as well as health care and nutrition education for mothers. In Mexico and Nicaragua this component explicitly stipulates the provision of a basic health care package for the target household members. Receipt of the cash transfer is conditional on compliance with a predetermined number of health center visits and health and nutrition workshops. Children’s health care visits are linked to growth monitoring and often to vaccination protocols. Health care visits for pregnant and lactating women seek to ensure appropriate prenatal, childbirth, and puerperal care. In Mexico and Jamaica adult household members other than pregnant and lactating women are also required to get a check-up once or twice a year (see table 2).

The value of the monthly cash grant for the health and nutrition component varies across countries (see table 2). In Honduras, for example, the value of the nutrition and health voucher is equivalent to the value of the time invested by the mother in the trip to the health center and waiting for care. Jamaica set the health grant per beneficiary per month at US$9, the same level as the education transfer and twice average monthly spending per person on health care and medicine in 1999. Colombia set the grant to the mean income required to allow an average indigent family to reach the extreme poverty line and so to consume a nutritiously adequate diet. Jamaica and Turkey provide health and nutrition grants to individuals rather than family-based allocations.
Table 2. Conditionality and Transfer Size of Selected Conditional Cash Transfer Programs

<table>
<thead>
<tr>
<th>Program</th>
<th>Education</th>
<th>Health and nutrition</th>
<th>Transfer size</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Colombia</strong>&lt;sup&gt;a&lt;/sup&gt;</td>
<td>At least 80% school attendance in a 2-month cycle</td>
<td>Regular health care visits for child’s growth and development monitoring</td>
<td>Primary school: Col$14,000 (US$6) per child per month; secondary school: Col$28,000 (US$12) per child per month</td>
</tr>
<tr>
<td><strong>Honduras</strong></td>
<td>School enrollment and maximum 7 days of school absence in a 3-month period</td>
<td>Compliance with the required frequency of health center visits</td>
<td>Voucher: L$828 (US$58) per child per year; average supply incentive of L$57,940 (US$4,000) per school per year</td>
</tr>
<tr>
<td><strong>Jamaica</strong>&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Minimum school attendance of 85% (maximum 9 days of school absence per term)</td>
<td>Compliance with the required number of health visits per year, which varies by beneficiary age/status</td>
<td>Grant: J$500 (US$9) per child per month after second year (program began at J$300 per child per month)</td>
</tr>
<tr>
<td><strong>Mexico</strong></td>
<td>School enrollment, with minimum attendance of 85%, monthly and annually</td>
<td>Compliance by all household members with the required number of health center visits and mother’s attendance at health and nutrition lectures</td>
<td>Primary school: varies by grade, Mex$80–165 (US$8–17) per child per month plus Mex$100 (US$11) per year per child for school materials; secondary school: varies by grade and gender, Mex$240–265 (US$25–32) per child per month plus Mex$200 (US$20) per year per child for school materials</td>
</tr>
<tr>
<td><strong>Nicaragua</strong>&lt;sup&gt;a&lt;/sup&gt;</td>
<td>School enrollment, fewer than 6 days of unexcused school absence in a two-month period, and school grade promotion</td>
<td>Regular health care visits for growth monitoring, up-to-date vaccinations, and attendance at health and nutrition talks</td>
<td>Grant: C$240 (US$17) every 2 months per household plus C$275 (US$20) per child per year for school materials; supply incentive: C$10 (US$0.7) per student every 2 months</td>
</tr>
<tr>
<td><strong>Turkey</strong>&lt;sup&gt;a&lt;/sup&gt;</td>
<td>School enrollment, with minimum attendance of 85%</td>
<td>Regular health care visits for growth monitoring and vaccinations according to a schedule set by the Ministry of Health</td>
<td>Primary and secondary school grant: TL 12.8 million (US$9.50) per month for first child, TL1 0.8 million (US$8) for second, and TL8.8 million (US$6,50) for each subsequent child</td>
</tr>
</tbody>
</table>

*Source: Authors’ compilation FSE (2001), IFPRI (2000a), Skoufias (2001), World Bank (2001c, d, 2002).*

*Programs have not always enforced all conditions.*
Supply-Side Support

Conditional cash transfer programs can be interpreted as a response to the perceived failures of traditional supply-side interventions, such as schools and health clinics, which have been underutilized by the poor because of unmanageable out-of-pocket expenditures, high opportunity costs, difficult access, and a lack of incentives for investing in children’s human capital. However, conditional cash transfers are not a substitute for the provision of high-quality supply-side investments. Rather, they complement such investments by directly addressing the problem of insufficient demand for health and education services from the poor. This makes these programs’ ultimate success dependent on access to high-quality health and education services. No program should be conditioned on the mandated use of poor-quality, ineffective services.

Because of the critical role of good quality health and education inputs, some countries go beyond providing demand-side monetary incentives to families by strengthening the supply of these services. In Nicaragua teachers receive a modest bonus per child participating in the program, half of it intended to pay for school materials, and nongovernmental organizations (NGOs) are contracted to provide health services. Mexico sets aside resources to ensure an adequate supply of equipment, medicines, and material to meet the increase in health services demand arising from the program. Honduras provides grants directly to schools and health centers as part of an experiment to compare the effectiveness of three alternative interventions combining demand and supply incentives.

Poverty Targeting

Directing benefits to the poor or vulnerable is a critical feature of each reviewed conditional cash transfer program. Most rely on both geographic and household targeting, using targeting mechanisms appropriate to the type of data available (table 3).

At the geographic level Jamaica uses annual consumption data to construct a scoring formula to identify poor households at the parish level for allocating PATH funds. In Mexico eligible communities in rural areas are selected using a marginality index based on census data, whereas in Honduras malnutrition data from the Height Census of First Grade School Children are used to select program municipalities. In most countries, the criteria applied to select communities to receive the conditional cash transfer program include consideration of the supply capacity to respond to the increased demand in health and education services.

At the household level programs are experimenting with proxy-means tests that estimate household poverty levels as a criterion for program participation (table 3). In Nicaragua the results of household-level proxy means tests are being compared
Turkey will use a proxy-means test being developed especially for the conditional cash transfer program to target the poorest of the poor at the national level. Other countries are taking advantage of economies of scale in the use of proxy-means tests. In Colombia household eligibility is based on an existing information system managed by municipalities, the System for Selecting Social Program Beneficiaries (SISBEN). The system classifies households according to an unmet basic needs index and other indicators, such as average household schooling that serve as income proxies. Used primarily to identify eligibility for the subsidized health regime, SISBEN is now being expanded to other social sector

Table 3. Targeting Criteria of Selected Conditional Cash Transfer Programs

<table>
<thead>
<tr>
<th>Program</th>
<th>Geographic</th>
<th>Household</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colombia FA</td>
<td>Municipalities other than department capitals with fewer than 100,000 inhabitants; municipalities not participating in other national programs with adequate supply of education and health services and a bank; municipalities with up-to-date SISBEN database</td>
<td>Level 1 families in the SISBEN (an information system based on a proxy means test for identifying poor households)</td>
</tr>
<tr>
<td>Honduras PRAF II</td>
<td>Municipalities with the lowest average height for age z-scores</td>
<td>None</td>
</tr>
<tr>
<td>Jamaica PATH</td>
<td>All parishes participate in the program; funds are distributed across parishes depending on their poverty incidence</td>
<td>A scoring formula with a predetermined cutoff point</td>
</tr>
<tr>
<td>Mexico Progresa a</td>
<td>Rural communities with a high marginality index with more than 50 and fewer than 2,500 inhabitants and access within a certain distance to primary and secondary school and health care center; urban areas with a high marginality index have been included since 2001</td>
<td>Within eligible localities, eligible households are identified using discriminant analysis of household income and other characteristics</td>
</tr>
<tr>
<td>Nicaragua RPS</td>
<td>Departments and municipalities with high extreme poverty incidence, good access to schools and health care centers, good transport and communication infrastructure and local capacity; within eligible municipalities census areas were classified in two groups according to a marginality index based on family size, access to basic sanitation and safe water, and literacy rates, with group 1 eligible in the pilot phase 1 and group 2 in the second pilot phase</td>
<td>Pilot phase 1: all households in selected census areas with less than 14.1 ha and no vehicle; pilot phase 2: eligibility is determined by a scoring formula</td>
</tr>
<tr>
<td>Turkey SSF</td>
<td>National coverage; no geographic targeting</td>
<td>Proxy-means test based on a scoring formula</td>
</tr>
</tbody>
</table>

initiatives, including the conditional cash transfer program. Jamaica is planning to expand the use of the PATH scoring formula to other safety net programs to avoid duplication of administrative systems and increase coordination across programs.

Some countries periodically review beneficiaries’ eligibility. In Mexico and Jamaica household poverty status is reevaluated every three years. Nicaragua’s RPS is designed to last three years in a beneficiary community before the cash transfers are phased out. Only the supply interventions are retained for two more years without a reassessment of eligibility.

An Expanding Role in Poverty Alleviation

As reflected in budget allocations and the number of beneficiaries, conditional cash transfer programs are playing an increasingly important role in poverty reduction strategies. Mexico’s Progresa went from covering 300,000 households when it began operations in 1997 to reaching more than 4 million families in 2002, some 20 percent of the population. The program’s 2002 annual budget was around Mex$18 billion (US$1.8 billion).

PATH is a key element of the Jamaican government’s initiative to transform the social safety net into a fiscally sound and more efficient system of social assistance for the poor and vulnerable. It aims to consolidate three major income transfer programs, strengthen targeting measures, improve the cost-effectiveness of delivering benefits, and adjust benefit levels to meet assessed needs. Turkey’s SSF was introduced as part of a handful of crisis-response mechanisms to ease the impact of the 2001 economic crisis on poor households. It has an annual operating budget of US$100 million. Colombia’s FA is the flagship program of the three safety net programs introduced in 2001 to provide relief from the effects of an economic recession. The program, designed to run through 2004, has a budget of US$455 million and is expected to reach more than a million children. In Brazil, Bolsa Familia is being introduced as an overarching welfare program that will consolidate numerous smaller programs to become a mainstay of Brazil’s poverty reduction approach.

Evaluation of Design and Implementation

The first generation of conditional cash transfer programs in Colombia, Honduras, Nicaragua, and Mexico prioritized the early use of robust evaluations as a key element for informing program design and expansion. All but Colombia’s program used randomized control designs as the primary evaluation methodology underpinning a large-scale social experiment, carefully planned well in advance with strong support from program staff and policymakers.
The first generation of conditional cash transfer evaluations aimed at assessing program impact and operational performance by examining the programs’ administrative adequacy, the extent to which programs reached poor areas and poor households, the presence and size of expected impacts, any unanticipated effects, stakeholders’ perceptions about the program, and the cost-effectiveness of delivery mechanisms.

The impact evaluations focused on measuring changes in short- and medium-term indicators of human capital accumulation rather than on the income redistribution effects of the grants. In education the evaluations assessed changes in school enrollment and attendance rates, and some also analyzed changes in promotion and repetition rates. Evaluation of Honduras’s PRAF and Mexico’s Progresa went beyond outcome indicators to measure changes in impact indicators, such as average test scores. In addition, given PRAF’s evaluation objective of comparing the impact of supply- and demand-side interventions, evaluators are examining changes in the availability and quality of education inputs (percentage of teachers trained, percentage of schools with basic teaching materials).

In health and nutrition, the evaluations included a wide range of health care utilization and quality indicators. Program variations in target population are reflected in the diverse selection of child, maternal, and adult health indicators. Child health indicators typically include vaccination coverage, malnutrition rates, incidence of diarrhea, and participation rates in child growth and development monitoring. Maternal health indicators include utilization rates and satisfaction with pre- and postnatal care. Honduras’s PRAF evaluation is measuring final program impacts by analyzing changes in maternal and infant mortality.

Changes in consumption levels and patterns are also central to many evaluations. Total consumption per capita disaggregated by food and nonfood items, such as health and education spending, is frequently used as an indicator. Given the implicit objective of reducing current poverty, Mexico’s Progresa evaluation investigates the impact of cash transfers on the poverty headcount ratio, poverty gap, and poverty severity index.

Development programs often have unplanned direct and indirect effects, both positive and negative. Some of the conditional cash transfer evaluations have analyzed such impacts. For example, the distribution of cash grants directly to mothers may have an effect on resource allocations within households and on power relations. Cash transfers may crowd out remittances and other private transfers to households or affect household work incentives. Household-level targeting may also affect community relations when not all members of a community receive program benefits.

**Evaluation Design**

Program impacts are measured by assessing whether a program changes the mean value of an outcome variable among participants compared with what the outcome
would have been had they not participated. The central evaluation problem then is
that program participants cannot be simultaneously observed in the alternative state
of no participation (the counterfactual). Evaluators typically simulate the counter-
factual by comparing program participants (the treatment group) with a control or
comparison group with similar characteristics. Construction of the counterfactual
determines the evaluation design, which can be broadly classified as experimental or
quasi-experimental. These evaluation designs vary in feasibility, cost, and the clarity
and validity of results.

Experimental or randomized control designs involve the random assignment of
individuals (or another unit of analysis) into the treatment group or the control
group. Because participants are selected randomly, any differences between the groups
is due to chance, not selection. For this reason, experimental designs are usually
regarded as the most reliable evaluation method and the one yielding the easiest
results to interpret (Freeman and Rossi 1993; Grossman 1994).

When randomization is not feasible, a quasi-experimental design is used to gener-
ate a comparison group through alternative means. Statistical matching on the
basis of observable characteristics is commonly used to select comparison group
members who are comparable in essential characteristics to participants. Because
unobservable characteristics of beneficiaries, such as motivation or organizational
capacity, can strongly influence program impacts but are generally not addressed or
addressed only with difficulty in evaluations using quasi-experimental designs, these
approaches are often considered less methodologically robust.

The first generation of conditional cash transfer evaluations took advantage of
the gradual implementation of these programs (because of logistical complexities,
fiscal constraints, and uncertainty about the magnitude of program impacts) to
randomly add beneficiaries as the programs expanded.6 This approach reflected
pragmatism and a desire to rigorously explore the impact of these new programs.
Experimental designs are usually maintained for only a few years, however, thus
limiting their ability to provide rigorous evidence on longer term program effects.

Most first-generation conditional cash transfer evaluation designs rely on random
allocation of program benefits by geographic area rather than by household (table 4).
The broad geographic nature of some of the program components and the difficulties
arising from having treatment and control groups in the same community made
randomization at the household level impractical.

In Mexico’s Progresa, evaluators randomly assigned localities to treatment and
control groups. Treatment localities entered the program in November 1997, whereas
control localities started receiving Progresa benefits in December 2000. Randomization
was implemented at the municipal level in Honduras’s PRAF and at the census level in
Nicaragua’s RPS. In Honduras the evaluation objectives required three different
treatment groups to compare the impacts of different combinations of demand and
supply incentives. Randomization by municipality was the preferred option because
<table>
<thead>
<tr>
<th>Program</th>
<th>Logical framework</th>
<th>Operations evaluation</th>
<th>Qualitative study</th>
<th>Impact evaluation</th>
<th>Evaluation activities</th>
<th>Main indicators</th>
<th>Data sources</th>
<th>Control group</th>
<th>Treatment group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colombia FA</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>Quasi-experimental with 2 rounds: participating municipalities were matched with similar municipalities not part of the program</td>
<td>Targeting efficiency; school enrollment; child nutrition and health status; consumption patterns</td>
<td>Household survey; surveys of schools and health centers; surveys of community day care centers</td>
<td>50 municipalities (8,347 households)</td>
<td>50 municipalities^b^ (10,660 households)</td>
</tr>
<tr>
<td>Honduras PRAF II</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
<td>Experimental with panel data: random assignment of municipalities into four groups: G1 (vouchers), G2 (vouchers + supply incentives), G3 (supply incentives only), and G4 (control group)</td>
<td>Education outcomes (test scores, repetition, promotion, attendance); availability and quality of education inputs; health outcomes (maternal and infant mortality); utilization and satisfaction with health care services; health care practices</td>
<td>Census of G1 and G2 municipalities; household surveys (baseline plus two follow-ups—1 and 2 years after program start); school and health center diagnostic surveys; standardized test scores</td>
<td>20 municipalities (1,600 households); G1 = 20 municipalities (1,600 households); G2 = 20 municipalities (1,600 households); G3 = 10 municipalities (800 households)</td>
<td>20 municipalities (1,600 households); G1 = 20 municipalities (1,600 households); G2 = 20 municipalities (1,600 households); G3 = 10 municipalities (800 households)</td>
</tr>
</tbody>
</table>

(Continued)
### Table 4. (Continued)

<table>
<thead>
<tr>
<th>Program</th>
<th>Evaluation activities</th>
<th>Sample size</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Evaluation design</td>
<td>Main indicators</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mexico</td>
<td>X X X Experimental with panel data: random assignment of localities into treatment and control group</td>
<td>School enrollment and attendance; utilization of health care services and health status; child nutritional status; household consumption and calorie availability; poverty incidence; changes in fertility; women’s status and intra-household relations; time allocation; private transfers</td>
</tr>
<tr>
<td>Progresa</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Nicaragua</td>
<td>X X</td>
<td>Experimental with panel data: random assignment of census areas into treatment and control group</td>
</tr>
<tr>
<td>RPS</td>
<td></td>
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</tr>
</tbody>
</table>
of their well-defined borders and the feasibility of linking each household, school, or health center with a particular municipality. Program municipalities were selected using data from the School Height Census. A subset of municipalities was randomly assigned to one of four evaluation groups: those receiving demand vouchers, those receiving vouchers plus improvements in service quality, those receiving improvements in service quality, and the control group. RPS in Nicaragua followed a similar process, randomly allocating census areas into treatment and control groups.

In contrast to the other programs Colombia’s FA applied a quasi-experimental design. Program implementers ruled out randomization, instead targeting the program to medium-size municipalities able to provide adequate health and education services and with at least one bank to be able to set up family accounts. A comparison group consisted of municipalities similar to the treatment group in terms of population and infrastructure but not qualifying for the program, often because of lack of a bank. Although not originally planned, the program was launched in a few treatment municipalities before the baseline data were collected. This provided an opportunity for a preliminary evaluation of the unanticipated treatment group and a comparison group constructed through propensity score matching techniques using the baseline data (the comparison group is constructed from nonprogram households with a participation probability closest to program beneficiaries, as determined by the probability of program participation based on socioeconomic characteristics). This required adjustments to the sampling frame, the inclusion of retrospective questions in the survey questionnaires, and additional econometric techniques to control for possible nonrandom selection of early participating municipalities, but the exercise yielded valid (if less precise) impact estimates.

**Data Collection**

Early planning of most evaluations allowed for the collection of baseline data, thus permitting comparisons of households in the treatment and control groups before and after program implementation. In this way evaluations can account for characteristics that do not change over time within treatment and comparison households, as well as for those that do and that are common to both groups. Random assignment into treatment and control groups, combined with the collection of baseline and follow-up data, allows measuring program impact using difference-in-differences estimators. Except for Colombia, all first-generation conditional cash transfer evaluations have baseline data collected before program implementation.⁷

Household surveys are the main data collection instrument in each of the cases reviewed. Each questionnaire contains a core set of questions about the demographic composition of the household, household expenditures and remittances, and socioeconomic status, education, health, migration, and labor market participation of household members. Some country questionnaires include additional modules, such
as anthropometrics (height and weight), fertility, participation in other programs, and time allocation. Honduras also incorporates two modules on the quality of health services and schools to evaluate the supply-side component of PRAR.8

School and health center surveys and community questionnaires are also frequently used for evaluation. In Honduras and Mexico student achievement test scores were used to analyze program impact on academic performance. Beneficiaries and other stakeholders’ perceptions about the program are often captured through qualitative studies. As part of the operational evaluation of the program, Progresa conducted semistructured interviews with secondary school and health clinic staff and focus group discussions with beneficiaries, nonbeneficiaries, and community mothers who serve as local contacts for Progresa.

Qualitative studies have also been used in Nicaragua to complement impact evaluations. A study on beneficiaries’ perceptions of the program’s impact on welfare included a beneficiary survey; focus group discussions with beneficiaries and community mothers; key informant interviews with representatives from the Ministries of Health and Education, the mayor’s office, health care providers, NGOs, and local program office staff; and six case studies of beneficiary families in different municipalities. Another study assessed perceptions of the poverty targeting mechanism and included surveys, focus group discussions with beneficiaries and nonbeneficiaries, and key informant interviews.

**Implementation Issues**

Social experiments present challenges at each stage of implementation. Evaluations of conditional cash transfer programs reveal two particular issues: the difficulty of coordinating impact evaluations with the implementation schedule and the challenge of winning the political support required for a successful impact evaluation. New, logistically complex programs, such as cash transfer programs, can run into implementation delays or, as in Colombia, may move ahead of the evaluation schedule. Likewise, political changes (such as an upcoming election or changes in program administration) may also affect implementation or even program design. Natural disasters, such as flooding in Jamaica, can also alter the implementation schedule.

Such events can effect the evaluation in various ways. For example, in Nicaragua baseline data was collected during August–September 2000, and follow-up data collection was scheduled for the same time a year later. But when the health component was delayed until June 2001 because of difficulties coordinating the health care providers, evaluators had to postpone follow-up data collection until October. Although having a control group helps in this kind of situation, conducting panel surveys at different times of the year may lead to problems from the confounding nature of seasonal effects.
Delays in setting up the program management information system may also cause problems. Deficiencies in the delivery of program benefits may go undetected and thus be unaccounted for in the evaluation. In Mexico, Progresa’s payment records revealed that 27 percent of the eligible population in the evaluation sample had not received benefits after almost two years of program operation. This can result in a divergence between the “intention to treat” effect estimated by the evaluation and the mean effect of the program on those who actually participated.9

Finally, as Mexico’s Progresa and Honduras’s PraF have revealed, implementing impact evaluations requires strong political support, particularly for a randomized control design. Incorporating a control or comparison group into the evaluation can generate strong criticism and lead to political and media pressure to extend program benefits to these groups. It is important to secure a solid commitment from policymakers to maintain the integrity of the program and evaluation designs and to communicate clearly the benefits of random allocation when budget constraints prevent reaching all eligible beneficiaries at once.

Evaluation Results and Impact on the Ground

Evaluation results are available for Progresa in Mexico, FA in Colombia, and the RPS pilot in Nicaragua. These evaluations reveal that conditional cash transfers can provide effective incentives for investing in the human capital of poor people.

Impacts on Education, Health, and Consumption

In education, conditional cash transfer programs have demonstrated a positive effect on enrollment rates for both boys and girls.10 In Mexico primary school enrollment rates before Progresa were 90–94 percent. Econometric estimates of program impact using a difference-in-differences model controlling for household and community characteristics show an increase ranging from 0.74 to 1.07 percentage points for boys to 0.96 to 1.45 percentage points for girls (table 5). At the secondary level, baseline enrollment rates were 67 percent for girls and 73 percent for boys. Estimates of program impact show an increase ranging from 3.5 to 5.8 percentage points for boys to 7.2 to 9.3 for girls. In Nicaragua program impacts are even more impressive (table 6). From a low starting point of 68.5 percent, average enrollment rates in treatment areas increased nearly 22 percentage points. Colombia’s FA program seems to have had no effect on enrollment rates among the primary school age population (7–13 years old) while boosting secondary school enrollment rates (for 14–17 years old) 5.5 percentage points in rural areas and 14 percentage points in urban areas (table 7).
The evidence of impacts on attendance is mixed. The evaluation of Nicaragua’s RPS indicates a larger impact on attendance than on enrollment rates, finding a 30 percentage point increase in the share of children with fewer than six unexcused school absences in a two-month period. The evaluation of Progresa showed more pronounced effects on enrollment than attendance.

Evaluations have also found improvements in child health and nutrition. The Progresa evaluation shows a significant increase in nutrition monitoring and immunization rates. Econometric estimates from difference-in-differences models accounting for individual fixed effects found that children 0–2 years old participating in Progresa increased their growth monitoring visits 25–60 percent with respect to the baseline value of .22 visits during the previous month. Progresa also lowered illness rates for the same group of children by 4.7 percentage points, or 12 percent lower than the baseline value (Gertler 2000). The data also suggest that Progresa has had a significant impact on child growth, lowering the probability of child stunting for children ages 12–36 months (Behrman and Hoddinott 2000).

Table 5. Impacts on Education, Health, and Consumption of Mexico’s Progresa

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>Net change/program impact</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Education</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary school enrollment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>90–94%</td>
<td>0.96–1.45 percentage points(^a)</td>
</tr>
<tr>
<td>Male</td>
<td>90–94%</td>
<td>0.74–1.07 percentage points(^b)</td>
</tr>
<tr>
<td>Secondary school enrollment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>67%</td>
<td>7.2–9.3 percentage points(^a)</td>
</tr>
<tr>
<td>Male</td>
<td>73%</td>
<td>3.5–5.8 percentage points(^a)</td>
</tr>
<tr>
<td><strong>Health</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean growth monitoring visits (in the month prior to the survey), children ages 0–2</td>
<td>0.22</td>
<td>0.054–0.133(^b)</td>
</tr>
<tr>
<td>Illness rates (in the month prior to the survey), children ages 0–2</td>
<td>0.40</td>
<td>−4.7 percentage points(^b)</td>
</tr>
<tr>
<td><strong>Consumption</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean consumption level per household per month</td>
<td>—</td>
<td>13.4%(^c)</td>
</tr>
<tr>
<td>Median food consumption per person per month</td>
<td>—</td>
<td>10.6%(^c)</td>
</tr>
<tr>
<td>Median caloric acquisition per person per day</td>
<td>—</td>
<td>7.8%(^c)</td>
</tr>
</tbody>
</table>

Source: Education, Skoufias (2001); health, Gertler (2000); consumption, Hoddinott and others (2000).

\(^a\)Econometric estimates using a difference-in-differences model controlling for household and community characteristics.

\(^b\)Econometric estimates of program impacts using a difference-in-differences model.

\(^c\)Percentage difference between beneficiary and control households at 20 months postbaseline.
| Table 6. Impacts on Education, Health, and Consumption of Nicaragua’s RPS |
|---|---|---|---|---|---|
| Indicator | Treatment areas | Control areas |  |
| | Baseline 2000 | Follow-up 2001 | Baseline 2000 | Follow-up 2001 | Net change/program impact<sup>a</sup> |
| <i>Education (%)</i> |  |  |  |  |  |
| Share of children ages 7–13 enrolled in primary school (grades 1–4) | 68.5 | 93.2 | 72 | 75.1 | 21.7 (2.7) |
| <i>Health (%)</i> |  |  |  |  |  |
| Share of children less than 3 years old participating in growth monitoring | 55.9 | 91.8 | 60.6 | 67.4 | 29.1 (4.3) |
| Share of children ages 12–23 months with complete, timely immunization | 35.4 | 81.9 | 40.3 | 68.5 | 18.3 (7.8) |
| <i>Consumption (cordobas)</i> |  |  |  |  |  |
| Per capita annual total expenditures | 4,310 | 4,498 | 3,929 | 3,300 | 817 (231) |
| Per capita annual food expenditures | 2,922 | 3,165 | 2,684 | 2,175 | 753 (154) |

<i>Source: IFPRI (2002b).</i>
<sup>a</sup>Unconditional difference-in-differences estimator.
<i>Note: Numbers in parentheses are standard errors.</i>

| Table 7. Preliminary Impacts on Education, Health, and Consumption of Colombia’s Families in Action (fA) |
|---|---|---|---|---|---|---|
| | Comparison areas | Effect of program in treatment areas |  |
| | Urban | Rural | Urban | Rural |  |
| <i>Education</i> |  |  |  |  |  |
| Enrollment probability, ages 7–13 | 0.941 | 0.915 | 0.003 (0.022) | 0.012 (0.028) |
| Enrollment probability, ages 14–17 | 0.639 | 0.496 | 0.138* (0.066) | 0.055 (0.053) |
| <i>Health</i> |  |  |  |  |  |
| Probability of suffering from acute diarrhea, children under 6, over past 15 days | 0.212 | 0.170 | −0.102* (0.055) | −0.054 (0.065) |
| Probability of suffering from acute respiratory disease, children under 6, over past 15 days | 0.448 | 0.404 | −0.032 (0.103) | −0.021 (0.073) |
| <i>Consumption</i> |  |  |  |  |  |
| Number of days 2–6-year-olds ate eggs | 2.4 | 2.67 | 0.705* (0.437) | 0.774* (0.428) |
| Number of days 2–6-year-olds ate vegetables | 1.26 | 1.67 | 1.383* (0.437) | 1.148* (0.488) |

<i>Source: Attanasio and others (2003).</i>
<sup>*</sup>Significant at the 5 percent level.
<i>Note: Numbers in parentheses are standard errors.</i>
In Colombia’s FA the proportion of children under age 6 enrolled in growth monitoring rose 37 percentage points. The incidence of acute diarrhea in children under age 6 was reduced by 10 percentage points in urban areas, but there was no significant change in rural areas. The study applied various measures of malnutrition to children under age 6 and detected no impact on global or acute malnutrition in any of the program areas. It did find a positive impact on weight-for-height and weight-for-age in rural areas though not in urban areas (Attanasio and others 2003). Nicaragua’s RPS program generated similar improvements. Before RPS was implemented, some 60 percent of children under age 3 participated in nutrition monitoring. After several months of program operation more than 90 percent of children in RPS areas participated in nutrition monitoring compared with 67 percent in control areas. Rates of timely immunization among children 12–23 months old rose by 18 percentage points in the treatment group compared with the control group (IFPRI 2002b).

Conditional cash transfer programs have also resulted in higher consumption levels. In Mexico after just over a year of program operation the average consumption level was 13 percentage points higher, and the value of food consumption for the median beneficiary household was 11 percent higher in Progresa households than in non-Progresa households. Higher expenditures on fruits, vegetables, and animal products accounted for much of the increase in household consumption. Median caloric intake per person in Progresa households increased by 7.8 percentage points (Hoddinott and others 2000). Dietary intake also improved in FA households in Colombia. In Nicaragua consumption levels remained unchanged in RPS areas despite worsened economic conditions related to low coffee prices and a drought. By contrast, consumption declined sharply in control households (IFPRI 2002b). The net program impact translates into a 19 percent increase in per capita consumption and suggests that conditional cash transfer programs may help poor people protect consumption in times of crisis.

The evaluation of Progresa revealed that conditional cash transfer investments can be delivered cost-effectively. The administrative costs of delivering cash transfers to poor households appear to be small (Mex$8.9 of every Mex$100 allocated to the program) relative to the costs of previous Mexican programs and targeted programs in other countries (Coady 2000). The largest cost components are those associated with household targeting (nearly 30 percent), followed by those associated with conditioning the receipt of transfers (26 percent). The evaluation also found that the cost of generating an extra year of schooling using subsidies is around Mex$10,000 in secondary school and Mex$55,000 in primary school, compared with Mex$168,000 for extensive expansion by building additional secondary schools and thus reducing travel distances.
Impacts on Program Expansion and Design

These findings of encouraging human development impacts have been used to revise programs and influence policy. But the evaluations reveal little about which element of the intervention (the transfer or the conditionality) is responsible for the observed changes or whether the relatively short-term changes will be translated into long-run impacts on human capital formation and poverty. They also provide no comparative evidence on whether alternative interventions would have achieved comparable results.

The impact evaluations have triggered some program modifications, guided program expansion, allowed the programs to survive changes in political administrations, and generated interest in replicating the programs internationally. The positive impacts of Mexico’s Progresa helped prompt its expansion from rural to urban areas, and the program has continued with few alterations despite a change in government. Likewise, the measured achievements of FA in Colombia contributed to the program’s continuation and expansion despite a change in government. The evaluation findings for Nicaragua’s RPS showing that the program had met most of its targets and exceeded many of them triggered plans for program expansion. The demonstrated utility of the conditional cash transfer evaluations also increased political support for other impact evaluations. In Mexico a congressional mandate calls for the evaluation of all social programs, whereas in Colombia the national performance monitoring system is expanding to include impact evaluations of the country’s principal social programs.

The evaluation results have also contributed to the ongoing debate on the design of conditional cash transfer programs and their potential role in broader reform of social protection systems. One issue under discussion is whether conditional cash transfer programs should take on income-generating activities. Although this may be a necessary condition for the sustainability of human capital investment in future generations, whether conditional cash transfer programs should take this on themselves or whether separate income-generation programs are preferable is unclear. In both Mexico and Nicaragua there has been a tendency to expand conditional cash transfer programs to include training and other income generation activities. Both programs are planning impact evaluations to help inform the debate. Evaluation results of conditional cash transfer programs and national education-oriented cash transfer programs in Brazil have contributed to a reform that will consolidate an array of cash transfer programs and triple the average monthly benefit per family. The new program is expected to reach 11.4 million families by 2006, about a quarter of Brazil’s population, making this the world’s largest conditional cash transfer program.
Upcoming Evaluations: Expected New Insights

New conditional cash transfer programs have recently begun in Jamaica, Turkey, and urban areas of Mexico. This second generation of programs is being implemented under considerably different circumstances than the first. They have benefited from the experience of the first generation, making the logistical aspects less daunting. Evidence of program impacts from the first generation has reduced uncertainty about program results and thus the need for small pilots or phased implementation. Finally, the socioeconomic and political circumstances are particularly pressing in some cases, so implementation plans incorporate nationwide expansion almost immediately. Both the PATH program in Jamaica and the ssf in Turkey have had short pilots, mainly to test program processes, followed rapidly by nationwide expansion.

Consequently, new methodologies are being tested. Program pilots include only a process evaluation, reserving impact evaluations for the full-scale program. Because experimental evaluation designs are more challenging when used to evaluate a nationwide program, the second generation of conditional cash transfer programs relies on quasi-experimental designs.

The evaluation of Oportunidades, the follow-on to Progresa, takes advantage of the proxy-means test used for beneficiary selection to construct a comparison group from households that applied to the program but were not selected because they fell above the cutoff point. Presumably, households immediately above the cutoff point are similar on average to program beneficiaries and can serve as a comparison group. A second comparison group will be drawn from eligible households in nonintervention areas, selected through propensity score matching techniques.

The evaluation of Turkey’s ssf anticipates applying a quasi-experimental design using panel data with a baseline and two follow-up measures, as well as a qualitative study. Data from the first follow-up survey—to be conducted about one year after the program begins—will be used to assess poverty targeting, short-term welfare impacts, changes in utilization of health and education services, and stakeholder perspectives. A more comprehensive impact evaluation is contemplated for two years after program implementation, using the last round of panel data.

Because of the reliance on quasi-experimental designs, second-generation evaluations are politically less sensitive and less demanding to implement. However, the results are likely to be less robust and straightforward than those generated by carefully planned experimental designs. In addition, given the rapid expansion of these programs to national scale, there is less control over the timing of the implementation schedule and a greater need for flexibility in evaluation plans. Potential contamination of the comparison group is another problem. The use of households just above the cutoff point for constructing a comparison group risks contamination of the sample from premature incorporation of comparison group households into the program should the cutoff point change.
These second-generation evaluations will address many of the same core questions about program impacts on school attendance, health care utilization, and consumption and so will help confirm the cross-program robustness of earlier results. Together with continuing evaluations in Colombia, Honduras, and Nicaragua, these evaluations will also analyze new questions prompted by program objectives in each country and by a desire to increase the global body of knowledge about conditional care transfer programs.

In Nicaragua the evaluation will assess the sustainability of behavioral changes by measuring program impacts once cash transfers are phased out and only supply-side interventions remain. In Honduras the evaluation will focus on the relative importance of supply and demand factors in increasing human capital as well as program impacts on maternal and child mortality rates. In Colombia, implementation of the conditional cash transfer program as one of three emergency safety net programs will allow for a comparison of the relative effectiveness of conditional cash transfer, workfare, and training programs in achieving particular outcomes. In Mexico the evaluation will examine the results of a new educational savings program for Oportunidades students.

Conclusions and Recommendations for the Future

In contrast to many development programs, the recent expansion of conditional cash transfer programs is based on fairly solid evidence of program impact. Evaluation results from the first generation of these programs in Colombia, Mexico, and Nicaragua show them to be an effective means for promoting human capital accumulation among poor households. In particular, there is clear evidence of program success in increasing school enrollment rates, improving preventive health care, and raising household consumption. These evaluation results have provided policymakers with rare empirical evidence on program efficiency and effectiveness that has informed administrative reforms, prompted the expansion of programs geographically and to new population groups, and contributed to their continuation despite changes in political regimes.

The next generation of evaluations is building on this body of knowledge of conditional cash transfer programs by providing evidence on the medium-term impact of programs, the value of new elements, and the impact of new conditional cash transfer programs in Honduras, Jamaica, Turkey, and urban areas of Mexico. These evaluations will confirm or challenge earlier findings, shed light on questions of sustainability and medium-term impacts, and provide policymakers with a better understanding of the impacts of alternative combinations of program inputs and different regional circumstances. These results will be useful in understanding the capacity of conditional cash transfer programs to meet the new demands placed on them and ensure that these demands do not interfere with achievement of the program’s primary objectives.
But even when evaluations of the new generation of conditional cash transfer programs become available, many fundamental questions will remain unanswered—about the effectiveness, including long-term welfare impacts; synergies between program components; tradeoffs between transfer size and number of beneficiaries; and balance between the short-term transfer objectives and the long-term human development objectives. There is also a need to assess the effectiveness of these programs both as a permanent institution for addressing chronic poverty and as a temporary instrument for addressing vulnerability to shocks, and to explore ways to strengthen the links with suppliers of health and education services to improve access and quality. These long-term questions can be answered only through further evaluation.

Improvements in evaluation instruments are also needed. Econometric modeling is being used to simulate the anticipated impacts of program design alternatives, such as transfer size and eligibility criteria. Although not a substitute for impact evaluations, these tools can be very useful, particularly for program design. There is also a need to go beyond impact evaluations of individual programs to improve results-based monitoring and evaluation systems of related programs, as a foundation for effective policy management. Finally, there is a need for impact evaluations to explore the development effectiveness of alternative programs and policies, particularly concerning long-term welfare impacts.

The benefits of program evaluations go far beyond country boundaries and constitute a global public good. The experience of conditional cash transfer programs to date shows the critical role of evaluations in shedding light on success and failure in the fight against poverty. The evaluations are also contributing to the spread of conditional cash transfer programs, which are being replicated around the world.

Even so, it should not be assumed from positive evaluation results from a handful of countries that similar successes can be achieved in other countries in different contexts, especially in areas facing supply constraints in health and education or where the capacity to administer a conditional cash transfer program is limited. Nor do the positive results from one program imply that the program subject to the evaluation is necessarily the best approach to achieving a particular outcome. Ideally, program evaluations would compare alternative interventions for achieving a similar objective to determine the most effective and efficient approach. What evaluations of the impact of conditional cash transfer programs reveal so far is the importance of good program and evaluation design in informing policy decisions and providing evidence for achieving progress in the fight against poverty.

Notes

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1. In March 2002, Progresa changed its name to Oportunidades and changed some of its objectives and operational features.

2. A review of World Bank projects from 1998 to 2000 analyzing the quality of impact evaluation plans incorporated into the project appraisal process found that only 10 percent of projects had adequate plans for a rigorous impact evaluation, though the percentage of projects that included them had doubled over these years (World Bank 2001b).

3. See Kim and others (1999) for a review of Pakistan’s primary school female fellowship program; Ravallion and Wodon (2000) for an assessment of Bangladesh’s Food for Education program; Kandkher and others (2003) for an evaluation of the Bangladesh Female Stipend program; Yap and others (2001) for a discussion of Brazil’s PETI program aimed at reducing child labor; and World Bank (2001a) for a review of Brazil’s Bolsa Escola education stipend program.

4. This section draws on Rawlings (2004). For a more in-depth description of conditional cash transfer programs, see Ilahi and others (2000), Legovini and Regalia (2001), and Morley and Coady (2003).

5. Nicaragua initially stipulated that families would lose their grant if malnourished children did not gain adequate weight, but this requirement was dropped after the first year.

6. For example, to increase its coverage of rural areas, Mexico’s Progresa expanded in phases from August 1997 to early 2000. Nicaragua’s RPS started with a two-year pilot phase in two departments (Madriz and Matagalpa), whereas in Honduras implementation of PRAF was limited to a subset of municipalities because of funding stringencies.

7. Nicaragua’s RPS has completed follow-up measurements after one year and two years of program implementation and plans to conduct a third once demand incentives are eliminated and only the supply intervention remains. Mexico’s Progresa collects six rounds of panel data in rural areas every six months. Evaluators of Honduras’s PRAF planned to follow up after one and two years of program implementation. Colombia’s FA will have baseline data available for about half of the treatment sample (table 4).

8. Although not strictly part of the evaluation, censuses were conducted in the evaluation areas in some countries. In Mexico, a census collected data to determine household eligibility. In Honduras and Nicaragua, censuses generated a beneficiary registry and a household list from which to draw a representative sample in treatment and control areas and provided information for simulating inclusion and exclusion errors resulting from a proxy-means test targeting mechanism.

9. As Skoufias (2001) discusses, the use of the Progresa eligibility variable for program evaluation allows the evaluators to estimate the “intention to treat” effect. To the extent that not all eligible households actually receive program benefits, the intention to treat effect underestimates the program mean effect on actual program beneficiaries.

10. For a comprehensive discussion of the education impacts see Schultz (2000a, b, c), Behrman and others (2000), and IFPRI (2002b).

References


Reassessing Conditional Cash Transfer Programs

Jishnu Das, Quy-Toan Do, and Berk Özler

During the past decade, the use of conditional cash transfer programs to increase investment in human capital has generated considerable excitement in both research and policy forums. This article surveys the existing literature, which suggests that most conditional cash transfer programs are used for essentially one of two purposes: restoring efficiency when externalities exist or improving equity by targeting resources to poor households. The programs often meet their stated objectives, but in some instances there is tension between the efficiency and equity objectives. The overall impact of a program depends on the gains and losses associated with each objective.

The use of conditional cash transfer programs as a means of combating poverty has increased dramatically in the past decade. Programs such as Progresa (now called Oportunidades) in Mexico, Bolsa Escola (now called Bolsa Familia) in Brazil, and the Red de Proteccion Social in Nicaragua aim to balance the goals of current and future poverty reduction by providing cash to finance immediate consumption and fostering investment in human capital. Several evaluations show that these programs are technically feasible in that the main stated goals of the programs are actually met in practice and are politically acceptable in that successive governments are willing to continue and even expand program coverage. These results have been a source of encouragement for researchers and policymakers in the development community.

Some studies suggest, however, that households would behave very differently if given an equivalent amount of cash with no strings attached: Households would consume less of the conditioned-on good and more of other commodities. In western Kenya, for instance, the incidence of malaria decreased when households were given insecticide-treated bednets (Nahlen and others 2003). But when households were asked what they would do if given an equivalent amount of cash, their priorities were different. They would have spent the cash on food and clothing—bednets
were a distant priority (Alaii and others 2000). Also in western Kenya, a deworming program led to a large increase in school attendance. But surprisingly, even after a year of the program, a small increase in the price of the pills from its initial level of zero resulted in an 80 percent decline in their use (Miguel and Kremer 2003, 2004). The evidence is not limited to Sub-Saharan Africa. For the Bolsa Escola program in Brazil, giving cash conditional on school attendance was critical and successful in increasing school participation; cash given unconditionally would not have had a significant impact (Bourguignon and others 2002; Cardoso and Souza 2003).

In all these cases, the conditions induced households to behave differently than they would have had they been given unconditional cash. In fact, the advocates of conditional cash transfer programs point to the ability of the programs to influence behavior as a measure of their success. But how the programs work depends on how households respond. An economic perspective can provide useful information on the efficacy of conditional cash transfer programs by analyzing the impacts on household and individual behavior in relation to program aims. In addition, this perspective can help identify the underlying rationale for inducing behavioral changes, that is, under what circumstances policymakers would like individuals to behave differently from the market-induced outcome.

Toward this aim, this article reviews the theoretical and empirical literature on conditional cash transfer programs, which suggests that most programs are used for essentially two purposes (table 1). When an individual’s actions do not match societal preferences, conditional cash transfers provide incentives for individuals to alter their behavior. This induced change increases the combined welfare of all individuals. Thus, a mother who makes schooling decisions for her child may not take into account the long-term benefits of education. In this case, giving cash to parents only if they send their children to school reconciles the (possibly) divergent interests of parents and children.

Conditional cash transfer programs have also been used as screening mechanisms for targeting resources to poor households. Specifically, when governments are unable to directly observe individual characteristics, conditional cash transfers can induce self-selection so that members of the targeted group participate in the program and others opt out. A classic example is workfare. When cash is given only to people who work on a specific task, say, road building, the rich usually opt out and the poor participate.

These two purposes do not form an exhaustive list. Although economists have developed tools to analyze and understand behavioral responses for these two cases, a third justification is that human beings often violate the economist’s concept of rationality. As Basu (2003) points out, people are frequently impatient, willing to sacrifice too much to make good things happen too soon, not good at understanding complicated concepts such as compound interest rates, and often lacking in self-control. In addition, they may be less than fully informed. In all these cases, conditional
Table 1. Selected Evaluations of Conditional Cash Transfer Programs

<table>
<thead>
<tr>
<th>Study</th>
<th>Program</th>
<th>Main findings</th>
<th>Issues covered</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alaii and others (2003)</td>
<td>The western Kenya insecticide-treated bednet trial (ITN)</td>
<td>Perceived private benefits from insecticide-treated bednet use is low. Positive externalities imply that insecticide-treated bednets had an effect on the spatial distribution of malaria vectors within 600 m of the control villages and on child mortality, moderate anemia, high-density parasitemia, and hemoglobin levels within 300 m of the control villages.</td>
<td>Implementation, physical externalities</td>
</tr>
<tr>
<td>Alderman and Lindert (1998)</td>
<td>Food subsidies (Tunisia)</td>
<td>Self-targeting through choice of commodity is found to be effective at improving targeting efficiency. The effect is not as great as mechanisms employed elsewhere, such as means-tested food stamps in Jamaica and geographically targeted food supplementation in Peru.</td>
<td>Targeting, redistribution, political economy of aid</td>
</tr>
<tr>
<td>Behrman and Hoddinott (2001)</td>
<td>Progresa (Mexico)</td>
<td>Nutritional supplements and other child health interventions have a positive impact on child growth and probability of being stunted.</td>
<td>Household bargaining, fungibility</td>
</tr>
<tr>
<td>Bourguignon and others (2002)</td>
<td>Bolsa Escola (Brazil)</td>
<td>Ex ante evaluation of the program shows increases in school enrollment, with larger effects for poor households, but no effect on current poverty levels. Unconditional cash transfers would have no impact on child labor and school enrollment rates.</td>
<td>Implementation, targeting, redistribution</td>
</tr>
<tr>
<td>Cardoso and Souza (2003)</td>
<td>Bolsa Escola (Brazil)</td>
<td>Program has no impact on child labor but positive impact on enrollment.</td>
<td>Targeting, fungibility, efficiency</td>
</tr>
<tr>
<td>Galasso and Ravallion (2003)</td>
<td>Plan Jefes y Jefas (Argentina)</td>
<td>Program is well targeted, with significant impact on poverty reduction. Forgone incomes equal roughly one-third of the cash transfer provided by the plan.</td>
<td>Targeting, redistribution, equity-efficiency tradeoff</td>
</tr>
<tr>
<td>Galasso and Ravallion (forthcoming)</td>
<td>Food for Education (Bangladesh)</td>
<td>Program is mildly propoor.</td>
<td>Targeting, efficiency</td>
</tr>
<tr>
<td>Jacoby (1997)</td>
<td>Nutribun and Milk Program (Jamaica)</td>
<td>Poorest households receive the largest benefits. Benefits per beneficiary child are less than 50% of program cost, suggesting considerable deadweight loss.</td>
<td>Targeting, redistribution, efficiency</td>
</tr>
</tbody>
</table>

(Continued)
cash transfers can increase welfare in the society, either by protecting people from
their own irrationalities or by providing incentives for them to gather more information (if forced to send a child to school, parents will find out more about the value of education).
Most of the empirical literature focuses on the efficiency rationale arising from mismatched interests and the equity rationale. The findings are generally positive, in that conditional cash transfer programs often meet their stated efficiency or equity objectives. When used to induce greater investment in human capital, they do lead to increases in schooling and greater use of health resources. Similarly, when used to target resources to the poor, they do ensure that the poor receive more than the rich. However, there is sometimes tension between the efficiency and equity objectives. For instance, conditional cash transfer programs may lead to greater school participation, but this may be accompanied by larger transfers to the rich.

This tradeoff is not new to policymakers. Several conditional cash transfer programs were implemented with efficiency in mind and with an explicit attempt to ensure that the rich did not receive more than the poor by constructing eligibility criteria that dictated who could receive the cash transfers. The means-tested eligibility criteria ranged from sophisticated measures, such as household income (Bolsa Familia in Brazil), to less demanding correlates of poverty, such as land ownership or employment (Food for Education in Bangladesh). Any such means testing requires additional expenditures and the careful collection of household data. As the popularity of these programs grows and the emphasis shifts to quick results on goals set by donors, governments may be less willing to invest in such expensive efforts. The tradeoffs then become starkly apparent. The overall impact of the program will depend on the gains and losses associated with each.

The economic analysis of the efficiency and the equity objectives are different, and this article is structured accordingly. It first presents the textbook case of a conditional cash transfer, which shows that in the standard economic framework unconditional cash is better than conditional cash. Consequently, whether a conditional cash transfer program is effective depends on how well it addresses market failures arising from mismatched preferences and how well it targets resources to a particular group. The article discusses these issues in turn, with an emphasis on the problems that programs have faced in meeting their stated objectives. It then examines the overall costs and benefits of conditional cash transfer programs, looking at the combined effects of conditionality on efficiency and equity.

Conditional Cash Transfers: The Textbook Example and Rationales

This article defines any program requiring a specified course of action to receive a benefit (which may be in cash or in-kind) as a conditional cash transfer. This definition includes cash transfers based on human capital investments (such as schooling and health), but it is broad enough to encompass other programs, such as workfare (cash contingent on working in a program) and consumption transfers (in-kind transfers), among others.
Though different in ultimate form, workfare and in-kind transfers are conceptually identical to conditional cash transfers. Workfare is an income transfer conditional on taking the occupation proposed by the program. Similarly, in-kind transfers are cash transfers conditional on the purchase and consumption of the relevant commodity. Not surprisingly, the economics of these three types of transfers is similar, and the empirical insights gained from the analysis of one are relevant to the others.

Figure 1 shows a conditional cash transfer program from the point of view of the household in a standard economics framework. The household can consume two goods, $X$ (say, education) and $Y$. The maximum amount that the household can consume prior to the scheme is given by the budget constraint $AB$. That is, if a household spends all its income on $X$, it can consume up to the amount $B$; similarly, if it spends all its income on $Y$, the maximum it can consume is $A$. After the program’s implementation, the budget constraint is given by $AEDC$. Under this new budget constraint, if the household consumes at least $X_0$, it receives an additional income, $ED$. However, if the household consumes less than $X_0$, it does not receive an

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**Figure 1.** Households and Conditional Cash Transfer Programs

![Graph showing households and conditional cash transfer programs](image-url)
income transfer and remains on its pretransfer budget constraint, \( AE \). \( X_0 \) represents
the condition—to receive the extra income, the household must consume at least
this amount of the good.

The indifference curves for three types of households are shown as type I (dotted),
type II (dashed), and type III (solid). Their behavior is very different. Type I does not
participate in the program and remains in the same place on its budget constraint,
\( AE \), consuming less than the required amount, \( X_0 \). Type II moves from its budget
constraint, \( AE \), where it consumes less than \( X_0 \), to consume \( X_0 \) when it participates
in the program. Finally, type III consumes more than \( X_0 \) before the program is intro-
duced and continues to do so after.

In this example, conditional cash transfers are worse than distributing an equivalent
amount of unconditional cash. If households were given cash without the condition
at \( X_0 \), the budget constraint would be given by the line CD extended upward to meet
the \( y \) axis. For type I and type II households the conditional cash transfers is strictly
worse than an equivalent amount given in cash—these households move to a
higher indifference curve when given unconditional cash. For type III households
the conditional cash transfer is equivalent to an unconditional cash grant.

The logic inherent in a conditional cash transfer program drives the intuition
behind these results. By imposing conditions, the policymaker provides incentives
for households to take an action that they would not ordinarily take on their own
(otherwise why have the condition in the first place?). But if that action is different
from what households would have chosen on their own, their resulting welfare
must be lower—by distorting the consumption choices of households conditional
cash transfer programs reduce welfare compared with unconditional cash grants.
The only households for which conditional cash transfers and unconditional grants
produce equivalent outcomes are the ones that do not experience any distortion in
their consumption decisions, represented by the type III households that were
already consuming \( X_0 \).

Implicit in this example is the absence of a market failure, meaning that decisions
made by individual households are also optimal for society as a whole. Suppose
instead that from a societal point of view, type II households underinvest in educa-
tion: when making educational decisions, they do not take into account the effect of
their own education on others around them. In this case, a cash transfer conditional
on education could lead to a larger increase in social welfare than an unconditional
cash grant, even though the welfare of the individual household could be reduced.
This is the first rationale for conditional cash transfer programs: they can be used to
improve efficiency when there are underlying market failures in the economy.

A second rationale for conditional cash transfer programs relates to equity and
redistribution. Suppose policymakers are interested in providing cash only to a cer-
tain segment of the population, such as poor households. The problems that they
face are that poor households are hard to identify and that budgets are small. One
solution is to screen beneficiaries so that poor households participate (and receive the cash) and rich ones opt out. Conditions can achieve this exact result. The idea behind successful screening is that the benefits of the program (the cash received) minus the costs of the condition (the utility loss from being forced to consume a certain amount) will be different for poor households than for the rest of the population. In particular, if the benefits of the cash received exceed the cost of the condition for poor households only, then they will self-select into the program. In figure 1, type II and type III households self-select into the program and type I households opt out. Thus the second rationale for conditional cash transfer programs is their use as screening devices to target participants when individual characteristics cannot be easily observed.

These two rationales are very different. In the first case, the objective of policymakers is explicitly to increase consumption of the conditioned-on good, whereas in the second case the condition matters only insofar as it determines who self-selects into the program.

Efficiency and Conditional Cash Transfers

The example in figure 1 shows that when societal and individual preferences are different, conditional cash transfers can help increase overall welfare. This leads to two important questions. First, when do externalities arise and what empirical evidence exists on these market failures, especially in low-income countries? Second, if these market failures are frequent, particularly in certain sectors, what are the problems that conditional cash transfer programs face in achieving their stated objectives?

Market Failures and the Use of Conditional Cash Transfers

Several examples from the recent literature are useful for examining when externalities arise. Although the studies reviewed here address different concerns, they share a common theme. In each one, an inefficiency arises because of an externality whereby the actions of one individual directly affect the welfare of others and because of the inability of individuals to contract out the externality by appropriately rewarding or punishing others for their actions. Together, these cause a divergence of societal preferences from individual decisions. More efficient outcomes could then be achieved through the use of conditional cash transfers.

Direct Externalities. Two types of externalities that have received attention in the recent literature are physical externalities and learning externalities. Physical externalities arise in several contexts. For instance, Miguel and Kremer (2003, 2004) study a program that provided free deworming treatment to rural primary school
children in Kenya. The deworming program resulted in larger positive health and school participation effects for children in the treatment group than for children in the control group (who received no treatment). Furthermore, the study points out that “there is existing only limited empirical evidence on deworming treatment externalities, but that which exists suggests that school-based deworming may create substantial externalities” (p. 162). These externalities are confirmed for the program: The program had positive effects for untreated students in treatment schools and students in neighboring schools as well. The researchers conclude that the externality could be more than 20 times as large as the cost of the program. Starting with the premise that individual households do not take into account the positive benefits for the whole community of their individual consumption of deworming pills, the overall consumption of deworming treatment is likely to be less than the socially optimum amount. Consequently, there is a clear role for policymakers to subsidize deworming treatment to restore efficiency.4

Learning externalities arise frequently in technology adoption scenarios. Once the attributes of a new technology are known to a community, there are significant benefits. Nevertheless, learning about a new technology often involves costly experimentation. Households that do not take into account the benefits that their early experimentation will have on the community’s stock of knowledge may be unwilling to invest time and effort, leading to a free-rider problem. These households will prefer to wait and see rather than experiment with the new technology. As in the previous example, individual household decisions lead to underinvestment in learning.

There is considerable evidence to suggest that learning externalities play an important role in adopting technology. For example, Foster and Rosenzweig (1995) find that farmers are more likely to adopt a new technology when their neighbors do but are less likely to make the first move, preferring to wait for their neighbors to experiment first.5

*Household Bargaining.* Market failures that can be remedied through conditional cash transfer programs also arise when decisions are made through a bargaining process within the household.6 For example, recent literature on child labor argues that the inefficiency of child labor and underinvestment in schooling arise due to a mismatch between parents’ preferences and children’s interests (Baland and Robinson 2000). If children could promise to pay their parents for their own education, education levels would be higher. But because education decisions for children are made by parents and because children cannot make such promises, parents favor positive short-run outcomes that benefit them relatively more (including increased income from their child’s labor) to long-term returns that accrue mostly to children.

In empirical studies Kochar (2000a) shows that there are significant differences between the parents’ and the child’s rate of return to children’s education and that parents’ returns overwhelmingly determine the amount of education a child receives.
Moreover, education levels in rural households respond strongly to labor market returns in urban areas (Kochar 2000b). Kochar’s work suggests that rural families underinvest in education because they are unable to guarantee that their children will continue to reside in the village once they are educated: The inability of children to commit to such action leads to the underprovision of education. In this case, conditional cash transfer programs that provide cash only if the child attends school, such as Bolsa Familia, increase efficiency by addressing the difference between parental preferences and children’s interests.7

Using Conditional Cash Transfers to Address Market Failures

Suppose that a policymaker is convinced of the importance of externalities and therefore that conditional cash transfers are an appropriate solution. Several problems may still arise in the program’s ability to meet the stated objective of, say, increasing human capital investments. Two important issues are participation and fungibility.

Low Participation. The first requirement for a conditional cash transfer program to achieve its objective is that individuals participate. (This holds true for both programs used to boost efficiency and programs used to target resources.) Thus, programs with stipends for school attendance should lead to higher enrollment and attendance rates. Similarly, in workfare designed to target poor households, individuals should be willing to undertake the work required to receive the benefits.

With low participation, a program is ineffective. Conceptually, though, the participation problem is related to the size of the transfer and the cost of the condition. For example, suppose policymakers want to get children into school and start out by offering parents $5 to send their children to school. If participation is low, the amount of cash offered can be increased until the point at which all parents enroll their children. Thus, if participation is low, either the amount of cash offered is too small or the cost of the condition is too large.8

The importance of the participation problem is reflected in the fact that the large evaluation literature emphasizes program uptake. Bolsa Familia in Brazil is a conditional cash transfer program with the objective of increasing school enrollment and reducing child labor for children ages 6–15. The program provides transfers to children from households below a certain income level who attend school at least 85 percent of the time. Bourguignon and others (2002) estimate the ex ante impact of the program and find large effects on enrollment, with a decrease in the share of children not enrolled (from 5.8 percent to 3.9 percent) and stronger effects among the poor (from 9.1 percent to 4.7 percent). These results are partially confirmed in an ex post evaluation of the same program (Cardoso and Souza 2003).

In Bangladesh, two important programs to increase school enrollment, Food for Education and the Female Stipend Program, both resulted in increases in enrollment.
As with Bolsa Familia, both programs conditioned benefits, food in the first and cash in the second, on school attendance. The effects were large and significant. Ravallion and Wodon (1999) show that under Food for Education an extra 100 kg of rice increases the probability of school enrollment by more than 15 percent for both boys and girls. For the Female Stipend Program, Khandker and other (2003) estimate that an additional year of participation in the program leads to a 8 percent increase in girls’ enrollment.

The Fungibility Problem. The second problem that conditional cash transfer programs face relates to the fungibility of the conditioned-on commodity. Conditions work successfully when individuals are forced to take actions that they would not ordinarily take on their own. But this logic automatically creates an incentive for individuals to try to offset the welfare loss imposed by the condition. The ability of individuals to offset any distortion from the program is the problem of fungibility, which usually arises when there is a close substitute for the conditioned-on commodity (this could be the commodity itself). In this case, recipients can offset the distortion imposed by the condition by decreasing consumption of the substitute, so that overall amounts are unchanged by the program, even when the condition is satisfied.9

As an example of fungibility, consider a program that seeks to improve learning outcomes by giving parents cash conditional on the purchase of educational materials (such as school supplies). Such a program may report high uptake (that is, all parents buy school supplies with the cash), but it will have minimal effects on learning outcomes if households cut back on their own funding for school supplies. If parents were already buying school supplies, the program would make school supplies free without increasing the total amount of school supplies available to the child. Following up on the previous discussion, the behavior of type III households in figure 1 shows how fungibility can be a problem. Because this group was already consuming the necessary amount of the good, the increased consumption of the commodity after the program is introduced is no greater than it would have been under an unconditional income grant. For type III households, the commodity is perfectly fungible. In less extreme cases, substitution may take the form of decreasing consumption of a close substitute (eating less spinach when given iron tablets), changing patterns of consumption (eating less at home when given food in school), or even reallocating investments within the household (sending fewer boys to schools when girls are given a stipend).

How can policymakers evaluate whether fungibility is a problem? The literature discusses two approaches. One approach is to directly estimate the program’s impact on close substitutes of the conditioned-on good. Thus in the case of educational materials, the impact of providing supplies in school on the household purchase of supplies would be estimated. The second approach is to examine an outcome that
depends on both the conditioned-on good and the substitutes. Learning outcomes depend on supplies provided both in school and at home. If, as a consequence of providing supplies in school, there is an increase in learning outcomes, there must have been an increase in the overall amount of educational materials available to the child.

Both methods have advantages and drawbacks. The first can directly estimate the extent of substitution (the decreased provision of educational materials at home), whereas the second can only indicate whether substitution was one for one. But the first method requires clear knowledge of what the substitutes actually are. The substitutes for educational materials are straightforward, but they may not be for other goods. A mother may substitute for better healthcare in the clinic in a number of ways (washing hands, boiling water, and the like), which may be difficult to list, let alone measure. By concentrating on outcomes, such as child height, that depend on healthcare both in the clinic and at home, the reduced-form impact of the program can be estimated.

Jacoby (2002) is one of the few sources of a direct estimate of substitution. Studying a school feeding program in the Philippines, Jacoby assumes that households smooth consumption, so that daily caloric consumption is the same on school and nonschool days. By comparing the caloric consumption of children on school and nonschool days, Jacoby finds that households do not substitute away calories from the program. On school days children’s caloric intake is 80 percent higher than on other days—the difference accounted for by the caloric value of the feeding program.

Behrman and Hoddinott’s (2001) evaluation of Progresa in Mexico and Stifel and Alderman’s (2003) analysis of Vaso de Leche in Peru use the second approach. Under Progresa, eligible mothers had to visit clinics regularly and participate in growth monitoring to receive nutritional supplements and cash transfers. Behrman and Hoddinott find that Progresa’s preschool child nutrition programs had substantial positive impacts on growth and reduced the probability of stunting for children ages 1–3. Behrman and Hoddinott postulate that the program addresses externalities arising from household bargaining: Progresa directs its resources to mothers based in part on prior evidence from other populations that suggest better child health and nutrition result when women rather than men receive resources.

Under Vaso de Leche, the largest social transfer program in Peru, select households receive milk or milk products. Although the program is well targeted to the poor, Stifel and Alderman (2003) find that it fails to achieve its main nutritional objective of improving child height. They argue that the reason for the lack of impact is that half the in-kind transfers are inframarginal (that is, to type III households), meaning that the provision of milk did not have an impact beyond the income transfers it represented. Stifel and Alderman conclude that cash transfers may be a better means of increasing consumption of milk if they are less costly and more efficiently distributed than food transfers. But as van de Walle (1998)
suggests, in-kind transfers might be more politically feasible than cash transfers. Whether political gains outweigh implementation cost in this instance remains an open question.

A natural question is whether fungibility is an issue in all conditional cash transfer programs or only in particular types, such as nutritional interventions. For instance, if a program leads to higher school enrollment, is there an associated fungibility problem? Although there is limited empirical evidence, the answer seems to be yes. In particular, these programs may reduce the amount of education that is given to children at home or affect the composition of education across children. Khandker and others (2003) examine whether providing stipends only for girls in the Female Stipend Program in Bangladesh had an effect on boys’ schooling—because the program reduces the price of girls’ education compared with that of boys’ education. The evidence is mixed. Using household data, the authors find that the effect on boys’ schooling is statistically insignificant. But using school enrollment data they find a 29 percent decline in boys’ enrollment in program schools.

Equity and Conditional Cash Transfers

The use of conditional cash transfers as a screening mechanism has a long history in workfare and food distribution programs. Recent reviews by Ravallion (2003) and van de Walle (1998) document the ways these programs have been evaluated as well as their ability to lift households out of poverty. These reviews show that success is closely tied to whether the condition simultaneously satisfied two criteria: that the targeted group was willing to participate in the program and that the group not targeted found the condition too expensive compared with the program’s rewards.

Means Testing

Because of the difficulty of meeting these criteria, policymakers adopt targeting programs that completely avoid conditions and directly target cash based on observable household characteristics. This method, known as means testing, collects more data on the identity of individuals and thus avoids the need to devise screening mechanisms. Innovative programs with different eligibility criteria have emerged during the past decade. In some programs (such as Progresa in Mexico or Bolsa Familia in Brazil) means tests are based on detailed data collection and identification of household wealth (Bolsa Familia, for instance, provides cash only to households with per capita monthly incomes less than 90 reais). In cases where data collection on household assets may be too expensive or politically infeasible, other proxy indicators of wealth have been used.
Proxy indicators are used in the Food for Education program in Bangladesh and the Vaso de Leche program in Peru. Food for Education provided food to children who attended school at least 85 percent of the time. An attempt was also made to ensure that only poor households received the transfer. In the absence of data on household income or assets, the eligibility criteria were based on easily observable correlates of poverty—whether the household head is a widow, the amount of land owned by the household, and the employment status of the household head. These criteria ensured that poor households received greater transfers—but not by much. Galasso and Ravallion (forthcoming) show that the difference in receipts between rich and poor households was marginal.

In the Vaso de Leche program, a committee was in charge of observing the relevant characteristics of households to determine eligibility. Despite the potential ambiguities of such a strategy, the program did result in marginally greater transfers to poor households. Using measures of participation and expenditure levels, Stifel and Alderman (2003) show that the Vaso de Leche program resulted in the allocation of more than 60 percent of the value of all transfers to poor households.

When means testing is feasible, the problem of targeting resources to a particular subset of households is reduced. The extent to which this becomes less of a problem depends on the sophistication of the data—in cases such as Bolsa Familia, where the means test is based on detailed household information, targeting is more efficient than in, say, the Food for Education program.

**Screening**

Where means tests are logistically or politically infeasible, conditional cash transfers can be used as screening mechanisms so that only members of the targeted group self-select into the program. One example of particular interest is targeting to the poor. In such cases, the requirements for self-selection can be expressed in terms of the income effect of the conditioned-on good, so that targeting is successful if the conditioned-on good is inferior. Rich households (that consume less of the good to start with) will then find the costs of meeting the condition higher than poor households do and will disproportionately opt out of the program.

In figure 1, the condition $X_0$ induces exactly this sort of screening. Type II and type III households (less wealthy) participate in the program, whereas type I households (more wealthy) voluntarily opt out. The good is inferior because consumption decreases with wealth. Examples of conditional cash transfers as screening mechanisms include well-documented workfare programs (van de Walle 1998; Galasso and Ravallion 2003), rationing of food or health subsidies by queuing (Alderman 1987), and packaging of commodities that are unappealing to the rich (Alderman and
Nevertheless, the requirements for conditional cash transfers as screening mechanisms may be hard to satisfy.

Argentina’s Plan Jefes y Jefas was designed to increase employment by providing a subsidy only for individuals who were trying to find employment. Household heads who were initially unemployed could apply for the program, which provided cash if they found employment and undertook 20 hours of activities, such as basic community work, training activities, school attendance, or employment in a private company with a wage subsidy for 6 months (Galasso and Ravallion 2003). Why was the condition of counterpart activities imposed?

In Argentina it is hard to verify whether an individual is unemployed, because over half of all employment is in the informal sector. The 20-hour requirement acts as a screening device: Individuals who are already employed are unwilling to sacrifice their work (or leisure) time for the benefits of the program, whereas those who are currently unemployed face a lower opportunity cost for participating. Galasso and Ravallion (2003) find that the condition was only partially successful at ensuring that the already employed did not participate—and even less successful at increasing employment. Only 3 percent of beneficiaries had formal employment to start with, so the program did ensure that those with formal employment did not participate, but 19 percent of beneficiaries were already employed in the informal sector to start with.

At the same time, increases in the employment rate were much less than expected due to the program’s inability to distinguish between individuals who were inactive (out of the labor force) and those who were unemployed (actively searching for a job but unable to find one). In fact, 38 percent of eventual recipients were inactive, leading Galasso and Ravallion (2003) to conclude that a large share of the participants were women who would not otherwise have been in the labor force. The condition thus failed on two counts: It was not expensive enough to ensure that individuals employed in the informal sector opted out, nor was it expensive enough compared with the opportunity cost of losing 20 hours of housework. In contrast to the previous evaluations, where higher program uptake is always better, this example illustrates the idea that program uptake can also be too high compared with its stated objectives.

Conditional Cash Transfer Programs and the Efficiency-Equity Debate

The preceding discussion suggests that conditional cash transfer programs have an impact on both efficiency and equity, regardless of their initial objective. In some cases the program can have a positive impact on both. Particularly when the condition is imposed on an inferior good, the provision of cash could lead to an increase in,
say, human capital while simultaneously ensuring that the rich select out of the program. In this case, both efficiency and equity would be enhanced. One example of such multiple positive impacts is conditioning cash on attendance in public schools in places where the rich use private schooling (a fairly common practice in South Asia). In this case the transfer would result in greater school enrollments. Further, since the rich do not use public schools, the benefits of the program would be enjoyed (mostly) by the poor—both efficiency and equity objectives would be met.

In other instances, though, there can be tension between efficiency and equity. Using conditional cash transfer programs to increase human capital investment could have an adverse impact on equity: similarly, the distortions required for self-selection to work could impose an efficiency cost. Policy-makers tend to be aware of the contradictory roles that conditional cash transfers are sometimes required to fulfill. Eligibility criteria and means tests are introduced in programs such as Bolsa Familia and Progresa specifically to minimize adverse redistributional impacts. In other cases, the net impact of the tradeoff is less clear.

Efficient but Not Equitable?

Consider, for instance, the Female Stipend Program in Bangladesh, which was implemented to increase secondary school enrollment of girls. Under this program the government gives stipends to girls who attend at least 85 percent of classes. What differentiates this program from Food for Education is the complete lack of means testing. There are no eligibility criteria besides the attendance requirement.

Khandker and others (2003) evaluate the program and find that girls’ enrollment rates in secondary education increase substantially. If these rates were inefficiently low to begin with, the program served to decrease the gap between societal preferences and individual actions. But in Bangladesh secondary public schooling for girls is a normal good, with rich households more likely than poor households to enroll their children. For extremely poor households, the opportunity cost of 85 percent attendance in terms of labor lost likely exceeds the benefit of the stipend. Consequently, Khandker and colleagues find that the program has adverse distribitional impacts: The “currently untargeted stipend disproportionately affects the school enrollments of girls from households with larger land wealth. Targeting towards the land poor may reduce the overall enrollment gains of the program while equalizing enrollment effects across landholding classes” (p. 25).

Note that the adverse redistributive impact is not a sufficient reason to discontinue the program. One approach to address this problem, as suggested by the authors, is to introduce means tests in addition to increasing the amount of the cash transfer. Indeed, when the condition is imposed on a normal good, means testing becomes a screening tool that is a complement to the conditional cash transfer program, alleviating the adverse redistributive impact of the condition.
Equitable but Not Efficient?

Using conditional cash transfers as a screening device for targeting also comes at a cost, which arises from the distortion in consumption and investment choices induced by the condition. An example is food subsidies targeted to the poor, where the quality of the food is low. Because low-quality food is an inferior good (as people’s incomes increase, the quality of the food they eat increases), this would presumably lead to greater food subsidies for the poor than for the rich. The Nutribun and Milk program in Jamaica is one such example. Under this program, children in school received a nutritious baked product every day. Jacoby (1997) finds that the program achieved its aims in terms of targeting—lower uptake among the rich implied that the benefits from the program as a share of total consumption fell from 4.8 percent for the poorest decile to 1.2 percent for the richest decile.

The effective targeting did not necessarily make for a successful program, however. Jacoby (1997) argues that the deadweight loss of the program was large. By using the notion of equivalent variation—the smallest increment in cash that would have achieved the same objective—Jacoby shows that the benefit per respondent was J$152, compared with the program cost of J$400. Thus more than half of the costs of the program were estimated deadweight losses due to the implied conditional nature of the transfer. Whether the benefits of targeting exceeded this loss is an open question.

Although Argentina’s Plan Jefes y Jefas resulted in greater benefits to the poor, the efficiency cost in terms of forgone incomes from the condition (the 20-hour work requirement) is unclear. Galasso and Ravallion (2003) estimate the average opportunity cost to be around 50 pesos—a third of the amount of cash transferred by the program itself. A possible next step is to trace out the losses in targeting effectiveness from decreasing the work condition against the gains from increasing efficiency.

In this case means testing is a substitute for conditional cash transfer programs. The costs of implementing means tests should then be weighed against the efficiency losses necessary to obtain self-selection of participants. Arguably, the optimal redistribution tool is a combination of the two.

Beyond Efficiency: Political Economy

The two rationales discussed in this article, efficiency and equity, form the basis for several conditional cash transfer programs, but they are by no means an exhaustive list. A third rationale relates to the incentives of the institutions that provide the cash for the program, specifically whether they are country governments or donor organizations.

Governments that are primarily concerned with targeting resources to poor households can ill afford to ignore the fact that the public may favor work requirements
or school attendance in exchange for public assistance rather than cash payments with no strings attached (van de Walle 1998). On the other hand, some leakage of program benefits to nonpoor households in primarily efficiency-increasing programs may be more appealing to middle-class voters, increasing the total budget available for such programs (Gelbach and Pritchett 2002). These political economy considerations play a vital role in the design of conditional cash transfer programs.

Conditional cash transfer programs also serve the direct purpose of imposing donor preferences when tastes over allocations differ (Culyer 1991; Tobin 1970). Even without different preferences, an agency view of policy-making can provide a rationale for why conditional cash transfers are desirable and increasingly popular. Because aid agencies are accountable to donors and ultimately taxpayers, transparent and observable measures of performance need to be implemented to ensure proper monitoring. Conditional cash transfer programs are thus suitable tools for aid agencies to move toward the announced objectives, although the exclusive focus on measurable dimensions of performance may come at the expense of more comprehensive and efficient development policies, whose impacts are difficult to assess.\(^\text{12}\)

To illustrate this, consider the Millennium Development Goals for education. Target 3 is to “ensure that, by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary training.”\(^\text{13}\) This objective includes enrollment of all school-age children and universal primary completion. But only the enrollment rate is officially included in the Millennium Development Goal indicators—not the primary completion rate. The first is a clearly identifiable indicator, but the second is fuzzy, with differing definitions and scales across countries. This problem also arises due to an externality—in making schooling decisions, it is unlikely that parents take into account the idea that enrollment might induce additional aid flows from donor countries. Imposing conditions then yields considerable political gains in the production of verifiable and clearly observable outcomes.

The stress on verifiability may come at a cost. The first round of conditional cash transfer programs, including Bolsa Familia and Food for Education, were careful in considering the tradeoffs between equity and efficiency. Later programs, such as the Female Stipend Program in Bangladesh, were not. Because the Millennium Development Goals for education do not require minimizing the adverse distributional impacts of educational policies, the temptation to implement programs that perform better only on the verifiable dimension may be high. This may lead to conditional cash transfer programs that enhance efficiency but worsen equity or that yield immediate gains but impose long-run costs.

This article has compared conditional cash transfers with their unconditional counterparts. Even though the previously discussed rationales may justify the use of conditional cash transfer programs, these programs need to be compared with other policy interventions. For example, Case and Deaton (1999) find that pupil-teacher ratios in South Africa have significant positive impacts on enrollment, educational
Textbook case: Unconditional transfers are better than conditional transfers

Why have conditional cash transfers?

Efficiency rationale:
Improve efficiency by reconciling societal preferences with individual decisions

Redistributive rationale:
Target transfers to the poor when there is asymmetric information (the identity of the poor is unknown)

Why might conditional cash transfers not have the desired impact?

Design and implementation:
Very low participation in the program because the benefit of the transfer is less than the cost of the condition. This is due either to poor design (too little cash in the design of the program) or poor implementation (corruption, leakage)

Fungibility:
Individuals undermine the rationale of the program by changing their consumption or investment patterns for a close substitute of the conditioned-on good. Examples include decreasing the consumption of oranges when given vitamin C tablets and cutting back on food intake at home when given food in school

Tradeoffs:
Is there a tradeoff between the efficiency and the redistributive rationale? That is, do conditional schemes that seek to restore efficiency have adverse redistributive impacts? Alternatively, do redistributive schemes have adverse efficiency impacts?

Cost-benefit analysis:
How big are the externalities that the conditional cash transfer addressed in the first place?
achievement, and test scores for numeracy. Should South Africa then use mainstream conditional cash transfer programs to improve educational outcomes? Although the programs would arguably have immediate political impacts, the alternative of reducing class sizes could have long-lasting positive effects that are harder to measure in the short run. These two alternative policy instruments illustrate the tradeoff between short-term and long-term impacts. These results also suggest a quantity-quality tradeoff: Increasing enrollment (through the implementation of conditional cash transfer programs, for example) without supplying additional teachers will be harmful to educational achievements and test scores in the long run. Though an emphasis on demand-side policies (such as conditional cash transfers) brings political gains and ultimately future aid flows, it comes at the expense of other policy instruments. These tradeoffs require careful consideration.

Conclusion

This article examines a wide range of conditional cash transfer programs and tries to understand and interpret various evaluations in the literature. Figure 2 synthesizes the discussion. Two important ideas emerge:

- Conditional cash transfer programs can be justified on efficiency grounds to alleviate market failures or on equity grounds to redistribute resources. The choice of the good on which the condition is imposed is crucial. In particular, the extent to which the good is fungible makes a significant difference, depending on the underlying motivation for the program.
- The equity and efficiency rationales, while theoretically distinct, exist simultaneously in several conditional cash transfer programs. The extent to which the efficiency and equity objectives result in a tradeoff can be addressed through the condition requirement, the amount of the cash conditionally transferred, and the refinement and enforcement of eligibility criteria.

A review of the literature suggests that researchers have typically addressed these issues separately. However, policymakers need to incorporate several factors in a comprehensive framework to design optimal programs.

Notes

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1. A review of the literature reveals little empirical support for these rationales. This is partly because empirical investigations of departures from rationality, especially with respect to investments in human capital, are hard to implement. In laboratory experiments, behavioral economists have systematically demonstrated that individuals behave very differently from what would be predicted by economic models of a rational human being. Taking these experiments to the field has proved much more difficult and remains an area for future research. Similarly, systematic evidence for informational problems remains sparse. In fact, limited evidence in the case of the deworming experiment suggests that information was not the constraining factor—even after substantial experience with the pills and their effects had been built up, households were unwilling to pay even a tiny sum for their purchase, suggesting that subsidies may have to be continued indefinitely to sustain high take-up of the conditioned-on good (Miguel and Kremer 2003).

2. Another rationale for conditional cash transfer programs is the presence of credit constraints or credit rationing. The theoretical justification in this case is still unclear. Credit-rationed individuals face a tighter static or dynamic budget constraint. As this discussion suggests, credit rationing is optimally alleviated with unconditional income transfers rather than conditional cash transfers because conditions introduce an unnecessary distortion.

3. The review presented here is not exhaustive. Some cases of market failures have been omitted. In particular, moral hazard arguments, whereby aid is believed to induce lower effort on the part of recipients, are an important omission (see Ravallion 2003). Targeting aid to poor people might create an incentive for them to remain poor, leading to excess consumption instead of investment. In this case, conditional cash transfers would encourage investment instead of immediate consumption. Another omitted argument (with little empirical evidence) is the case of bounded rationality. If individuals are unable to undertake appropriate investment decisions due to bounded rationality or behavioral problems such as hyperbolic discounting, conditional cash transfers would act as substitutes for individual decisionmaking, with the government behaving essentially as a parental agency (Basu 2003 discusses this issue as it regards child labor). A third rationale relates to the political economy of aid and is addressed in the last section of this article.

4. The authors also state that “it is difficult to draw conclusions about optimal deworming subsidies in the absence of a fully-fledged behavioral and epidemiological model” (p. 207). Although positive externalities were large on average, it is hard to identify marginal externalities because they depend on how many others are being treated.

5. Just as individuals can learn from their neighbors, their preferences can also be influenced by the behavior of others in their community. For example, believing that social norms drive gender discrimination may offer the government scope to positively discriminate in favor of women to induce a communitywide change in beliefs or preferences. Bangladesh’s Female Stipend Program can be seen as a conditional cash transfer program with such an objective (see Khandker and others 2003).

6. For discussions of how bargaining in households affects decisions, see Bourguignon and Chiappori (1994) and Basu (1999).

7. Bargaining models also suggest that conditional cash transfers are not the only way to address underinvestment in children. An alternative may be to provide direct income support to members of the household whose preferences are more aligned with the interests of their children. For instance, it is often assumed that mothers allocate resources more consistently with their children’s needs than fathers do. This assumption has been empirically tested by Lundberg and others (1997), who examine the change in composition of household expenditures after a policy change in the U.K. child benefit program in the late 1970s. The policy change replaced the universal child benefit, which had consisted primarily of a reduction in the amount of taxes the father had to pay, with a cash payment to the mother. This represented a substantial redistribution of income from husbands to wives (about 8 percent of average male earnings in the United Kingdom by 1980). The authors find a substantial increase in spending on children (and women), relative to men, and conclude that “children do better when their mothers control a larger fraction of family resources” (p. 479).
8. The small size of the transfer can arise either by design (if policymakers are unsure of the right size) or due to poor governance. Few studies have evaluated the governance argument, but studies by Ablo and Reinikka (2000), Reinikka and Svensson (2003), and Das and others (2003) suggest that large differences can exist between executed program budgets and the amount that actually reaches beneficiaries.

9. When households can access a secondhand market where the conditioned-on good is sold, fungibility is a serious issue. Making sure that this problem does not occur is a prerequisite for the conditionality to make any sense. This article assumes, however, that the problem is well known and dealt with to the best of the policymakers’ ability.

10. As discussed earlier, self-selection implies that the net benefit of the program is positive for the targeted group and negative for others. This “single-crossing condition” requirement is detailed in Spence (1973) and Rothschild and Stiglitz (1976).

11. The consumption of an inferior good decreases with wealth. By contrast, the consumption of a normal good increases with wealth.

12. For a formal treatment of this problem, see Holmström and Milgrom (1991).


References


Infrastructure Privatization and Regulation: Promises and Perils

Ioannis N. Kessides

Infrastructure is crucial for generating growth, alleviating poverty, and increasing international competitiveness. For much of the twentieth century and in most countries, the network utilities that delivered infrastructure services—such as electricity, natural gas, telecommunications, railroads, and water supply—were vertically and horizontally integrated state monopolies. But this approach often resulted in extremely weak services, especially in developing and transition economies and especially for poor people. Common problems included low productivity, high costs, bad quality, insufficient revenue, and shortfalls in investment. Over the past two decades many countries have implemented far-reaching institutional reforms—restructuring, privatizing, and establishing new approaches to regulation. This article identifies the challenges involved in this massive policy redirection within the historical, economic, and institutional context of developing and transition economies. It also reviews the outcomes of these policy changes, including their distributional consequences—especially for poor households and other disadvantaged groups. Drawing on a range of international experiences and empirical studies, it recommends directions for future reforms and research to improve infrastructure performance.

For much of the twentieth century and in most countries, network utilities—electricity, natural gas, railroads, water supply, telecommunications—were vertically and horizontally integrated state monopolies under ministerial control. Infrastructure’s enormous economic importance, a desire to protect the public interest in industries supplying essential services, and concerns about private monopoly power led governments to conclude that control over these services could not be entrusted to the motivations and penalties of free markets. Governments also believed that given the large investments involved, public resources were required to increase infrastructure coverage. Accordingly, a single public entity usually controlled every
aspect of a utility—facilities, operations, and administration—and determined which services to provide to essentially captive customers.

The past decade has seen a dramatic change in views about how network utilities should be owned, organized, and regulated (Newbery 2000a). The new model calls for increased reliance on private infrastructure to improve efficiency, promote innovation, and enhance services. But after a series of financial crises, corporate scandals, and stock market collapses; the California electricity crisis; and blackouts around the world, clear guidance is needed on what to do about infrastructure—as well as reassurance about (or qualifications of) earlier, more confident messages. What are the promises and perils of the new model? What principles should guide future efforts to restructure, regulate, and expand infrastructure?

State-Owned Monopolies Often Exhibited Poor Performance…

The performance of state-owned infrastructure monopolies varied considerably. In many developing and transition economies, these monopolies suffered from low labor productivity, deteriorating fixed facilities and equipment, poor service quality, chronic revenue shortages and inadequate investment, and serious problems of theft and nonpayment. Public utilities pursued multiple poorly defined and conflicting objectives, and their managers were often appointed on the basis of political loyalty, not competence. Large portions of the population lacked services in developing areas—though not in transition economies, many of which achieved fairly high service coverage. Prices varied considerably across sectors. They were typically high in telecommunications, whereas underpricing was common in electricity and certain segments of transportation and was especially serious in water.

Infrastructure performance was generally much better in advanced industrial countries. Still, in the electricity sector, high construction costs (caused by delays and changing environmental and safety requirements) and expensive, politically driven programs led to problems. In telecommunications, state-owned entities were forced to adopt inefficient pricing structures and were used to generate revenue for the government and support excessive employment—delaying investment and modernization and undermining efficient operations and universal service. In almost all countries railroads failed to earn adequate revenue, had difficulties adjusting to changes in markets, experienced declining market shares for passenger and freight traffic, and exhibited poor productivity relative to technological opportunities.

In developing and transition economies, a main cause of deteriorating infrastructure performance was underinvestment, due largely to the failure of governments to prescribe cost-reflective tariffs, especially during periods of high inflation. Under state ownership prices fell to levels that could not cover the investment needed to meet growing demand. This problem was deferred as long as governments were able
to provide subsidies and international financial institutions were willing to bail them out. But years of underfunding and failure to address systemic problems led to a significant infrastructure deficit, generating substantial welfare losses. In many countries inefficient public utilities were draining state budgets, diverting resources from other social priorities such as health and education, undermining the banking sector, and impeding the development of the private sector.

By the early 1990s developing economies were incurring annual losses of about $180 billion due to mispricing and technical inefficiency in water, railroads, roads, and electricity—nearly as much as annual investments in these sectors (World Bank 1994). Infrastructure inefficiencies constrained domestic economic growth, impaired international competitiveness, and discouraged foreign investment.

The external debt burden forced many countries to undertake fiscal adjustments, which hit public infrastructure investment particularly hard. In Latin America, for example, between 1980–84 and 1995–98 public infrastructure investment as a share of gross domestic product declined from 3.1 to 0.2 percent in Argentina, from 5.0 to 2.0 percent in Bolivia, from 3.7 to 0.6 percent in Brazil, from 3.1 to 1.7 percent in Chile, from 2.5 to 0.4 percent in Mexico, and from 2.0 to 0.6 percent in Peru (Calderon and others 2003). With growing budget deficits and the resulting inability of governments to maintain and expand infrastructure services, most developing and transition economies simply could not sustain state-owned utilities. Debt and fiscal crises, combined with extraordinarily weak performance, stimulated strong pressures for infrastructure reform (Estache 2000).

...Leading to a New Model for Financing and Providing Infrastructure

Recognizing the performance problems of state-owned, monolithic network utilities—and driven by technological progress, advances in economic thinking, and mounting evidence on the high costs of government intervention—nearly all industrial and many developing and transition economies have implemented far-reaching infrastructure reforms. These institutional reforms have entailed combinations of competitive restructuring, privatization, and establishment of regulatory mechanisms (Joskow 2003).

Private entities, with their financial, technical, and managerial resources, are seen as having a comparative advantage in the rapidly changing markets and technologies of network utilities. Thus rebalancing the roles of the private and public sectors has been an integral part of every infrastructure reform program. A key attraction of privatization is that it places the realignment of prices with underlying costs at the center of the reform agenda. Investors demand cost-reflective tariffs before they will commit their capital and expand networks.
The public utility paradigm was premised on the assumption that each infrastructure network industry constitutes a natural monopoly in which a single firm could achieve lower costs and better service than a number of competing suppliers. This view was enshrined in the monolithic organization structure, in which a single entity controlled all facilities and operating and administrative functions and was obligated to serve on demand within its territory in accordance with its public utility responsibilities.

In recent years, however, there has been increasing recognition that network utilities are not monolithic natural monopolies but rather encompass several distinct activities with entirely different economic characteristics—in fact, entailing a mixture of competition and monopoly elements in supply. Technological progress, which has proven to be a potent enemy of natural monopolies (Klein 1996), coupled with mounting evidence of the high costs of regulatory intervention, has undermined the public utility concept. It is now widely accepted that the monopoly utility model no longer applies—and never should have been applied—to all network industries. Moreover, if these industries are properly reorganized and restructured, substantial competition can emerge for many activities.

Thus most analysts now believe that network utilities should be unbundled, horizontally and vertically, with potentially competitive segments under separate ownership from natural monopoly components (Guasch and Blitzer 1993):

- In electricity, transmission and distribution should be unbundled from generation.
- In telecommunications, the local loop should be split from long-distance, mobile, and value-added services.
- In natural gas, high-pressure transmission and local distribution should be separated from production, supply, and storage.
- In railroads, tracks, signals, and other fixed facilities should be separated from train operations and maintenance.

In this view, any interference with market mechanisms in competitive or contestable segments should be minimized, and privatization and competitive entry should be fully exploited. Only segments where natural monopoly conditions persist and are unavoidable (generally because they involve substantial sunk capital) should be regulated and perhaps operated by the public sector.

Some analysts have even questioned the need for regulating, at least extensively, the natural monopoly segments of infrastructure by drawing the distinction between competition in the market and competition for the market. Proponents of this view have resurrected an old, yet powerful idea: Where a large number of firms enter noncollusive bids to become the supplier of a natural monopoly activity, the resulting price need not reflect exploitive market power (Demsetz 1968). Thus, even when competition in the market is not feasible, some of its benefits could be achieved by introducing competition for the market. Under this approach, time-bound monopoly
franchises are awarded by competitive bidding and periodically rebid. This provides incentives for firms to perform well to retain the franchise (Klein and Roger 1994).

The New Model Poses Risks, But Also Holds Considerable Promise

The global wave of infrastructure privatization and liberalization in the 1990s was a significant departure from the previous economic consensus. Not only was the need for state ownership of network utilities questioned. So, too, were longstanding notions about natural monopolies, vertical integration, and related regulatory interventions.

Yet today’s industrial countries relied on the old, vertically integrated model to develop good infrastructure and have only recently pursued unbundling. So why should developing and transition economies take this new approach? This question is especially relevant given that the new model poses significant risks if not accompanied by appropriate structural and regulatory safeguards.

The simple answer is that the new model, implemented correctly, offers benefits too big to ignore—for governments, operators, and consumers. There is enough experience to guide correct implementation. Still, it should not be pursued in a specific country or industry without carefully assessing its institutional and structural prerequisites and without explicit attention to the concerns it raises.

Unbundling Is No Panacea…

The basic tradeoff between vertically integrated and unbundled forms of organization is between potential losses of coordination and scope economies and possible increases in transaction costs, relative to potential efficiency gains from competition and increased transparency (Gómez-Ibáñez 1999). But in many cases these tradeoffs have not been carefully assessed. Instead, simplistic approaches to competition and restructuring have ignored economies of vertical integration and challenges of replicating vertical relationships with market mechanisms—leading to many problems in utility restructuring and privatization.

The primary virtue of unbundling is that it promotes competition, ensuring that firms provide their services at efficient prices. Unbundling is likely to be particularly attractive when market size and density permit many operators to function, providing both active and potential competition (Kessides and Willig 1995).

But in many developing areas, markets are too small for substantial competition to emerge. In electricity, for example, where even a 1,000 megawatt system is small for introducing competition, 60 developing economies have peak system loads below 150 megawatts, another 30 between 150 and 500 megawatts, and possibly
another 20 between 501 and 1,000 megawatts (Bacon 1994). Thus the benefits of competition that come from unbundling will be limited in many developing and transition economies.

Moreover, the provision of many innovative, market-responsive utility services requires investments in physical infrastructure. In unbundled systems it may be difficult for providers of competitive final services to coordinate with monopoly owners of infrastructure networks—especially if their incentives for investments are not in harmony. Thus another factor required for unbundling is a mature, well-developed set of network facilities, so that there is little need for new investments where incentive problems are more likely. Yet circumstances in most developing and transition economies are exactly the opposite. These countries require substantial new infrastructure investments, either because their networks are underdeveloped or because they have not been adequately maintained or modernized (or both).

...And Requires Careful Regulation

Unbundling can reduce the need for regulation by isolating monopoly segments, containing their damaging consequences, and replacing regulation with competition. But even though fewer activities require regulatory oversight in unbundled systems, performance becomes much more sensitive to regulatory efficacy. In fact, some inefficient practices (such as internal cross-subsidies) that were tolerable in a monopoly environment can cause much more damage in the new setting.

To obtain the benefits of unbundling, policies need to harmonize regulatory oversight of monopoly activities with increasing competition (Baumol and Willig 1987). Otherwise, the interface between bottleneck components (those essential to the provision of final services and too costly to duplicate) and competitive segments can create such severe distortions that the mixed system is the worst of both worlds. Thus unbundling makes the regulatory task more complex, which is likely to be a problem in environments with weak institutional capacity—as in most developing and transition economies.

Privatization Has Been Oversold and Misunderstood

Just a few years ago, privatization was heralded as an elixir that would rejuvenate lethargic, wasteful infrastructure industries and revitalize stagnating economies. But today privatization is viewed differently—and often critically. Skepticism and outright hostility toward privatization are not limited to a few radical protesters. Opinion polls in several developing and transition economies, especially in Latin America, reveal growing public dissatisfaction with privatization. Disapproval ratings were higher in 2002 than in 2000, and higher in 2000 than in 1998. In 2002
almost 90 percent of Argentines and 80 percent of Chileans surveyed disapproved of privatization (figure 1).²

Public discontent with privatization has been fueled by price increases, job reductions, and the high profits of firms that have improved operating performance—as well as by economic and political crises that had little to do with government policy toward infrastructure. But these adjustments have been necessary for privatization to achieve its public interest objectives. As noted, inadequate revenue was a key problem of the old model. The choice was either higher prices or more taxation. Higher prices generally fall on those benefiting from services—in many developing areas, the middle and upper classes—whereas higher taxes are likely to occur partly through inflation taxes that hurt poor people and other vulnerable groups (although it should be noted that the inflation tax could be prevented by properly designed macro policy). Thus a sensible, and arguably less regressive, response is to realign prices with costs. That privatization makes such adjustments mandatory—to attract investors—is one of its main appeals.

As for layoffs, state utilities in most developing and transition economies had high excess employment before reforms. Efficiency and competitiveness require eliminating

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**Figure 1.** Public Opinion on Privatization in Latin America, 1998–2002

<table>
<thead>
<tr>
<th>Country</th>
<th>1988</th>
<th>2000</th>
<th>2002</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argentina</td>
<td>95%</td>
<td>70%</td>
<td>75%</td>
</tr>
<tr>
<td>Bolivia</td>
<td>65%</td>
<td>80%</td>
<td>90%</td>
</tr>
<tr>
<td>Brazil</td>
<td>80%</td>
<td>90%</td>
<td>95%</td>
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<tr>
<td>Chile</td>
<td>90%</td>
<td>95%</td>
<td>98%</td>
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<tr>
<td>Mexico</td>
<td>70%</td>
<td>85%</td>
<td>90%</td>
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<tr>
<td>Nicaragua</td>
<td>80%</td>
<td>90%</td>
<td>95%</td>
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<tr>
<td>Peru</td>
<td>75%</td>
<td>80%</td>
<td>85%</td>
</tr>
</tbody>
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*Data source: Latinobarometro (2002).*
redundant jobs. Efficiency is especially important in infrastructure because such services are critical for manufacturing, transportation, and commerce—and so essential to boosting economic activity.

Moreover, the market’s primary incentive is the prospect of profits for firms that succeed. So, although preventing monopoly profits is a legitimate goal for public policy, it should not lead to artificial limits on postprivatization profits or restrict such profits based on mechanistic formulas or populist demands. Otherwise, incentives for investment, innovation, efficiency, and productive growth—badly needed in the network utilities of most developing and transition economies—would be undermined or eliminated (Baumol 1993).

Finally, the role of institutions cannot be overlooked. Most developing and transition economies have suffered from much worse infrastructure performance than have advanced industrial economies. But the structure of ownership has not been the key explanatory variable for the differences in performance. After all, for many years state ownership prevailed in most advanced economies. The true explanation lies in the broader institutional context.

It can be argued that the performance of state-owned network industries reflects a variety of country characteristics both observable and unobservable, including institutional capacity, business culture, nature of organized interest groups, patterns of social conflict, and codes of conduct. It would be unrealistic to expect such features to change on a time scale comparable to that of privatization transactions—or to think that less attractive attributes would disappear overnight.

Strong institutions took a long time to develop even in advanced industrial economies. It is difficult to create such institutions overnight in societies that do not have the constitutional, political, and legal traditions required to support them. Thus achieving the public interest objectives of privatization will take longer than the time that has elapsed since such reforms were introduced in most developing and transition economies. Even East Asia’s “miracle” economies took several decades of concerted efforts to produce notable results (Baumol 1993).

Reforms Require Proper Sequencing…

It is often hard or costly to change structural choices—such as the degree of vertical and horizontal integration—after privatization. Moreover, the absence of regulation that clarifies the rules of the game for potential investors may cause them to demand risk premiums that could later appear unreasonably high and generate public backlash against privatization, possibly leading to policy reversals. So, restructuring to introduce competition should occur before privatization, and regulation should be in place to assure potential buyers of both competitive and monopoly elements. But it is also important to keep options open—and to delay irreversible changes until their
benefits outweigh their potential costs. State ownership may be undesirable, but at least it retains the option of well-designed future privatization.

...And Each Sector Must Choose among Imperfect Options

There is no universally appropriate model for restructuring network utilities. The fact that state ownership is flawed does not mean that privatization is appropriate for all infrastructure activities and all countries. Before state ownership is supplanted by another institutional setup, it is essential to assess the properties and requirements of the proposed alternative—taking into account the sector’s features (its underlying economic attributes and the technological conditions of its production) and the country’s economic, institutional, social, and political characteristics.

The telecommunications sector offers perhaps the most compelling case for privatization and liberalization in developing and transition economies. Prices are typically too high and investment and penetration too low. In many countries, the economic implications of efficient telecommunications are extensive but under-appreciated. Thus the benefits from relaxing restrictions on entry are potentially substantial. Issues of regulatory commitment to safeguard private investors are probably less important than issues of regulatory design to facilitate competitive entry and price reductions.

In many segments of the transportation sector—railways, ports, trucking, airlines, interurban busing—competition within and between modes is sufficient in most countries to justify substantial liberalization and privatization. But the case for privatizing transport network infrastructure is much less compelling than that for privatizing services operating on the network. Rail track, basic and access port infrastructure, and certain portions of airport facilities, where monopolies are unavoidable and substantial amounts of sunk capital are involved, must be regulated or even operated by the public sector.

In the United States, railroad liberalization worked splendidly because rail is competitive with roads for freight carried over long distances. In most other countries (except perhaps Argentina, Brazil, China, India, the Russian Federation, and parts of Africa), rail is uncompetitive for freight except for bulk items, many of which are in decline. In these countries “liberalization” is often code for restructuring, downsizing, and reorienting transportation toward roads.

In electricity, wholesale competition has worked well in industrial countries because of excess capacity, moderate demand growth, and the availability of natural gas (which enabled the entry of gas-fired plants at modest scale and relatively low cost). In contrast, electricity markets in many developing areas face capacity shortages, enormous excess demand, and periodic blackouts. Thus electricity restructuring and privatization are more problematic and dependent on administrative ability. California’s experience has shown that market liberalization under conditions of tight demand (reserve margins
below 10 percent) can lead to high and volatile prices that would be politically unac-
ceptable and would likely derail attempts at radical reform. Unbundling introduces
price risks between generators and suppliers that require contracts and hedging instru-
ments to guard against unanticipated events that dramatically affect spot prices. In
interconnected systems operating under a variety of jurisdictions, spare capacity is a
public good that may not be adequately supplied unless pricing policies are put in place
to ensure its adequate remuneration (Newbery 2001, 2002).

The scope for introducing competition is far more limited in the supply of water
than in other network utilities. Local networks of pipes and sewers remain quintes-
sential natural monopolies. Moreover, unbundling is not as attractive because
increased competition in supply will likely provide far fewer benefits than in other
network utilities—the costs of producing water (a potentially competitive activity)
are low relative to the value added at the transportation stage (where natural
monopoly prevails), though this may vary across countries. Greater opportunities
exist to introduce competition in sewage treatment. Overall, concessions and leases
will likely be the most effective way of increasing competition in this sector.4

What Effects Have Reforms Had?

Future efforts at privatization and regulatory reform in developing and transition
economies will be shaped by their economic and political features as well as by
assessments of the record so far—both in those countries and elsewhere. Assessments
of performance are complicated by the short period of experience with privatization,
restructuring, and regulatory reform in most developing and transition economies.
In addition, crucial economic variables are subject to severe measurement problems.
Because privatization, restructuring, and regulatory reform have generally occurred
simultaneously, it is almost impossible to identify their separate effects econometrically.

Leaving aside these measurement difficulties, empirical evaluations of privatization
and restructuring are largely favorable. Although experiences have varied considerably
across countries and industries, most infrastructure reforms have improved many
aspects of performance. Investment and service coverage have increased. Productivity
and cost-effectiveness have risen. Service quality has improved. Prices have become
more closely aligned with underlying costs. Services have become more responsive
to consumer and business needs and to opportunities for innovation.

Effects on Investment and Service Expansion

Between 1990 and 2001 more than $750 billion was invested in 2,500 private
infrastructure projects in developing and transition economies (Izaguirre 2002).
This investment varied enormously across regions, with nearly half going to Latin
America and the Caribbean (mainly through divestitures) and more than a quarter going to East Asia and the Pacific (mainly in greenfield projects). Meanwhile, Sub-Saharan Africa and the Middle East and North Africa each received just 3 percent of private investment—reflecting much weaker reforms. Investment also varied considerably by sector, with most going to telecommunications and power.

Investment peaked at around $130 billion in 1997 and by 2001 had fallen to about $60 billion. This sharp drop was due mainly to the deteriorating global market for private financing of infrastructure assets—reflecting financial crises, stock market collapses, and corporate scandals—though lack of economic reforms might also have played a role.

Reforms have expedited service expansion in a variety of sectors and countries. Telecommunications coverage has seen the largest jump, but significant increases have also occurred in electricity, transportation, and access to safe water (Harris 2003). The size of such changes depends enormously on the extent to which the market is liberalized and the effectiveness of regulation. For example, increased competition has been particularly powerful in boosting telecommunications coverage. Networks have expanded almost twice as quickly in Latin American countries that have allowed competition in telecommunications after privatization as in countries that simply converted to private monopolies. But even private monopolies have expanded faster than public ones (Wellenius 1997).

By relaxing the financial constraints facing state enterprises and establishing stable and fair regulation, electricity reforms have promoted investment and accelerated network expansion. In Argentina installed capacity grew from 13,267 megawatts in 1992 to 22,831 megawatts in 2002—an increase of nearly 5 percent a year. During the same period the route length of transmission lines increased from 16,958 kilometers to 22,140 kilometers (2.7 percent a year). Similarly, in Chile’s main system installed capacity jumped from 2,713 megawatts in 1982 to 6,737 megawatts in 2002 (4.4 percent a year), whereas the route length of transmission lines went from 4,310 to 8,555 kilometers (3.7 percent a year). The impressive expansion of generating capacity in Argentina and Chile was achieved by private operators while also keeping prices low (Fischer and others 2003; Pollitt 2003). Before reforms, service coverage in Peru increased slowly—from 44 percent in 1986 to just 48 percent in 1992. But in the five years after reforms were introduced, service expansion accelerated, and by 1997 coverage was more than 68 percent (Rudnick 1998).

**Effects on Operating Efficiency**

Privatization and deregulation have significantly improved physical performance, service quality, and other aspects of efficiency in many developing and transition economies. The most dramatic gains have been in telecommunications (due to
revolutionary technological changes and the sector’s substantial scope for competitive entry), where privatization and related reforms have lowered repair requests and raised call completion rates and the probability of receiving a dial tone.

Other infrastructure sectors have also made swift advances. Railroad privatization significantly shrank labor forces in almost every case, ranging from an 8 percent reduction in Côte d’Ivoire and Burkina Faso to 44 percent in Estonia, 66 percent in Mexico, and 92 percent in Argentina. These reductions have usually been due to programs to reduce labor redundancy rather than to service cuts (Thompson and others 2001; Thompson 2003). Rationalization of the labor force, especially when combined with traffic growth, has dramatically increased labor productivity. In many Latin American rail systems, output per employee (measured as the sum of ton-kilometers and passenger-kilometers) has doubled, tripled, or even quadrupled (Thompson and Budin 2001).

Reforms have had remarkable effects on the quality of electricity supply. In Chile the average time for emergency repair service declined from 5 hours in 1988 to 2 hours in 1994. In addition, power outages due to transmission failures have fallen steadily since privatization (Rudnick and Zolezzi 2001). Energy losses, including theft, have also shrunk, from 21 percent in 1986 to 9 percent in 1996 (Fischer and Serra 2000). Similarly, in Argentina privatized distribution companies have cut their losses substantially (Feller 2001). For example, Edenor’s losses fell from 26 percent of its distributed electricity in 1993 to just 10 percent in 2000 (Edenor 2001). In the greater Buenos Aires area the hours of supply lost per year dropped from 16.8 in 1994 to 5.0 in 2001 (CAISE 2002). Technical losses in transmission also fell, from 6 percent in 1992 to 4 percent in 2000.

Reforms have also led to significant improvements in the operating performance of ports. Privatization generated significant efficiency gains in the operations of Kelang Port Authority, Malaysia’s largest port (Peters 1995). Crane handling improved from 19.4 containers an hour in 1985 to 27.3 in 1987, bringing Kelang’s performance close to Singapore’s (Tull and Reveley 2001). The return on fixed assets grew at an average annual compound rate of just 1.9 percent in 1981–86 but jumped to 11.6 percent in 1986–90, a result of improvements in productivity and throughput, not higher prices. Workers also benefited from the gains in productivity: By 1990 they were paid 60 percent more an hour in real terms, put in 6 percent more hours, and produced 76 percent more than before privatization (Galal and others 1994).

Port reforms in Argentina also show the powerful effects of deregulation and competition. Before reforms, port operations were costly and inefficient because of restrictive labor practices, overregulation by multiple agencies with poorly defined responsibilities, and weak organization. As a result Argentine ports were losing market share to roads and to more efficient Chilean ports. Deregulation and privatization had dramatic effects on port investment and performance. In the port of Buenos Aires annual container traffic jumped from 300,000 TEUs (20-foot equivalent units)
in 1991 to more than 1 million in 1997, the number of cranes increased from 3 to 13, labor productivity almost quadrupled, and the average stay for full containers dropped from 2.5 to 1.3 days (Estache and Carbajo 1996). Privatization and deregulation have produced similar improvements in port performance in other countries (Gaviria 1998).

**Effects on Allocative Efficiency and Financial Performance**

Before reforms, the failure of many governments to adequately increase service rates, especially during periods of high inflation, effectively decapitalized their infrastructure systems. Thus one of the main attractions of infrastructure privatization is the expectation that it will make price reform a policy priority. The assumption is that private investors will be unwilling to invest in infrastructure unless governments agree to implement prices that reflect costs. Indeed, many countries are dismantling longstanding policies of underpricing and cross-subsidies.

Electricity reforms have better aligned prices with underlying costs to reflect resource scarcity, as efficiency requires. In many countries this has meant increasing prices that previously were too low (Joskow 2003). But in some countries prices have been falling because of the efficient exploitation of regional natural gas networks and new production technologies (mainly combined-cycle gas turbines). In Argentina the average monthly price per megawatt-hour in the wholesale electricity market fell from about $45 (with peaks of more than $70) in 1992 to about $15 in 2001. Similarly, in Chile the node price (including energy and capacity charges) of power delivered to Santiago fell from $30 per megawatt-hour in October 1982 to $23 per megawatt-hour in October 2002 (in October 2002 dollars; Fischer and others 2003; Pollitt 2003). Between 1986 and 1996 wholesale prices dropped 37 percent, and final prices fell 17 percent.

The low prices of electricity and high rates of investment in Argentina and Chile have been accompanied by strong financial performance by the companies involved. In Argentina, the financial performance of the largest state-owned company, Servicios Electricos del Gran Buenos Aires, was very poor before privatization. After, the average rate of return on equity in generation was 5.6 percent during 1994–99. The transmission company, Transener, earned a 5.1 percent rate of return on equity in 1998. Distribution companies Edenor and Edesur earned 8.3 percent and 7.2 percent pretax returns on net assets during 1994–2000. In Chile, Chiléctra’s average nominal rate of return on equity during 1996–98 was 32 percent. Endesa’s return on equity peaked at 16 percent in 1994 (Fischer and others 2003).

Postreform pricing in several developing and transition economies has provided considerable benefits to rail users. Among 17 privatized railroads (mostly in Latin America), 15 had lower freight tariffs in 1999 than when the concessions started (mostly in the mid-1990s). Rates dropped 8–54 percent in Latin America and 14 percent in Côte d’Ivoire. For the six countries involved, these tariff reductions
saved about $1 billion a year in transport costs (Thompson and others 2001). Moreover, these estimates understate the total savings because they do not reflect the competitive pressures that lower rail tariffs exerted on trucking and other competing transport modes.

But in some countries price reform has been slow, with infrastructure prices still far removed from their underlying costs. For example, in 2000 in most transition economies household electricity prices still covered less than 50 percent of long-run marginal costs and industrial prices less than 70 percent (Stern 2002).

**Effects on Distributional Equity**

To mitigate the public discontent associated with restructuring and privatization, more comprehensive assessments are needed of their welfare effects—moving beyond standard analyses of their impacts on firm profitability and industry performance to include their effects on workers and households at different income levels. Moreover, distinctions between low- and middle-income countries need to be made more carefully. In low-income countries nearly all rural and many poor urban residents lack access to basic infrastructure services. Thus the policy reforms that normally accompany restructuring and privatization—such as eliminating cross-subsidies and moving toward cost-reflective prices—mainly affect higher-income groups. But in middle-income countries—such as those in Latin America and especially transition economies—such reforms can hurt poor people because many of them (mainly in urban areas) have access to basic services. The solution is not to halt the needed reforms but to put in place safety nets and tariff rebalancing schemes that do not involve radical, across-the-board price increases.

Recent empirical work offers insights on the distributional effects of infrastructure reforms. Studies in Argentina, for example, have found that all income classes benefited from the efficiency, quality, and access improvements resulting from the utility privatizations that began in 1990. More efficient infrastructure services also affect most other economic activities and promote general economic growth—enhancing economic opportunities for poor people. When these general effects are taken into account, the poorest groups seem to benefit the most from the increased productivity and access brought about by privatization and related reforms (Benitez and others 2003).

Recent research analyzing the welfare effects of utility privatizations in four Latin American countries (Argentina, Bolivia, Mexico, and Nicaragua) found no clear pattern in price changes—in about half the cases, prices fell. But there were adverse distributional effects on the bottom half of the income distribution due to job cuts in the privatized utilities. Against these negative distributional effects of layoffs have to be offset the improvements in service quality, increased access for poor people, and the changed structure of public finances, which benefited poor people more than other income groups (McKenzie and Mookherjee 2003).
Given the importance of network utilities, removing pricing distortions is crucial to economic reform in developing and transition economies. Still, there are good reasons to avoid abrupt, across-the-board price changes, which can cause large, unnecessary adjustment costs for consumers and firms alike. Even optimal prices, if instituted extremely quickly and without sufficient notice, can lead to a difficult transition process that is far from optimal. Thus policymakers should plan from the outset for a smooth transition to efficient pricing levels and structures.

Developing Good Regulation Remains a Major Challenge

Among the most critical tasks for policymakers in developing and transition economies is designing and implementing stable, effective regulation for network utilities. In many advanced industrial economies the challenge has been reforming existing regulations and reducing unwarranted governmental intrusion. By contrast, in nearly every developing and transition economy the most pressing issue is designing regulatory mechanisms for privatized utilities from scratch.5

Regulation that provides a credible commitment to safeguarding the interests of both investors and customers—particularly when economic shocks create political pressure to shift the balance of power among competing interest groups—is crucial to attracting the long-term private capital needed to secure an adequate, reliable supply of infrastructure services. Successful reform requires regulation that clarifies property rights, allocates them sensibly, and ensures private investors that their sunk investments will not be subject to regulatory opportunism.

For regulation to promote welfare by facilitating investment, innovation, and allocatively efficient pricing, its institutional design and substantive content must be consistent with country circumstances—particularly the country’s size, institutional endowments (including checks and balances), technical expertise, auditing technologies, fiscal condition and tax system efficacy, and the economic characteristics of its industries (Laffont 2000). Thus it is inappropriate and often costly for developing and transition economies to uncritically replicate the regulatory frameworks of advanced industrial countries.

What Makes for Effective Regulation?

Regulatory procedures must be predictable, accountable, and transparent. Regulatory bodies should:

• Have competent, nonpolitical, professional staff—expert in economic, accounting, engineering, and legal principles and familiar with good regulatory practices.
• Operate within a statutory framework that fosters competition and market-like regulatory policies and practices.
• Be subject to substantive and procedural requirements that ensure integrity, independence, transparency, and accountability (Kahn 1996).

**Where Do Things Stand?**

On paper, developing and transition economies have made considerable progress in establishing the institutional requirements for effective, independent regulators. But in practice the record is mixed, with discouraging developments in many countries and sectors. Moreover, it is unclear how well these agencies will work in the future.

Political interference has undermined regulatory independence in many developing and transition economies. Governments, especially line ministries, have been reluctant to consign important regulatory functions to independent agencies. Many regulatory agencies report to sector ministries and are filled with government representatives. Before privatization the state controlled every aspect of the infrastructure sectors in developing and transition economies. Ownership, operational, policy, and regulatory functions were typically fused, even when exercised by different government agencies. Thus it is not surprising that line ministries would resist having their postreform role limited to policy oversight: assessing industry developments, reviewing the adequacy of policy in light of these developments, and enacting legislative changes.6

Thus around the world, lack of regulatory independence has been one of the clearest institutional shortcomings. Even some early Latin American reformers with regulation based on the U.S. model have failed to achieve independence. Power regulators have a fair degree of autonomy in El Salvador and Nicaragua and to a lesser extent in Ecuador and Honduras (IADB 1999). But in Chile and Colombia, the independence of power regulators is uncertain because their boards include government ministers and they rely on budget allocations made by ministry officials (Fischer and Galetovic 2000). Lack of independence allegedly led the executive secretary of Chile’s regulatory commission to resign in 1999. Political interference has also undermined the independence of electricity regulators in Guatemala and Peru (IADB 1999).

Argentina’s two power regulators, the National Electricity Regulatory Authority and the National Gas Regulatory Authority, are reasonably independent. But there have been concerns about the lack of transparency and predictability in some of their decisions and the absence of external scrutiny of their administrative practices (Estache 1997). Transparency problems also initially plagued the country’s water regulator. During its first few years, the telecommunications regulator lacked both independence and transparency. Mexico’s telecommunications regulator suffers from similar shortcomings (Noll 2001).
In Jamaica the multisector Office of Utilities Regulation, which became operational in 1997, has been handicapped by defective legislation. It can only offer advice, because line ministries retain control over decisionmaking (Stirton and Lodge 2001). Similarly, in Costa Rica government interference, especially in tariff adjustments, has weakened the independence and effectiveness of the multisector Regulatory Authority of Public Services (IADB 1999).

In Hungary the energy regulator’s independence is limited by a lack of autonomous revenue, fixed-term appointments for the board of directors, and well-defined criteria for appointing and dismissing directors. In addition, civil service salary caps make it difficult to attract qualified staff (Stern 1999). In telecommunications the head of the sector’s regulator reports to the minister of transport and communications (Rosston 2000).

The Czech Republic also lacks independent regulators for energy and telecommunications—not surprising given the government’s ambivalence toward specialized regulatory agencies in the early years of transition (Stern 1999). As a result, the Ministry of Finance has the final say in regulating gas and electricity prices, whereas the energy regulator is part of the Ministry of Industry and Trade (Newbery 2000c). Similarly, the primary regulator for telecommunications is part of the Ministry of Transport and Communications (Kessides and Ordover 2000).

Poland’s energy regulator, by contrast, meets most of the formal requirements for independence. Latvia’s multisector regulator enjoys financial independence from the state budget and has shown strong commitment to transparency and accountability (Vanags 2001). But its independence is compromised by the close affiliation between its board members and the political parties that nominate them.

In Romania telecommunications regulation lacks coherence, while gas regulation lacks any semblance of independence (Newbery 2000b; Noll 2000). The minister of industry and trade appoints the chair, vice chair, and three members of the gas regulator’s board of directors, ensuring ministerial control. In electricity, however, Romania has taken bold steps to create independent regulators, as has Bulgaria. Romania’s National Electricity and Heat Regulatory Authority is a U.K.-style independent entity, whereas Bulgaria’s State Commission for Energy Regulation incorporates, at least on paper, elements of U.S.-style independent commissions (Stern 2000).

A 1998 study of infrastructure regulation in six Asian developing countries (Bangladesh, India, Indonesia, Malaysia, Pakistan, and the Philippines) found significant weaknesses in coherence, independence, accountability, transparency, and predictability. On a scale from A (best practice) to E (highly unfavorable for private investment), only electricity regulation in the state of Orissa (India) ranked better than C in four of these areas. It was followed by telecommunications regulation in all of India, which did better than C in three areas. Elsewhere the results were dismal: Only one other sector ranked better than C in any area (the independence of
Pakistan’s electricity regulator). The rankings were similar across sectors in each country, suggesting the importance of country characteristics in regulatory design (Stern and Holder 1999).

Other Asian governments have also been reluctant to cede control to new independent regulators. For example, during the first phase of Sri Lanka’s telecommunications reforms (1991–96) the government insisted on keeping the regulatory agency a government department—despite clear evidence that it was unable to attract needed expertise (Samarajiva 2001).

Many African countries have established regulatory agencies for their utilities. These agencies face serious challenges, including obtaining adequate expertise, financial resources, and statutory authority. Many are simply extensions of sector ministries, which maintain a tight grip on regulated sectors and still perform key oversight functions. A recent analysis of telecommunications regulation in 29 countries in the region indicates problems with independence and transparency (Pyramid Research 1999). On a scale of 1 (worst) to 4 (best), 23 of the countries received scores of 1 for autonomy, and only 2 received scores higher than 2. Rankings for transparency were better, though 10 countries still received scores of 1, and only 2 scored higher than 2. Scores for credibility and efficiency were similarly lackluster.

Insufficient statutory authority among telecommunications regulators has led to enforcement failures in several African countries. In Ghana, the incumbent fixed-line monopolist (Ghana Telecom) inhibited entry by charging—with impunity from the regulator—very high interconnection fees (Ahortor 2003; Laffont 2003). It also entered the cellular business despite being legally prohibited from doing so. In Tanzania, the dominant mobile operator (Mobitel) entered a region in direct violation of the regulator’s order. In Côte d’Ivoire, the regulator has been unable to force the incumbent fixed-line operator, CItelecom, to comply with the service quality and network expansion terms of its concession contract (Laffont 2003).

Recent surveys indicate that most regulatory agencies in developing and transition economies are not legally required to hold open meetings. Nor are they obligated to provide written justifications for their decisions (World Bank 2001). In many countries, the regulatory framework lacks coherence, with responsibilities splintered across regulatory agencies and line ministries (Willig 1995; Noll 2000).

One emerging lesson is that although formal requirements for integrity, independence, transparency, and accountability are essential for effective regulation, they are far from sufficient. The experience so far raises doubts that governments will observe the spirit of the law and implement proper, consistent regulatory procedures—especially when their choices are influenced (and constrained) by external pressures and loan conditions.

Still, it is important to remember that it took many years for advanced industrial economies to achieve regulatory effectiveness. For example, it took decades for the United States to reach an equilibrium in which the independence of regulatory agencies
was recognized and supported by administrative procedures, ex parte rules, and judicial review. In developing areas, regulatory structures have been created from scratch and are still in early stages of development. Although progress toward regulatory effectiveness has been slow, at least the trend is in the right direction—greater independence, accountability, and transparency than under state ownership (Gutierrez 2002).

An Agenda for Action: From Institution Building to Policymaking

There is much to applaud in the restructured and privatized network utilities of developing and transition economies—from their new architectures to the commitment of those who crafted them, operate in them, and regulate them. But even in countries where restructuring has been carried out in a way that promotes the public interest, a host of significant problems have emerged.

Many of these second-generation problems are endemic to infrastructure everywhere and largely reflect issues that arise after privatization, especially when combined with unbundling. Yet lack of resources (especially economic, accounting, and other technical expertise), inexperience with regulating private utilities, and preoccupation with institution building during the first stage of reform have created some unique challenges in these countries.

Designing Retrospective Analysis and Data Collection

Revisionism on several fronts is affecting infrastructure restructuring and privatization. Choosing the right restructuring strategy is harder than early optimists claimed, and privatization and related institutional reforms are less impressive in practice than earlier believed. Growing public discontent with these reforms may partly be the result of the failure of some governments to publicly articulate the economic and social rationales, prerequisites, and expected outcomes. Thus it may simply reflect public misunderstanding. Still, this discontent points to the importance of careful analysis of what works, what can go wrong, and why.

Lack of empirical knowledge is among the main hindrances to infrastructure policy analysis and reform in developing and transition economies. Given that most reforms began in the early 1990s, until recently there were not enough data to evaluate different ownership, structural, and regulatory options and their dependence on country circumstances. But there is now a growing list of experiments in infrastructure reform, enabling reflection on lessons and identification of the most important issues to address and options to consider.
Empirically, untangling the links between distinct policy decisions and ultimate industry performance will require systematic collection of cross-country infrastructure data. International financial institutions—which at times have imposed covenants to address performance in these sectors and have collected financial and other data to monitor it—are ideally suited to this effort. However, in many cases the data have not been collected consistently and with a view to supporting the needed types of analysis.

**Addressing Second-Generation Reforms**

Experience and economic logic suggest that postprivatization improvements in performance will be limited, and probably unsustainable, unless accompanied by appropriate second generation regulatory reforms. These include:

- Designing pricing policies that strike a balance between economic efficiency and social equity.
- Developing rules governing access to bottleneck infrastructure facilities.
- Adapting regulation to address emerging problems, changing circumstances, and new information in regulated infrastructure sectors.
- Finding new ways to increase poor people’s access to services.

Many of the rules and principles for resolving second-generation regulatory issues have been developed in the context of advanced industrial economies. To be effective in developing and transition economies, they must be modified.

**Price Reform.** Past pricing policies and subsidy mechanisms in the infrastructure sectors of developing economies were seriously flawed and usually failed to achieve their stated objectives. Rather than providing affordable services to poor people, they undermined the financial viability of the utilities, resulted in rationing of services, and exacerbated inequality.

Infrastructure services are often considered essential both to the public and to the effective functioning of the economy. Because some of these services are extremely price and income inelastic, their pricing has important distributional implications (Newbery 2001). Not surprisingly, moves toward cost-reflective tariffs often encounter strong political opposition. As a result, most governments that have liberalized infrastructure have not accorded sufficient prominence to adjusting infrastructure prices. Deviations from optimal pricing also reflect lack of appreciation of how alternative pricing schemes and subsidy mechanisms could do a better job of achieving economic efficiency and social equity.

Thus price reform is among the most urgent and challenging tasks for policymakers in transition and developing countries. It is also a policy area where replicating approaches in industrial countries will likely prove extremely problematic and where technical assistance from multilateral organizations and other external advisers
has been highly unsatisfactory. The literature provides little guidance for managing the move to cost-reflective prices. Specific challenges include what standards to apply, how fast to proceed, and how to promote universal service in a competitive environment. In particular, there is need for further applied policy research to evaluate the potential use of price differentiation and price flexibility for achieving revenue adequacy and expanding services to poor people.

Alternative Subsidy Mechanisms. Most developing and transition economies have used cross-subsidies ostensibly to promote desirable social goals (such as ensuring that essential services remain affordable to poor segments of society) and positive economic externalities (such as those associated with universal service). But many subsidy programs involve almost no targeting: Price structures do not discriminate between rich and poor people, so everyone benefits. In fact, because many poor people do not have access to infrastructure services (such as private water connections), poor households capture only a small fraction of subsidy resources (Foster and others 2003). Furthermore, distorted prices impose significant costs by sending the wrong economic signals to consumers, suppliers, and investors. Economic theory and regulatory experience suggest that cross-subsidies are incompatible with open entry and competition (Baumol 1999). Thus there is an urgent need for alternative subsidy mechanisms that are more targeted and transparent, minimize the distortions in the behavior of utilities and their customers, and do not conflict with market liberalization.

The requisite policy approach for pursuing universal service goals in a specific industry is likely to be sensitive to the country’s political and institutional endowment and fiscal condition, consumer incomes and preferences, and the industry’s economic characteristics. For example, even though cross-subsidies can create significant distortions leading to welfare and financial losses, and the use of general tax revenue to support social goals is less distortive, it would be premature to call for the outright elimination of cross-subsidies in all circumstances. In many developing and transition economies the cost of public funds can be very high because government revenue is raised with distortive taxes. So reliance on cross-subsidies might be preferable in developing countries with especially inefficient tax systems. Moreover, alternative subsidy mechanisms could require elaborate and costly administrative systems. In such cases cross-subsidies might have to be tolerated as a second-best solution.

Thus additional work is needed to understand how these factors affect the optimal design of support mechanisms: whether support for universal service should be funded out of general tax revenues or perhaps out of a broadly based tax on revenues from the industry’s products and services; the extent and scope of subsidies; and more targeted methods for delivering subsidies without distorting competition.

Access to Bottleneck Infrastructure Facilities. A vexing task for regulators is designing terms and conditions of access to bottleneck infrastructure facilities by competing
service providers. These facilities are essential inputs in the production or delivery of final products and cannot be economically duplicated. Examples include the local loop (“final mile”) in telecommunications, the transmission grid in electricity, the network of pipelines in natural gas, and the track in railroads. Access policy is the keystone of the contemporary response to the problem of residual monopoly in infrastructure. Indeed, it is at the forefront of discussions of ways to facilitate competitive entry into activities that have traditionally been run by franchised monopolies. The access issue is especially difficult in situations where several firms compete in the sale of a final product, but one is the monopoly owner of an input that is indispensable in the supply of that product. The problem is how competition in the final product market can be preserved and not tilted to favor either the owner of the bottleneck input or its rivals.

The economic literature offers two main approaches to efficient pricing of essential input facilities: the efficient component pricing rule (also known as parity pricing) and the Ramsey pricing rule (Laffont and Tirole 1996; Baumol and others 1997). But despite their internal consistency and powerful theoretical results, neither approach (especially the Ramsey pricing rule) is readily translatable into workable rules and access pricing schedules. Considering the circumstances in developing and transition economies, there is a need for further research to identify variants of these rules that are less complex technically and less demanding informationally.

**Balancing Regulatory Commitment and Flexibility.** An indispensable precondition for effective privatization and sustained private investment is a country’s institutional capacity to restrain arbitrary administrative action and credibly commit to a stable policy process. Developing mechanisms that enforce substantive and procedural restraints on administrative discretion and limit regulatory opportunism is especially important in infrastructure, where the establishment of transportation and distribution networks requires large, mostly sunk investments. Without government commitment to policy stability, frequent changes in regulation can have the same effect as outright expropriation of sunk investments (Levy and Spiller 1996).

Yet a good regulatory system must also adapt to emerging problems, changing circumstances, and new information and experiences in regulated sectors. Regulatory flexibility is especially imperative in sectors experiencing rapid technological and market changes. Thus there is a need to strike a delicate balance between regulatory commitment and flexibility—to limit regulatory discretion while avoiding the rigidity and paralysis of micromanaged privatizations or concessions.

Inflexibilities built into privatization agreements are often a severe impediment to solving postprivatization regulatory problems. Such inflexibilities were probably needed to create commitments to reform, protect consumers, and attract the private capital required for privatization. But they also make it difficult to solve emerging problems because many parties find adaptations threatening to the privatization commitments that protect their interests and the entire fabric of reform.
One way to limit government discretion in a socially desirable manner is to require regulators to publicly articulate the basic economic principles that they use for policy analyses and decisions. These principles could be included in a statute or a concession agreement and should guide postprivatization governance. They must cover issues ranging from safeguarding the value of investments in infrastructure (without going so far as to shield investors from market-based risks) to protecting consumers and ensuring efficient, equitable tariff setting. International financial institutions could make an important contribution by helping to develop guidelines for revising regulatory mandates and rules and for renegotiating privatization contracts—guidelines that adhere to accepted principles of the economic public interest and embody much of the best available economic learning (Willig 1999). To date, few if any regulatory agencies in developing and transition economies have articulated such principles.

Designing Effective and Practical Regulatory Regimes

Empirical assessment of economic regulation reveals that in a variety of circumstances its effects deviate substantially from efficiency. Regulatory failure arises from a combination of the information problems facing regulators and the complex agency relationships inherent in the control structure of every regulatory setting. Even in the United States, where regulatory oversight has been supported by expert economic analysis, the disappointing performance that followed the economic regulation of the 1960s and 1970s raised doubts about time-honored regulatory solutions to allocative problems.

In developing and transition economies regulatory failure is exacerbated by lack of technical and economic expertise in critical areas. This may require regulators to avoid sophisticated interventions that impose heavy informational and analytical requirements. Indeed, in some circumstances in these countries the costs of regulation may exceed its benefits, and the public could be better off relying on unfettered competitive market forces.

There is an urgent need to:

- Deepen understanding of how to design effective and practical regulatory mechanisms when technical and economic expertise are scarce.
- Identify options for the structural reorganization of industries that reduce the need for regulatory oversight.
- Develop more precise criteria for distinguishing when regulatory intervention is required and when it is not.
- Develop models for optimal allocation of scarce regulatory resources among firms and sectors of different size and with different technologies, information asymmetries, and political constraints.
- Identify appropriate, perhaps less sophisticated, tools of intervention better suited to regulators in developing and transition economies.
Notes

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1. This refers mainly to the period after World War II. Private ownership in electricity was initially the norm in many countries in Europe and North and South America. State ownership spread later, especially after World War II, either because of ideological reasons (as in England and France) or because political constraints on prices forced private firms into bankruptcy (as in Latin America). Similar situations prevailed for railroads and water in many countries. Telephone services became captive of state-owned post offices in Europe and Japan, but not in Canada, the United States, or, initially, Latin America.

2. The results of such polls can be very sensitive to how the questions are asked. As Klein (2003) notes, according to such polls only 21 percent of Peruvians seemed to generally support electricity privatization. But when asked specifically about privatization implemented transparently and accompanied by increased investments as well as prices set by a regulatory process, more than 60 percent favored it.

3. Wallsten (2002) finds that investors have been willing to pay more for telecommunications firms in countries that established a regulatory authority before privatization.

4. Concessions refer to any arrangement in which a firm obtains from the government the right to provide a particular service under conditions of significant market power.

5. The regulatory function was not entirely avoided under state ownership. For example, service quality still had to be monitored, and prices for infrastructure services had to be set. The main difference lies in the characteristics of the regulatory process, which was ad hoc and opaque under the old regime but has to adhere to certain transparent requirements of due process in the new setting.

6. In fact, as Estache (2002) has observed, governments are more active players in the regulatory game than at first appears because of some perverse incentives. Large rents that are left by regulation to the privatized utility operators imply large income taxes. Fiscally constrained governments might therefore be tempted to use the regulatory process to prevent the redistribution of rents in order to enlarge their fiscal payoffs from privatization reforms. Thus, there could be considerable scope for implicit collusion between privatized operators and governments to weaken the regulatory process.

References


The “Cotton Problem”

John Baffes

Cotton is an important cash crop in many developing economies, supporting the livelihoods of millions of poor households. In some countries it contributes as much as 40 percent of merchandise exports and more than 5 percent of GDP. The global cotton market, however, has been subject to numerous policy interventions, to the detriment of nonsubsidized producers. This examination of the global cotton market and trade policies reaches four main conclusions. First, rich cotton-producing countries should stop supporting their cotton sectors; as an interim step, transfers to the cotton sector should be fully decoupled from current production decisions. Second, many cotton-producing (and often cotton-dependent) developing economies need to complete their unfinished reform agenda. Third, new technologies, especially genetically modified seed varieties, should be embraced by developing economies; this would entail extensive research to identify varieties appropriate to local growing conditions and the establishment of the proper legislative and regulatory framework. Finally, cotton promotion is needed to reverse or at least arrest cotton’s decline as a share of total fiber consumption.

Cotton is an important cash crop in a number of developing and transition economies, at both the farm and national levels. In 1998/99 it contributed between 30 and 44 percent to merchandise exports in five West African cotton-producing countries (Benin, Burkina Faso, Chad, Mali, and Togo) and 32 percent in Uzbekistan, 15 percent in Tajikistan, and 12 percent in Turkmenistan. Cotton’s contribution to gross domestic product (GDP) in these countries has also been substantial, ranging from 3.6 percent (Turkmenistan) to 8.2 percent (Tajikistan). Most of these cotton-dependent countries are poor, with per capita GDP well below $500 (table 1). In Africa, where cotton is the main cash crop, it is typically a smallholder crop grown on rainfed land with minimal use of purchased inputs such as chemicals and fertilizers.

Cotton is also an important contributor to rural livelihoods in many countries. The United Nations Food and Agriculture Organization (FAO) estimates that about 100 million rural households were involved in cotton production worldwide in
2001—45 million in China, 10 million in India, 7 million in Pakistan, and 6 million in African cotton-producing countries, including Nigeria, Benin, Togo, Mali, and Zimbabwe (Sarris 2003). The high dependence on cotton in these countries has important ramifications for poverty, especially when large price changes occur. In a study of Benin, Minot and Daniels (2002) find that a 40 percent reduction in farmgate cotton prices—equivalent to the price decline that took place from December 2000 to May 2002—implies a 7 percent reduction in rural per capita income in the short run and a 5–6 percent reduction in the long run. They also find that such a decline could lead to a short-run increase in the incidence of poverty among cotton growers from 37 percent to 59 percent and an increase in the average incidence of rural poverty (among cotton growers and other farmers) from 40 percent to 48 percent. In a similar study of seven cotton-dependent Francophone African countries, Small (2004) finds that a 30 percent increase in the world price of cotton would induce a 14 percent increase in the world price of cotton would induce a 14 percent increase in GDP.

The cotton market has been subject to considerable interventions, from subsidies in the United States, the European Union, and China to taxation in Africa and Central Asia. During 2002 support to the cotton sector by major players reached almost $6 billion, more than a quarter of the global value of production. This support coincided with the lowest nominal prices since 1972 (and possibly the lowest in history in real terms).

Low prices combined with high domestic support gave rise to the so-called cotton problem. In India a minimum price guarantee mechanism was triggered for the first time in many years, resulting in an estimated $0.5 billion in government support to the cotton sector in 2002 (ICAC 2003). Some Francophone African governments

### Table 1. Cotton’s Importance to Developing and Transition Economies, 1998–99 Averages

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<tr>
<td></td>
<td>Value (US$ millions)</td>
<td>Share of merchandise exports (%)</td>
<td>Share of GDP (%)</td>
</tr>
<tr>
<td>Burkina Faso</td>
<td>127</td>
<td>43.9</td>
<td>5.1</td>
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<tr>
<td>Benin</td>
<td>164</td>
<td>39.1</td>
<td>7.1</td>
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<tr>
<td>Uzbekistan</td>
<td>1,038</td>
<td>32.2</td>
<td>6.5</td>
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<tr>
<td>Chad</td>
<td>76</td>
<td>32.2</td>
<td>4.7</td>
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<tr>
<td>Mali</td>
<td>180</td>
<td>29.5</td>
<td>6.7</td>
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<tr>
<td>Togo</td>
<td>67</td>
<td>21.3</td>
<td>4.7</td>
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<tr>
<td>Tajikistan</td>
<td>97</td>
<td>15.1</td>
<td>8.2</td>
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<tr>
<td>Turkmenistan</td>
<td>110</td>
<td>12.3</td>
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<tr>
<td>Tanzania</td>
<td>44</td>
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<tr>
<td>Syria</td>
<td>214</td>
<td>6.7</td>
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<td>Sudan</td>
<td>41</td>
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Source: FAO (2003); World Bank (2003).
introduced cotton support when the price received by growers was less than the cost of producing cotton. Brazil initiated a World Trade Organization (WTO) consultation process claiming losses due to subsidies by the United States (WTO 2002). Four West African cotton-producing countries—Benin, Burkina Faso, Chad, and Mali—pressed for removal of support to the cotton sector through the WTO, and Burkina Faso asked for financial compensation for low-income cotton-producing countries to offset the injury caused by support (WTO 2003).

Understanding these actions and likely reactions requires understanding the market setting and trade policies of the global cotton market. This article examines the global balance, price trends, and price variability in the cotton market and looks at the policies of major cotton producers and their likely impact on the cotton market. It also explores the policy reform initiatives in several East and West African cotton-producing countries and describes a number of policy alternatives for dealing with the cotton problem.

The Market Setting

More than two-thirds of the world’s supply of cotton is produced by developing economies. Cotton production totaled 20 million tons in 2001, up from 10.2 million tons in 1960 and reflecting an annual growth rate of 1.8 percent. Most of this growth was in China, where production tripled, and India, where it doubled. Turkey, Greece, and Pakistan also significantly increased their production (appendix table A.1). Australia, which produced only 2,000 tons of cotton in 1960, averaged 650,000 tons during the late 1990s. Francophone Africa produced less than 100,000 tons in the 1960s and now produces 10 times as much. In other countries production shares fell. The United States and the Central Asian republics of the former Soviet Union, the two dominant cotton producers during the 1960s, have maintained their output levels at about 3.5 and 1.5 million tons, but their shares fell by half. A number of Central American countries that used to produce almost 250,000 tons of the fiber now produce almost none.

About a quarter of the area allocated to global cotton production is currently under genetically modified varieties, accounting for 35 percent of world production and 31 percent of world exports. In the United States, where genetically modified cotton was first introduced in 1996, it accounts for three-quarters of the area planted to cotton. Other major producers of genetically modified cotton are South Africa (90 percent of its cotton area), Australia (82 percent), Mexico (60 percent), China (54 percent), Argentina (25 percent), and India (5 percent). If the conversion to genetically modified cotton continues at current rates, as much as half of world’s cotton will be of genetically modified origin in less than five years (see box 1 on the economics of genetically modified cotton).
Box 1. The Economics of Genetically Modified Cotton

Genetically modified cotton, a result of technological advances in the 1990s, has the potential to reduce the cost of production and increase the profitability of the early adopters of this technology. Research has shown that on balance, genetically modified cotton growers are much better off than conventional cotton growers.

Growers pay a premium for the pest-resistant seed, in effect purchasing insurance along with the seed. If insects attack the crop, growers benefit from lower costs (not having to spray). In the United States, where adoption of genetically modified cotton is high, the average number of pesticide applications against bollworms fell from 4.6 in 1992–95 to 0.8 in 1999–2001. Furthermore, growers are likely to experience higher yields because spraying always involves suboptimal elements and hence yield losses. Yields increases from switching to genetically modified cotton have ranged from 19 percent (China) to 80 percent (India). In developing economies there might also be health benefits because small growers spray with hand-held devices, and thus reductions in spraying would imply lowering the risk of poisoning. If insects do not attack, the grower simply loses the premium (the cost difference between conventional and genetically modified cotton).

There are two types of genetically modified cotton: Bt cotton and herbicide-tolerant cotton. Bt (Bacillus thuringiensis) is a naturally occurring soil bacterium that has been used as a biological pesticide for many years. The gene that produces the insect toxin has been transferred from the bacterium to the cotton plant. Because the plant produces its own toxin, the grower does not need to apply pesticides. Herbicide-tolerant cotton has been genetically modified to resist a herbicide that would otherwise kill both weeds and the cotton plant. Consequently, the herbicide can be applied without destroying the plant.

Producing genetically modified cotton is a complicated process, which is why most cotton-producing developing areas have not embraced the technology. First, the legal and regularity framework must be established, which includes selection of the company to undertake trials, pricing issues, copyright of genetic material, duration of license, and whether growers will be allowed to recycle seeds or have to purchase the seeds every year. The second stage involves field trials, for adapting varieties to local conditions. There are about 35 genetically modified cotton varieties in the United States and 22 in China, for example, each designed for particular pest populations and growing conditions. The third stage involves adoption by the cotton growers.

Genetically modified cotton was first grown in the United States in 1996. A number of cotton-producing countries have introduced the technology since then, including China, India, and Mexico in the Northern Hemisphere and Argentina, Australia, and South Africa in the Southern Hemisphere. Other countries are in the process of approval or at the trial stage, including Brazil, Indonesia, Israel, Pakistan, Turkey, and Zimbabwe. Major producers that have not used or approved of genetically modified cotton (as of 2003) are the producers in the European Union, Central Asia, and Francophone Africa (except Burkina Faso, which is conducting trials) (Cotton Outlook 2004).

Four groups are likely to be most affected by the use of genetically modified seeds: the companies that manufacture the seeds, the farmers that use them, the farmers that do not use them, and consumers. Falk-Zepeda and others (2000) estimate that of the $215 million in annual surplus generated during 1996–98 because of the switch from conventional to genetically modified cotton varieties in the United States, farmers’ net incomes increased by $105 million and the seed companies received $80 million. Increased cotton output reduced world prices, generating about $45 million of gains to consumers (both in the United States and elsewhere), but cotton farmers in other countries who did not use genetically modified cotton lost an estimated $15 million because of lower cotton prices. The methodology of these welfare effects was based on a standard economic surplus model developed by Alston and others (1995).

Cotton consumption is driven by the size of the textile industries of the dominant cotton consumers. China, the leading textile producer, absorbed more than a quarter of global cotton output during the late 1990s. Other major textile producers are India, Turkey, and the United States, which together with China account for three-quarters of global cotton consumption. Several East Asian countries have recently emerged as important cotton consumers. Indonesia, the Republic of Korea, Taiwan (China), and Thailand, which together consumed only 130,000 tons in 1960 (1.2 percent of global consumption), absorbed 1.5 million tons in 2002 (7.2 percent of global consumption).

Between 1960 and 2000, cotton demand grew at the same rate as population (1.8 percent a year), implying that per capita cotton consumption has remained stagnant (figure 1). Over the same period per capita consumption of synthetic fibers grew at a steady rate of 2.2 percent a year, causing cotton’s share in total fiber consumption to fall from 60 percent in 1960 to less than 40 percent in 2000 (figure 2). The increasing share of chemical fibers reflects substantial reductions in production costs, new uses, quality improvements giving them properties similar to those of cotton, increased use in sportswear and clothing for extreme weather conditions, and active promotion programs by the industry.

One-third of cotton production is traded internationally. The four dominant exporters—the United States, Uzbekistan, Francophone Africa, and Australia—account for more than two-thirds of world exports. Four major producers—China, India, Pakistan, and Turkey—import cotton to supply their textile industries (appendix table A.2). The eight largest importers account for more than half of world exports.

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**Figure 1.** Cotton Consumption, 1960–2002

[Graph showing cotton consumption from 1960 to 2002, with two lines: one representing million tons (left scale) and the other kilograms per person (right scale).]

*Source: ICAC (various issues, Cotton: Review of the World Situation).*
cotton imports. The four East Asian textile producers—Indonesia, Thailand, Taiwan (China), and the Republic of Korea—accounted for 22 percent of world cotton imports in 2002, up from 3 percent in 1960.

Real cotton prices have declined over the past two centuries, although with temporary spikes. The reasons for the long-term decline are similar to those for most primary commodities: reduced production costs as a result of technological improvements on the supply side and stagnant per capita consumption and competition from synthetic products on the demand side. Between 1960–64 and 1999–2003, real cotton prices fell 55 percent, in line with the 50 percent decline in the broad agriculture price index of 22 commodities (figure 3).

Reductions in the costs of production have been associated primarily with a doubling of yields, from 300 kilograms per hectare in the early 1960s to more than 600 kilograms per hectare in 2000, a 1.8 percent annual increase. Behind this doubling in yields has been the introduction of improved varieties and expansion in the use of irrigation and chemical fertilizers. Additional diffusion of genetically modified technology and of precision farming, introduced during the 1990s, is expected to further reduce the costs of production. Substantial technological improvements have also taken place in the textile industry, so that the same quality of fabric can now be produced with lower-quality cotton, a trend in many other industries whose main input is a primary commodity.

Prices for cotton, as for most primary commodities, have been volatile (Cashin and McDermott 2001; Deaton 1999). The degree of volatility, however, has changed considerably during the past 40 years. Table 2 presents one intrayear and two interyear measures of cotton price volatility for three periods between

**Figure 2.** Cotton’s Share in Total Fiber Consumption and Polyester to Cotton Price Ratio, 1960–2002

![Figure 2](source: icac (2003).)

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1960 and 2002. The periods were selected on the basis of what are considered the two most important postwar structural breaks in commodity prices: the 1973 oil-induced commodity price boom and the 1985 shift in U.S. commodity policies from public stockholding to price-based support instruments. All measures consistently show that cotton prices were at least twice as volatile during 1985–2002 as during 1960–72, but half as volatile as during 1973–84. Valdès and Foster (2003) found similar results for price variability of corn, rice, sugar, and wheat, and Sarris (2000) for wheat and maize.

Real cotton prices declined during these three periods by an annual average of 1.48 percent, 3.16 percent, and 1.54 percent (see table 2). Thus not only have prices been twice as volatile in 1985–2002 as in 1973–84, they have also declined twice as fast.

The Policy Setting

Cotton has been subject to numerous market and trade interventions. Townsend and Guitchounts (1994) estimate that in the early 1990s, more than two-thirds of cotton was produced in countries that had some type of taxation or subsidization policy. The International Cotton Advisory Committee (ICAC 2002, 2003a), which has been monitoring assistance to cotton production since 1997, finds that at least eight countries have consistently supported cotton production—Brazil, China, Egypt, Greece, Mexico, Spain, Turkey, and the United States (table 3). In 2002—the year in
Table 2. Cotton Price Trends and Variability, 1960–2002

<table>
<thead>
<tr>
<th>Period</th>
<th>Interyear variability</th>
<th>Intrayear variability based on annual averages</th>
<th>Trend (annual average)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Based on trend regression&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Based on first differences&lt;sup&gt;b&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>1960–72</td>
<td>11.7</td>
<td>3.7</td>
<td>4.8</td>
</tr>
<tr>
<td>1973–84</td>
<td>39.6</td>
<td>12.8</td>
<td>19.7</td>
</tr>
<tr>
<td>1985–2002</td>
<td>25.7</td>
<td>7.0</td>
<td>12.1</td>
</tr>
<tr>
<td>Change (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1960–72 to 1973–84</td>
<td>238</td>
<td>246</td>
<td>310</td>
</tr>
<tr>
<td>1960–72 to 1985–2002</td>
<td>120</td>
<td>89</td>
<td>152</td>
</tr>
</tbody>
</table>


Note: Price variability is complicated because of nonstationarity, which typically invalidates standard statistical testing procedures. To ensure that the results do not reflect nonstationarity biases, the table reports three measures of variability. Similarly, estimates of price trends should be interpreted with caution.

<sup>a</sup>Defined as variation around a linear trend using annual data.

<sup>b</sup>Defined as variation of the first difference, often referred to as the z-statistic.

<sup>c</sup>Defined as variation of each monthly observation around the annual average.

<sup>d</sup>Derived from three separate trend regressions.

Table 3. Estimated Government Assistance to Cotton Producers, 1997–2002

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Millions of U.S. dollars</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>United States</td>
<td>1,163</td>
<td>1,947</td>
<td>3,432</td>
<td>2,149</td>
<td>3,937</td>
<td>3,075</td>
</tr>
<tr>
<td>China</td>
<td>2,013</td>
<td>2,648</td>
<td>1,534</td>
<td>1,900</td>
<td>1,217</td>
<td>800</td>
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<tr>
<td>Greece</td>
<td>659</td>
<td>660</td>
<td>596</td>
<td>537</td>
<td>735</td>
<td>718</td>
</tr>
<tr>
<td>Spain</td>
<td>211</td>
<td>204</td>
<td>199</td>
<td>179</td>
<td>245</td>
<td>239</td>
</tr>
<tr>
<td>Turkey</td>
<td>—</td>
<td>220</td>
<td>199</td>
<td>106</td>
<td>59</td>
<td>57</td>
</tr>
<tr>
<td>Brazil</td>
<td>29</td>
<td>52</td>
<td>44</td>
<td>44</td>
<td>10</td>
<td>—</td>
</tr>
<tr>
<td>Mexico</td>
<td>13</td>
<td>15</td>
<td>28</td>
<td>23</td>
<td>18</td>
<td>7</td>
</tr>
<tr>
<td>Egypt</td>
<td>290</td>
<td>—</td>
<td>20</td>
<td>14</td>
<td>23</td>
<td>33</td>
</tr>
</tbody>
</table>

Percent of world price |

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</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>18</td>
<td>46</td>
<td>77</td>
<td>46</td>
<td>97</td>
<td>67</td>
</tr>
<tr>
<td>China</td>
<td>27</td>
<td>45</td>
<td>35</td>
<td>34</td>
<td>24</td>
<td>13</td>
</tr>
<tr>
<td>Greece</td>
<td>121</td>
<td>142</td>
<td>118</td>
<td>101</td>
<td>187</td>
<td>160</td>
</tr>
<tr>
<td>Spain</td>
<td>114</td>
<td>151</td>
<td>130</td>
<td>151</td>
<td>253</td>
<td>197</td>
</tr>
<tr>
<td>Turkey</td>
<td>—</td>
<td>19</td>
<td>31</td>
<td>10</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>Brazil</td>
<td>4</td>
<td>8</td>
<td>6</td>
<td>4</td>
<td>2</td>
<td>—</td>
</tr>
<tr>
<td>Mexico</td>
<td>4</td>
<td>5</td>
<td>18</td>
<td>15</td>
<td>22</td>
<td>15</td>
</tr>
<tr>
<td>Egypt</td>
<td>53</td>
<td>—</td>
<td>7</td>
<td>9</td>
<td>7</td>
<td>9</td>
</tr>
</tbody>
</table>

Source: ICAC (2003a, b); U.S. Department of Agriculture (various years); EC (2003).

—, not available.
which support was highest—assistance to cotton producers reached $3.6 billion in the United States, $1.2 billion in China, and almost $1 billion in the European Union. Producers in Brazil, Egypt, Mexico, and Turkey received a combined total of $110 million. India also supported its cotton sector in 2002 with an estimated $0.5 billion.

This section analyzes cotton policy interventions in the United States, European Union, China, and Uzbekistan. The countries were selected for their large share in global output or their high degree of policy intervention, so that any change in their policies is likely to significantly affect the global cotton market. Not reviewed here are other major cotton producers that do not have substantial market distortions, such as India, Pakistan, and Turkey. Policy interventions and reforms of cotton producers in Africa are reviewed in the next section. Although the policy interventions in these counties do not significantly affect the world cotton market, they do affect their own economies and the welfare of a large number of poor households that are directly or indirectly associated with the cotton industry. 3

The United States

Cotton subsidies in the United States were introduced as part of Depression-era commodity programs. Although specific provisions change every four or five years with each new farm bill, their chief objective has remained largely unchanged: to transfer income from taxpayers (and consumers) to commodity producers.

The main channels of support to U.S. cotton producers have been price-based payments, decoupled payments, crop insurance, and countercyclical payments. U.S. cotton users and exporters also receive some support. Price-based payments (also known as loan rate payments) are designed to compensate cotton growers for the difference between the market price and the target price when the world price falls below the target price. Decoupled payments (called direct payments in the 2002 Farm Bill) are predetermined annual payments based on historical areas allocated to cotton production. They were introduced with the 1996 Farm Bill to compensate for losses resulting from the elimination of deficiency payments. 4 Countercyclical payments were introduced in 1998 (called emergency payments) to compensate for losses due to low commodity prices; they became permanent under the 2002 Farm Bill. When domestic prices exceed world prices, cotton exporters and domestic end-users receive payments (also known as export subsidies or Step 2 payments) so that U.S. exporters maintain their competitiveness. Implicitly, cotton exporters receive another subsidy through the export credit guarantee program, which insures importers of U.S. cotton against potential defaults. There are numerous
other publicly funded programs that affect the cotton market, including research and extension services and subsidized irrigation.

The U.S. cotton program is complex and expensive. It was twice subject to audit by the U.S. General Accounting Office (U.S. GAO 1990, 1995). Perhaps the best summary of the program’s complexity and costs is the 1995 audit (U.S. GAO 1995, p. 3), which notes:

The cotton program has evolved over the past 60 years into a costly, complex maze of domestic and international price supports that benefit producers at great cost to the government and society. From 1986 through 1993, the cotton program’s costs totaled $12 billion, an average of $1.5 billion a year. Moreover, the program is very complex, with dozens of key factors that interact and counteract to determine price, acreage, and payments and to restrict imports. The severe economic conditions and many of the motivations that led to the cotton program in the 1930s no longer exist. . . . The [U.S.] Congress could, for example, reduce or phase out payments over a number of years, perhaps over the life of the next [1996] farm bill.

The report also notes that cotton subsidies reach a surprisingly small number of cotton growers (see also Arax and Wartzman 2003).

According to U.S. Department of Agriculture data, in 1996/97, the first season of the 1996 Farm Bill, support to U.S. cotton growers reached $759 million. Almost $600 million of it went for decoupled payments and the rest as an insurance subsidy. In 1997/98 support was $1.2 billion. When prices began declining, emergency assistance measures came into play, raising support to $1.9 billion in 1999, $3.4 billion in 1999/2000, $2.1 billion in 2000/01, and $3.9 billion in 2001/02 (table 4).

<table>
<thead>
<tr>
<th>Table 4. Budgetary Transfers to U.S. Cotton Sector, 1995/96–2002/03 (millions of U.S. dollars)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coupled payments</td>
</tr>
<tr>
<td>Production flexibility contracts/direct payments</td>
</tr>
<tr>
<td>Emergency/countercyclical payments</td>
</tr>
<tr>
<td>Insurance</td>
</tr>
<tr>
<td>Step-2</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

Source: U.S. Department of Agriculture (various years).
The European Union

During the 1960s and 1970s Greece and Spain together were producing 130,000 tons of cotton a year. With accession to the European Union (EU), cotton growers in these two countries became eligible for Common Agricultural Policy funds. Cotton production grew by an annual average of 7.3 percent, exceeding 400,000 tons a year during the 1990s. Support to EU cotton producers is based on the difference between the world market price and a support price. The policy also influences the quantity produced by specifying a maximum for which assistance will be provided—the equivalent of 255,000 tons for Greece and 82,000 tons for Spain.\(^5\)

Between 1996 and 2000, the budgetary expenditure on the cotton sector ranged between €740 and €903 million, implying that on average, EU cotton producers received more than twice the world price of cotton (see table 3). EU cotton producers received support even in periods of high prices, because the budgetary allocation to the cotton sector must be disbursed. For example, EU cotton producers received about the same level of support in 1995 and 2002, although cotton prices were twice as high in 1995 as in 2002.

The European Union has implemented a number of adjustments to its cotton program including a 1999 reform that effectively imposed a cap on the budgetary expenditures allocated to the industry (EC 2000). A major reinstrumentation of the EU cotton program will take place in 2006. Under the Luxembourg Council’s decision of April 22, 2004 (based on the September 2003 proposal), an estimated €700 million is expected to fund two support measures, with 65 percent of the support taking the form of a single decoupled payment and 35 percent taking the form of an area payment (EC 2003).

Eligibility for the decoupled payment is limited to growers who produced cotton during the three-year period 1999–2001. The area payment will be given for a maximum area of 380,000 hectares in Greece, 85,000 hectares in Spain, and 360 hectares in Portugal and will be proportionately reduced if total claims exceed the maximum area allocated to each country. To receive decoupled payments, cotton growers must keep the land in good agricultural use. To receive area payments they must plant (not necessarily produce) cotton. Karagiannis (2004) estimates that the reformed regime is likely to reduce EU cotton production between 10 and 25 percent (depending on the assumed values of the elasticities).

China

China’s cotton sector became fully government controlled in 1953 following the introduction of the first five-year plan (Zhong and Fang 2003). The central planning policies adopted then were similar to those of the Soviet Union and remained in place for the next 35 years. The central government set production targets and procurement
quotas (all primary processing facilities were owned by cooperatives). Some changes took place in 1978 when the government substantially raised the price of cotton and supplied more fertilizer. Market-oriented reforms were introduced in 1980 when the communal production system was partially abolished and individual farmers were given land use rights. Cotton production increased considerably in response to both the 1978 and the 1980 policy changes.

Currently, China intervenes in its cotton sector through price support measures (a reference price typically set above world prices), subsidies to transportation and marketing, and public stockholding. China also imposes a 3 percent tariff on cotton imports up to 0.86 million tons (and 90 percent for volumes above that amount). ICAC estimates that support to the cotton sector from 1998 to 2003 ranged from $0.8 billion to $2.6 billion. Huang and others (2004) estimate that in 2001 the nominal rate of protection for cotton averaged 17 percent.6

In 1999 the government announced reform measures that included creating a cotton exchange to facilitate domestic trading, reducing prices paid to producers, and lowering stocks. In September 2001 further reforms were announced (Zhong and Fang 2003). First, the internal cotton market will be open to cross-regional trade. Second, various enterprises will be allowed to buy cotton directly from producers with the approval of the provincial government. Third, primary processing operations will be separated from marketing cooperatives, in effect making them commercial enterprises.

To some extent the reform efforts have achieved their stated objectives. China currently operates a cotton exchange that trades future contracts (Shuhua 2003). Its publicly held stocks declined from 3.5 million tons in the two-year period 1998–99 to 2 million tons in 2001–2002. Estimated support to the cotton sector declined from $2.4 billion to $1 billion between the two periods, according to ICAC figures (cotton prices during these two periods averaged $1.30 and $1.04 a kilogram.) Furthermore, the 2003 import quota was extended to 1.9 million tons to meet domestic demand requirements.

Uzbekistan

Before 1991 Uzbekistan’s cotton sector was fully under state control. Most cotton was consumed by textile mills in Russia or shipped to Eastern European countries under barter arrangements. Following the collapse of the Soviet Union, Uzbekistan began exporting its cotton under conventional trading practices. Until 1996, some cotton still went to Russia under barter trade terms.

Most aspects of the marketing and trade of cotton still closely resemble pre-1991 arrangements. Numerous entities are involved in all postproduction activities, including the state company responsible for all primary processing, the state trading
organizations responsible for exports, and the Ministry of Foreign and Economic Relations, which handles financial transactions. Other entities include the state company responsible for domestic and international transportation of cotton, the organization responsible for quality monitoring, and customs.

Cotton growers appear to be heavily taxed both directly, through the lower prices paid by the state company that purchases cotton and indirectly through the (likely misaligned) exchange-rate regime. A recent government report concluded that only a third of the world price of cotton reaches producers (Uzbekistan 2003). However, when subsidized inputs and environmental costs are accounted for, the sector may not be as heavily taxed as the numbers suggest. Inputs are provided at nonmarket (and most likely subsidized) prices, and cotton production has been associated with the expansion of irrigation that caused the drying up of the Aral Sea, by many accounts the worst environmental tragedy of the twentieth century.

Implications of Cotton Policies

Numerous models have evaluated the impact of cotton policies on the cotton market, with considerable variation in results. In turn, these impacts have resulted in several reactions by adversely affected countries.

Impact of Trade Interventions

The ICAC, for example, concluded that average cotton prices would have been 30 percent higher without direct subsidies during the 2000/01 season. The study, based on a short-run partial equilibrium model, acknowledged that although removal of subsidies would result in lower production in the countries that provided them (and hence higher prices in the short term), the impact would be partially offset by production shifts to nonsubsidizing countries in the medium to longer term.

Goreux (2003), who extended the ICAC model by replacing the base year with 1998–2002 average subsidies, estimates that without support the world price of cotton would have been 3–13 percent higher in those five years, depending on demand and supply elasticities. Gillson and others (2004), using subsidy data for 1999 and a model similar to Goreux’s, estimate that removal of subsidies by the United States, the European Union, and China would raise the world price of cotton 18 percent.

Reeves and others (2001), using a simple computable general equilibrium model, find that removal of U.S. and EU production and export subsidies would induce a 20 percent reduction in U.S. cotton production and a 50 percent reduction in U.S. cotton exports, with much higher reductions for the European Union.
They also estimate that without support, world cotton prices would have been 10.7 percent higher during the 2001/02 season. The Food and Agriculture Policy Research Institute (FAPRI 2002) finds that under global liberalization (removal of trade barriers and domestic support in all commodity sectors), the world cotton price would increase over the baseline scenario by an average of 12.7 percent over a 10-year period. Based largely on FAPRI’s data and assumptions, Sumner (2003) estimates that the world price of cotton would have been almost 13 percent higher had there been no U.S. cotton subsidies during the marketing years 1999–2002.

Based on a partial equilibrium model, Tokarick (2003) finds that multilateral trade liberalization in all agricultural markets (including cotton) would induce a 2.8 percent increase in the world price of cotton and a $95 million annual increase in welfare. Poonyth and others (2004) estimate that removal of cotton subsidies (as reported in the WTO notifications) would increase the world price of cotton between 3.1 percent and 4.8 percent, depending on assumptions about demand and supply elasticities. In contrast, Shepherd (2004) and Pan and others (2004) find a negligible impact of subsidies on the world price of cotton.

The highly divergent results for these models reflect in part the structure of the models and the assumed elasticities. Several other factors also influence the results. First, there are differences in the level and structure of support. For example, some models assume that China supports its cotton sector and model its removal; others do not. Second, there are differences in the underlying scenarios. Some models assume liberalization in all commodity markets, whereas others assume liberalization only in the cotton sector. Third, the models use different base years and so different levels of subsidies. For example, support in the United States was three times as high in 1999 as in 1997. Setting all the differences aside, however, and taking a simple average over all models shows that world cotton prices would have been about 10 percent higher without support. Applying a simple average to the Francophone Africa cotton-producing countries shows that these countries lost approximately $150 million annually in export earnings due to the subsidies.

Not all models report results on the gainers and losers from the removal of cotton subsidies. In that respect, the most complete analysis is offered by the FAPRI model, which finds the largest gains in trade for Africa, with an expected average increase in exports of 12.6 percent (table 5). Exports increase by 6.0 percent for Uzbekistan and by 2.7 percent for Australia, whereas exports from the United States decline by 3.5 percent. The most dramatic impact is on the production side. The European Union’s cotton output would decline by more than 70 percent—not a complete surprise considering that the European Union’s cotton output during the late 1990s was three times higher than it was before Greece and Spain joined.
Some Ramifications of Cotton Policies

The high level of support to U.S. cotton growers and its impact on world markets have resulted in several reactions. Two, in particular, have had important policy implications: the Brazil–U.S. cotton dispute in the WTO and the West African cotton-producing countries’ joint cotton initiative proposal to the WTO requesting compensation (see table 6 for the events leading up to and following these cases).

Brazil versus the United States. On September 27, 2002, Brazil requested consultation with the United States regarding U.S. subsidies to cotton producers. On March 18, 2003, the Dispute Settlement Body of the WTO established a panel to examine the issues, and on April 26, 2004, the WTO issued an interim ruling in favor of Brazil. The final ruling (issued on September 8, 2004) concluded that “the United States is under the obligation to take appropriate steps to remove the adverse effects or... withdraw the subsidy” (WTO 2004c, p. 351).

Brazil argued that U.S. cotton subsidies were inconsistent with provisions of the Agreement on Subsidies and Countervailing Measures, the Agreement on Agriculture, and the General Agreement on Tariffs and Trade 1994 and were causing “serious prejudice to the interests of Brazil” because of a “significant price depression and price suppression” (WTO 2002, p. 3). It claimed that the United States provided domestic support to cotton during 1999–2002 in excess of the support decided during the 1992 marketing year under the peace clause (article 13) of the

Table 5. Projected Effects of Removal of Distortions 2003/04–2011/12 (percentage changes over baseline)

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<tr>
<td>World price</td>
<td>15.6</td>
<td>13.7</td>
<td>13.0</td>
<td>12.2</td>
<td>11.7</td>
<td>12.7</td>
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<td>Exports</td>
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<tr>
<td>Africa</td>
<td>12.1</td>
<td>15.1</td>
<td>14.0</td>
<td>13.1</td>
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<td>12.6</td>
</tr>
<tr>
<td>Australia</td>
<td>3.9</td>
<td>3.0</td>
<td>2.7</td>
<td>2.3</td>
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<td>2.7</td>
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<tr>
<td>United States</td>
<td>−8.4</td>
<td>−6.6</td>
<td>−4.0</td>
<td>−1.5</td>
<td>0.9</td>
<td>−3.5</td>
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<tr>
<td>Uzbekistan</td>
<td>5.4</td>
<td>6.9</td>
<td>6.7</td>
<td>6.4</td>
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<tr>
<td>World</td>
<td>3.9</td>
<td>5.6</td>
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<td>Production</td>
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<tr>
<td>United States</td>
<td>−18.3</td>
<td>−7.9</td>
<td>−5.9</td>
<td>−4.1</td>
<td>−2.3</td>
<td>−6.7</td>
</tr>
<tr>
<td>European Union</td>
<td>−77.4</td>
<td>−77.7</td>
<td>−78.3</td>
<td>−78.8</td>
<td>−79.0</td>
<td>−70.5</td>
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<tr>
<td>Uzbekistan</td>
<td>3.1</td>
<td>4.7</td>
<td>4.6</td>
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<tr>
<td>Africa</td>
<td>4.5</td>
<td>7.5</td>
<td>7.1</td>
<td>6.7</td>
<td>6.3</td>
<td>6.0</td>
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Source: FAPRI (2002).
<table>
<thead>
<tr>
<th>Date</th>
<th>Key event</th>
<th>Comments</th>
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<tr>
<td>July 8–9, 2002</td>
<td>The International Cotton Advisory Committee and the World Bank sponsor the conference “Cotton and Global Trade Negotiations” in Washington, D.C.</td>
<td>Cotton policy-related issues were debated by a diverse group of participants. Panels included representatives from cotton-producing countries (both government officials and private sector), NGOs, ambassadors, and representatives from various international organizations.</td>
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<td>September 27, 2002</td>
<td>Brazil requests consultations with the United States on cotton subsidies</td>
<td>Brazil argued that the U.S. cotton subsidies “caused serious prejudice to the interests of Brazil . . . [because of a] significant price depression.” It also argued that the U.S. subsidies induced a 41% increase in U.S. cotton exports and a 12.6% reduction in the world price of cotton. Brazil claimed an estimated injury well in excess of $600 million for marketing year 2001 alone. The case was financed by the Brazilian cotton producers.</td>
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<td>September 27, 2002</td>
<td>Oxfam publishes “Cultivating Poverty: The Impact of U.S. Cotton Subsidies”</td>
<td>The report was influential because it contrasted poor West African cotton producers with their counterparts in the United States. It noted that “U.S. cotton farmers receive more in subsidies than the entire GDP of Burkina Faso . . . and . . . three times more in subsidies than the entire USAID budget for Africa’s 500 million people.”</td>
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<td>May 16, 2003</td>
<td>Benin, Burkina Faso, Chad, and Mali launch the “cotton initiative”</td>
<td>The initiative demanded that countries discontinue subsidizing their cotton sectors and that until subsidies are removed, nonsubsidizing countries should be compensated. The initiative was aided by the Geneva-based NGO IDEAS.</td>
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<td>September 10–13, 2003</td>
<td>The cotton initiative becomes an intensely debated (and controversial) topic in Cancun</td>
<td>The initiative was facilitated by the director general of the WTO who “urged ministers to consider the proposal seriously.” Many countries were sympathetic to the initiative. By some accounts, the inability to make progress on the initiative was partially responsible for the failure to reach agreement in Cancun.</td>
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<td>March 23–24, 2004</td>
<td>The WTO sponsors the African Regional Workshop on Cotton in Cotonou, Benin</td>
<td>Because of numerous practical difficulties, it was decided that the initiative would be dealt with at two levels: development (compensation) and trade (subsidies). The development component was the subject of the Cotonou workshop.</td>
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</table>
April 26, 2004  The WTO panel issues its interim ruling in favor of Brazil. In its interim ruling, the WTO panel decided in favor of Brazil; it concluded that the U.S. cotton subsidies were inconsistent with provisions of the Agreement on Agriculture. The United States publicly announced that it will appeal the ruling.

May 31–June 1, 2004  FAO holds cotton expert consultations in Rome. Experts from international organizations and the academic community held a consultation on cotton. The discussion focused on the reasons why cotton models have reached such diverse conclusions.

July 5–6, 2004  The European Union sponsors the EU-Africa Cotton Forum. The forum aimed at endorsing the EU-Africa Cotton Partnership within the trade and development perspective.

August 1, 2004  The WTO General Council reaches a decision on the frameworks to proceed with multilateral trade negotiations. According to the decision, all trade-related aspects of cotton will be dealt with within the context of agricultural negotiations. The decision also emphasized that the theme should be addressed “ambitiously, expeditiously, and specifically.” The General Council instructed the director general to consult with the relevant international organizations to direct additional resources to cotton-dependent countries.

November 19, 2004  The WTO establishes the Subcommittee on Cotton. The subcommittee is expected to facilitate the exchange of information among bilateral and multilateral donors with a view to promoting the WTO’s decision to proceed with the multilateral trade negotiations (the so-called July framework decision or July package).

January 28, 2005  The Development Assistance Committee of OECD convenes a briefing on cotton. The committee’s briefing, “The Development Dimensions of African Cotton,” was a followup of the Cotonou Workshop, which assessed progress on the development aspects of the cotton initiative.

Source: Compiled by the author.
Agreement on Agriculture (figure 4). Brazil further claimed that the export subsidies (export credit guarantees, two-step payments) violated the Agreement on Agriculture.

Using the econometric model developed by FAPRI, Brazil showed that the U.S. subsidies induced a 41 percent increase in U.S. cotton exports, reducing the world price of cotton by 12.6 percent and causing an estimated injury to Brazil of more than $600 million for 2001 alone. Since the United States appealed the ruling, any U.S. steps to meet Brazil’s demands are likely several years away.

The ruling was issued against the background of the ongoing critical agriculture negotiations, the expiration of the peace clause, the more assertive stance taken by the G-20, and the West African sectoral initiative on cotton (see following section). The ruling has numerous implications for the WTO and the Doha Development Agenda and for developing countries and international institutions (Baffes 2004c):

- As the first case of a developing country challenging an Organisation for Economic Co-operation and Development (OECD) farm subsidy program in the WTO, it may set a precedent. If further cases follow, there may be a shift in the focus of WTO activities from negotiation to litigation. The ruling also coincides with the expiration of the peace clause and thus may open the floodgates for other domestic subsidy cases.
- The way to avoid a significant increase in such disputes is to make significant progress in the Doha Development Agenda. Hence, the ruling may help agencies
such as the EU Commission and the U.S. Trade Representative’s Office confront domestic protectionist lobbies.

- The ruling strengthens the claims of many developing countries that OECD subsidies depress world prices.
- This dispute spotlights the importance of models analyzing the effects of subsidies on world prices and export shares, making model developers more accountable for the analysis. The ruling reveals the importance and weaknesses of current measures of support and the differences in WTO, U.S., and EU definitions of “decoupled support.”

**West African Cotton Sector Initiative.** On May 16, 2003, four West African cotton-producing countries (Benin, Burkina Faso, Chad, and Mali) submitted a joint proposal to the WTO demanding removal of support to the cotton sector by the United States, China, and the European Union and compensation for damages until full removal of support. The West African countries were aided in this move, often referred to as the cotton initiative, by IDEAS, a Geneva-based nongovernmental organization (NGO) funded by the Swiss government.

The four countries argued that subsidies cost them an estimated $250 million in export earnings during the 2001/02 marketing season—$1 billion when the indirect effects of these subsidies were considered (cotton prices averaged $0.82 a kilogram in October 2001, the lowest since November 1972 with the exception of August 1986; figure 5). Because the standard WTO remedies (compensation through supplementary concessions or imposition of countervailing duties) were not feasible, the proposal called for “transitional…financial compensation…to offset the injury caused

**Figure 5.** Monthly Cotton Prices, January 1985–December 2004 (US$ per kilogram)

![Figure 5](source: World Bank (various issues, Commodity Price Data).
The compensation would be proportional to the subsidies, declining and ending as the subsidies were reduced and abolished. The proposal argued that the direct and indirect effects of support for cotton production should be taken into account when determining compensation and that “the unit amount and the total amount of subsidies should be taken into account when dividing the compensation among countries which subsidize production” (WTO 2003, p. 7).

The cotton initiative received considerable attention during the Cancun Ministerial Meetings. The director general of WTO urged ministers to consider the proposal seriously. Although numerous countries were sympathetic, there were doubts whether it would benefit the Doha Development Agenda to treat one commodity differently than others. Furthermore, it soon became apparent that direct compensation was unlikely. The inability to deal effectively with the initiative was one reason for the failure to reach agreement in Cancun.

It was finally determined that although the trade part of the request (subsidies) fell within WTO’s mandate, the development part of the request (compensation) should be handled by the multilateral institutions in coordination with the concerned governments. To that end, at a WTO-sponsored conference on March 23–24, 2004, in Cotonou, Benin, both bilateral and multilateral donors reaffirmed their willingness to deal with the development part of the cotton initiative.

On August 1, 2004, the WTO General Council reached a decision to proceed with multilateral trade negotiations, emphasizing that the theme should be addressed “ambitiously, expeditiously, and specifically.” The director general was instructed to consult with international organizations, including the Bretton Woods institutions, the FAO, and the International Trade Center, to direct existing programs and any additional resources toward development of the economies where cotton is of vital importance.

Cotton Reforms in Sub-Saharan Africa

During the late 1980s and early 1990s, a number of African cotton-producing countries undertook substantial policy reforms. Part of a comprehensive reform agenda, these policy reforms were triggered by sudden and often unpredictable political and economic shocks (Akiyama and others 2003). The reforms also reflected an evolution in thinking about the role of agriculture in economic development. Some economists had questioned such policies even earlier. Johnson (1947) argued that prices should not be used to achieve economic objectives. Friedman (1954) questioned the benefits of managing commodity price variability. Johnston and Mellor (1961) highlighted the negative impact of prourban economic policies on agriculture. These arguments were given an institutional voice by the World Bank through a series of publications, including the World Development Reports of 1983 and 1985 (World Bank 1983, 1985) and a series of country case studies by Krueger and others.
(1992). The change in philosophy was further reinforced by the increasing evidence of the inefficiencies of interventionist policies, especially as embodied in the state enterprises that handled most commodity marketing and trade.

**Eastern and Southern Africa**

Cotton was introduced in Eastern and Southern Africa early in the twentieth century. Production increased consistently until the early 1970s, when it peaked at 400,000 tons a year. Political and macroeconomic instability and the inefficiencies of state enterprises, which had accumulated huge debts, were becoming increasingly detrimental to smallholders. In some countries the cotton sector experienced outright collapse, leaving policy reforms as the only feasible alternative.

The structure of the cotton sector (like that of other commodity sectors) looked remarkably similar in almost all countries: A single government-owned marketing agency was responsible for most aspects of marketing and trade, including provision of credit and purchased inputs. These government enterprises had both a legal monopsony and a legal monopoly, making it easy to apply such policies.

At least six cotton-producing countries in Eastern and Southern Africa initiated reforms during the late 1980s and early 1990s: Ghana, Mozambique, Tanzania, Uganda, Zambia, and Zimbabwe (Poulton and others 2004). These countries account for 85 percent of the region’s cotton production. Ghana was the first to undertake reforms. In 1985 it liquidated the assets of its government cotton agency, opening the sector to competition. Mozambique, another early reformer, began to reorganize its cotton sector in 1989. Tanzania and Uganda introduced reforms in 1994, and Zambia and Zimbabwe did so a year later.

Although in most cases the cotton reforms were part of a comprehensive reform agenda (including reforms at the macroeconomic level), reforms were also triggered by country- or sector-specific circumstances.\(^7\) Uganda’s cotton sector was in complete collapse following the political and macroeconomic instability of the 1980s.\(^8\) The situation was not as severe in Tanzania, but the huge debts accumulated by the cooperative unions along with the inefficiencies of the cotton board made it evident that the private sector should be engaged in marketing activities. Like Uganda, Mozambique introduced reforms after the end of a period of civil conflict during the 1980s. Reforms in Zambia and Zimbabwe meant privatization of the state cotton enterprises.

The impact of the reforms varied, depending on the state of the sector prior to the reforms, the depth of the reforms, and how the reform process was executed. Positive outcomes included an increase in producers’ share of prices, prompter payments, and increased entrepreneurial activity (Shepherd and Farolfi 1999; Baffes 2001; Akiyama and others 2001; Poulton and others 2004). On the negative side, the provision of public services, including research and extension, deteriorated.\(^9\) With the dismantling of state enterprises with monopolistic powers, credit recovery rates
worsened, in turn reducing input use. But despite the well-documented reduction in input use and the unsuccessful credit recovery mechanisms, a supply response did take place. Ten-year average cotton production in Eastern and Southern Africa following reforms (a measure of postreform supply response) has been higher than during any 10-year period in the history of the sector (figure 6).

**Francophone Africa**

The cotton industry in Francophone Africa was pioneered by the French state-owned Compagnie Française de Développement des Fibres Textiles (CFDT), along with various national cotton companies. The national cotton companies had a legal monopsony in cotton, and most had a monopoly on primary processing, marketing, and supplying inputs. They would announce a base buying price before planting, sometimes supplementing that price with a second payment (payable the following season) based on the company’s financial health. Cotton growing expanded rapidly, from 225,000 tons in 1980 to almost 1 million tons in 2001. Growers used inputs well adapted to local conditions to produce high yields of cotton of consistent quality (Lele and others 1989).

Despite apparent successes, the system exhibited several weaknesses. Prices to producers were very low, often no more than 40 percent of border prices. The absence of competition in domestic markets and the involvement of the state cotton companies in the provision of services allowed costly operating inefficiencies to develop, absorbing a large share of export prices.
The determination of annual cotton prices reflected, at least in part, the relative bargaining power of producers, governments, managers of the state-owned cotton companies, and the CFDT. Uniform pricing of cotton and farm inputs across all areas of a country meant that transport costs were not properly taken into account in decisions about where to grow cotton. Uniform pricing regardless of the season and planned delivery schedules to primary processing facilities severely limited growers’ choices for managing inventories. Finally, the system did not respond flexibly to changes in world market conditions. For example, in the mid-1980s and early 1990s, low world prices and an overvalued currency led to the de facto bankruptcy of a number of state cotton companies. The companies had to be supported by injections of money from national governments and the donor community.

During the past several years, in conjunction with the Agence Française de Développement, the World Bank has held intensive discussions with the governments and other stakeholders in West and Central Africa, including state cotton enterprises, CFDT, and input suppliers. Two broad reform proposals emerged from these discussions: retaining the state cotton companies but reforming and regulating them, and introducing free entry and competition (Baffes 2000). The first proposal included setting prices appropriate to a competitive environment; giving producers equity in the national cotton companies and more influence over key decisions, especially price setting; subcontracting input provision and transportation to private firms; and eliminating subsidies on sales of cotton lint and cotton seed to domestic textile firms and oil mills. The second proposal included opening the sector to competitive entry at all levels and hence linking domestic prices to international prices; maintaining and strengthening research, extension, and phytosanitary regulations, areas in which the government has an essential role; strengthening farmers groups and facilitating their participation in voluntary contract-farming arrangements; freeing the cotton industry from sector-specific taxation and subjecting it only to economywide taxes; and increasing the efficiency of regional ginneries by harmonizing reforms of cotton trade across West African cotton zones.

Some recent reforms in Francophone Africa point to the future direction of institutional changes in the region’s cotton sector (Badiane and others 2002; Goreux 2003). In Burkina Faso, for example, the state cotton company still holds a monopsony on cotton purchases, but producers acquired 30 percent of the company’s shares in 1999. In Côte d’Ivoire, part of the state cotton company was split into three private companies of comparable size in 1998; following a two-year transition period, the two new private companies began operating independently. Since then, however, the reform process in Côte d’Ivoire has been derailed by political instability, as it has in Zimbabwe.

In Benin, reforms started earlier, with input provision being privatized in 1992 and private operators entering the ginning sector in 1995. Reforms have made significant progress since then under the strong leadership of farmers and ginner organizations.
The private sector, led by producer organizations, today plays a lead role in financing and setting priorities for research in the sector. It has taken complete control over extension services. More important, it has established an innovative mechanism to recover input credit and manage payment to producers. However, recognizing the benefits of more gradual reform, stakeholders in Benin have preferred to retain some aspects of the monopoly-monopsony system while the capacities of local producer organizations are being strengthened. For instance, producer prices are still announced in advance of planting and are still uniform across the country.

Mali is the only other Francophone country where noticeable efforts are being made to reform the cotton sector, following the near-bankruptcy of the state cotton company a few years ago. There are plans to allow new primary processing operators to set up plants in two production zones. In addition, discussions are under way to restructure the state cotton company and possibly move toward privatization in the near future.

Solving the Cotton Problem

The price prospects for cotton (and consequently the export shares of low-cost producers, including many African countries) could be improved considerably if developed countries substantially reduced or eliminated support and if the benefits of world price changes are fully transmitted to producers—not always the case (Baffes and Gardner 2003). A second-best alternative is to provide support in a nondistorting manner. One type of support with minimal distortionary effects—decoupled support—has regained popularity recently. Income transfers under decoupled mechanisms are based on past production and prices and thus would be expected to have only a small impact on current production decisions (Baffes and Meerman 1998). Decoupled support is a particularly interesting alternative for cotton because EU and U.S. support is in the form of domestic measures, and so a change does not require changing the sources of funding as it would in the case of border measures.

The United States took a step in the right direction with the introduction of decoupled payments under the 1996 Farm Bill, but the introduction of emergency payments in 1998 and their legitimization under the 2002 Farm Bill eliminated all good intentions. The European Union took concrete steps with the recent cotton reform but fell short of fully decoupling cotton subsidies and setting a timetable for the complete elimination of support. China is less clear in that only recently have the streamlining of support measures and their potential decoupling from production decisions entered into policy discussions (Jinglin 2003).

On the demand side, all producers need to engage in cotton promotion. Two signs are encouraging. First, cotton final consumption in the United States has been increasing for a decade. The United States has an active cotton-promotion program,
with an annual budget of about $60 million (Jacobson and Smith 2003). Its main feature is raising consumer awareness of cotton through the “Seal of Cotton” campaign. Skelly (2003) reported a strong correlation between the program’s advertising campaign and cotton’s market share in the United States. Second, under a recent cotton promotion initiative, ICAC established the International Forum for Cotton Promotion (IFCP) in 2003 to encourage and facilitate national market-development programs organized by associations and commercial organizations in individual countries and funded from domestic resources. The IFCP is expected to serve as a clearinghouse for the exchange of ideas and strategies to be implemented by national organizations and to facilitate the establishment and expansion of national demand-enhancement efforts. Although it is too early to assess performance, this promotion initiative is certainly a step in the right direction.

A number of developing countries, especially in Sub-Saharan Africa, launched policy reforms in the 1990s. Although not a panacea, the reforms have been successful by most accounts. Generally, cotton growers in countries where reforms have been sustained have received a higher share of fob prices and received payments more promptly. Supply responses have been greater as well. In an environment of declining commodity prices, these are not trivial achievements. However, in some cases, reforms have not been completed (Tanzania), have been reversed (Zimbabwe), or have been too slow (West Africa). In Uzbekistan reform has not even begun.

Farmers’ incomes could be enhanced by increasing on-farm productive efficiency, especially by adapting genetically modified seed technology (FAO 2004). In the United States, where genetically modified seeds account for almost two-thirds of the area allocated to cotton, the gains have been enormous—an estimated $215 million a year during 1996–98, half of it captured by farmers (Falk-Zepeda and others 2000). In China, where genetically modified cotton is used extensively by smallholders, the costs of production declined by 20–25 percent, effectively doubling the net income of cotton growers (Pray and others 2001). Pray and others (2002) also estimate that pesticide use declined by a quarter following introduction of genetically modified cotton. In Australia genetically modified cotton requires half the amount of chemicals used for conventional cotton (Campbell 2003).

In an assessment of the economic, environmental, and social benefits of genetically modified cotton, Edge and others (2001) conclude that there is no downside risk from genetically modified cotton other than the cost of the technology fee. Cabanilla and others (2003) estimate that the failure by the Francophone African countries to use genetically modified cotton technology may have cost as much as $68 million a year in Mali, $53 million in Benin, $41 million in Burkina Faso, and $39 million in Côte d’Ivoire. The FAO (2004, p. 56) noted that the economic benefits of genetically modified cotton can be significant: “In several cases the per hectare savings, particularly from Bt cotton, have been large when compared
with almost any other technological innovation introduced over the past few decades.”

Numerous other recommendations and policy alternatives have also been discussed in the context of the cotton problem, including development of downstream industries in cotton-producing countries, diversification out of cotton, introduction of organically grown cotton, and price stabilization. Development of downstream industries, such as textiles and clothing, is unlikely to address any of the difficulties cotton growers face. In the absence of domestic trade restrictions, cotton will be traded at world prices regardless of the location of textiles. The only gains to producing textiles in a cotton-producing area might be the potential savings from reduced transportation costs. Therefore, any recommendations for creating textile industries should be based on the profitability prospects of the textile industry rather than on the location of cotton production.

Diversification from cotton to other primary commodities, advocated by some, would also not address the problems faced by cotton growers. Most commodities face the same conditions as those affecting the cotton market: declining prices in the longer term due to technological innovation, strong competition from synthetic products, and low (or zero) per capita demand growth. Competition from synthetic products is a characteristic of numerous primary commodities—natural rubber competes with synthetic rubber, coffee and tea compete with soft drinks, jute andsisal compete with plastic products. Therefore, switching from cotton to, say, coffee does not address any of the problems faced by cotton growers. Diversification into new sectors should be based on the relative profitability of sectors.

Organic cotton is often advocated as a solution for cotton growers. Certainly, this market niche should be fully explored. Myers and Stolton (1999) report that in 1997, about 8,150 tons of certified organic cotton fiber was produced worldwide—2,600 tons in the United States, 1,175 tons in India, 1,800 tons in Turkey, 1,570 tons in Africa, and 845 tons in Latin America. But significant expansion into organic cotton faces several difficulties, especially on the demand side, for at least three reasons. First, there is “distance” in the consumer’s eyes between the primary product (cotton) and the final product (cloth). Second, purchasing clothing (as opposed to consuming, say, beverages) requires paying attention to a host of factors before the final decision is made (examining the brand, color, style, size, type and origin of cotton, other content, care instructions). Adding to that congested list information on whether cotton is of organic origin may, in effect, add inconvenience. Third, organic products are typically associated with health-related benefits that do not apply to nonfood products, such as cotton.

Finally, supply controls and stabilization schemes to reduce interyear price variability have failed miserably (see Gilbert’s 1996 “obituary” for international commodity agreements). The International Natural Rubber Organization, which administered the last UN-backed commodity agreement, collapsed in 1999 following the
East Asian financial crisis. The Association of Coffee Producing Countries, which pursued various export retention schemes in order to boost coffee prices, met a similar fate and was eventually dissolved in February 2002, just as robusta coffee prices reached their lowest level in recent history (Baffes and others 2004).

Intrayear price variability, by contrast, can be mitigated with the use of market-based instruments, such as futures and options contracts (Larson and others 2004). But there are a number of problems with these instruments, especially in the cotton market. These are very expensive tools, and apart from the New York Board of Trade (NYBOT), no exchange trades cotton futures contracts with sufficient liquidity (Baffes and Kaltsas 2004). Because the NYBOT contract is based on U.S. cotton, it exposes potential non-U.S. users to high basis risk (low correlation between its price and spot prices of cotton of other origin; Baffes and Ajwad 2001). To be fully hedged, any cotton producer who wants to hedge would have to buy a separate contract for exchange rate risk because the NYBOT contract is traded in U.S. dollars.12

The “Problem” in a Nutshell

The global cotton market may be one of the most obvious examples of the case of policymakers in industrial countries succumbing to the pressures of powerful domestic protectionist lobbies to the detriment of poor smallholders in developing economies. The importance of dealing effectively with cotton subsidies goes far beyond the cotton sector. As the Cancun failure illustrates, the cotton problem has been viewed as a key test to the successful outcome of the Doha Development Agenda, which has been envisaged to reflect the interests and needs of developing countries—hence the change from Doha Round to Doha Development Agenda.

At a global level the cotton problem has become a high-profile issue. The cotton initiative became a priority item in the WTO’s decision to proceed with the multilateral trade negotiations (the so-called July package; WTO 2004c), and in November 2004 the WTO established the Subcommittee on Cotton to facilitate the exchange of information among bilateral and multilateral donors (WTO 2004b). In September 2004 the WTO’s Dispute Settlement Body upheld its earlier ruling on the Brazil versus the United States cotton case, effectively reconfirming that cotton subsidies are too high and that two of them are illegal. Now, it is the policymakers’ turn to ensure that the Doha Development Agenda delivers its promised benefits.

Policymakers in both industrial and low-income cotton-dependent countries are facing four key challenges in the context of the cotton problem. First, agricultural support policies in important cotton-growing countries inflate production and depress world prices, reducing the income of nonsubsidized producers. These policies should be eliminated, and in the meantime any remaining support should be fully decoupled from current production decisions.
Second, in many developing economies (especially in Africa and Central Asia) where cotton is an important source of rural incomes, reforms to restructure the cotton sector and increase its efficiency remain incomplete. Fully implementing reforms should be the immediate focus of policymakers. After all, even if cotton prices increase as a result of market forces or the elimination of subsidies, poor producers will not benefit if the increase is absorbed by bankrupt state enterprises, debt-ridden cooperatives, or corrupt public officials. Furthermore, serious reform efforts will signal the willingness of these countries to participate in the creation of a sound global trading environment.

Third, cotton producers in many developing economies face the challenge of embracing genetically modified seed technology to compete effectively with their competitors who have already embraced such technologies and are reaping the cost advantages and yield gains. That would entail extensive field trials to develop varieties suitable to local growing conditions, as well as putting in place the appropriate legal and regulatory framework—challenging processes requiring attention at the policymaking level.

Finally, cotton faces intense competition from chemical fibers, especially since technological improvements in the early 1970s brought the prices of synthetics down to cotton’s levels. In an era of globalization and intense competition, producing cotton is just the beginning. Increasing cotton’s share of fiber consumption requires aggressive promotion programs by both the public and the private sectors.

Notes

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1. The so-called cotton problem has received widespread attention. Between July 2002, when the joint International Cotton Advisory Committee (ICAC)–World Bank conference highlighted the policy issues of the cotton market, and August 2004, following WTO General Council’s decision on multilateral trade negotiations, the Financial Times published more than 20 articles with exclusive focus on cotton, followed by the Guardian (10 articles) and the Wall Street Journal (7 articles). Numerous articles on cotton were published by the Washington Post, the New York Times, and The Economist. A google.com search on June 8, 2004, returned 10,900 sites that mentioned “cotton subsidies” compared with 3,610 sites on “sugar subsidies,” 2,040 sites on “corn subsidies,” 1,880 sites on “wheat subsidies,” and 650 sites on “rice subsidies.” The Harvard Business School used the Brazil versus United States dispute on cotton subsidies as a case study for one of its international economics courses.

2. Although protection takes the form of domestic support, there are some border restrictions taking the form mainly of import tariffs and tariff-rate quotas. Because these restrictions are applied mostly by cotton-exporting countries, they do not significantly affect the cotton market. Import tariff rates for 2003 were 20 percent in Zimbabwe, 10 percent in India, 10 percent in Uzbekistan, 7.5–10 percent in Brazil, 7.5 percent in Argentina, and 5 percent in Egypt. Countries with tariff rate quotas included
China (3 percent within quota, 90 percent outside quota; tariff rate quota for 2003 was 856,250 tons but was extended to 1.9 million tons when the rate was filled) and the United States (4.4 cents a kilogram within quota and 31.4 cents a kilogram outside quota; tariff rate quota for 2002 was 73,207 tons while cotton imports totaled 6,295 tons).

3. Interventions in the textile and clothing industry, such as the Agreement on Textiles and Clothing and the textiles provisions of the Africa Growth and Opportunity Act, are not reviewed here because these agreements do not greatly affect the global demand for cotton. For example, by current estimates full liberalization of textiles and clothing will induce a mere 1 percent increase in the world price of cotton (Reeves and others 2001).

4. Whether the direct payments that replaced the decoupled payments (also known as production flexibility contracts) are truly decoupled is subject to debate. Because farmers were allowed to update base acreage and yields after 2002, output was effectively linked to current production decisions. See Baffes and de Gorter (2004) for more details on this issue.

5. The maximum guaranteed quantity for which assistance is provided applies at the country level not at the individual producer level. When this restriction is translated into a grower basis, it not only creates administrative complexities but also leads to misallocation of resources, because there is no well-defined mechanism for allocating quotas. Karagiannis and Pantziós (2002), for example, argue that this system failed as a surplus-containment mechanism while resulting in farm income losses.

6. Not all analysts agree that China subsidizes its cotton. Fang and Beghin (2003), for example, estimate that between 1997 and 2000 the nominal protection coefficient for cotton averaged 0.80, implying that China taxes its cotton sector. The different views on the nature and degree of intervention reflect the complexities of China’s agricultural policies as well as the unreliability of the data.


8. By most accounts, Uganda is considered one of the most successful cotton reformers. But not by all. How Uganda is viewed depends on how the numbers are interpreted. Uganda’s cotton sector reached a peak of 87,000 tons in 1970. The sector collapsed and output dropped to 2,000 tons in 1987, a 97.7 percent decline. Cotton output has averaged about 30,000 tons the last few seasons, implying a 65 percent decline from 1970 but a 1,500 percent increase from 1987.

9. Although some researchers have concluded that the quality of commodities deteriorated after the reforms (Gibbon 1999; Shepherd and Farolfi 1999; Larsen 2003) Baffes (2004b) and Gilbert and Tollens (2003), who looked at the postliberalization quality issue for cotton in Tanzania and cocoa in Cameroon, found no such evidence.

10. But even that argument may not be valid. Most textile products use both cotton and synthetic fibers. So either a textile industry will be located in a cotton-producing area and incur the costs of transporting synthetic fibers, or it will be located in a synthetic fiber-producing area and incur the costs of transporting cotton. Because East Asia accounts for most global synthetic fiber supplies, most textile industries would be expected to be located in East Asia—which is largely the case.

11. Diversification out of commodities into industrial products has often been advocated. Industrialization attempts in developing economies (especially in Africa) have been introduced many times in the past with mixed outcomes at best (Easterly 2001).

12. Despite the difficulties, the World Bank, the European Union, and the African Development Bank are working, on a project to examine the feasibility of introducing market-based risk management tools in West and Central Africa. They are expected to explore the potential for a pilot in Benin and Burkina Faso through the Commodity Risk Management Group, which serves as the secretariat for the International Task Force on Commodity Risk Management. The task force comprises representatives of producer groups, private sector providers of risk management instruments, donors, NGOs, and international institutions, all of which share a commitment to a market-based approach to managing risks in commodity production and processing in developing economies.


## Appendix: Cotton Production and Trade Statistics

### Table A.1 Global Balance of the Cotton Market, 1960–2003 (thousands of tons)

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**Source:** ICAC (various issues).

—, not applicable.

*Includes Benin, Burkina Faso, Cameroon, Central Africa Republic, Chad, Côte d'Ivoire, Guinea, Madagascar, Mali, Niger, Senegal, and Togo.

bData are for the Soviet Union through 1990.

cData are included with those for Pakistan through 1970.
### Table A.2 Global Cotton Trade, 1960–2003 (thousands of tons)

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*Source*: ICAC (various issues).
—, not applicable.

\(^a\)Data are for the Soviet Union through 1990.

### References


*John Baffes* 139


John Baffes


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