Equity and Efficiency in the Reform of Price Subsidies

A Guide for Policymakers

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Foreword

The reform of price subsidies may be necessary not only to improve efficiency, but also to facilitate pro-poor economic growth and release resources for critical social services for the poor. At the same time, increases in prices for basic commodities and petroleum products can be associated with real income losses for the poor as well as political unrest in some cases. This guide provides guidance to policymakers on how to design and implement sound price-subsidy reforms that take into account both economic and social considerations.

This guide draws on the experience with the reform of price subsidies in 28 countries. It discusses economic and political considerations in price-subsidy reform and makes several recommendations concerning the speed of reform and social protection mechanisms. Rapid reform requires a favorable political and economic environment. In the absence of this, reform should be implemented gradually. The social impact of reform can be limited by establishing cost-effective and well-targeted temporary social protection mechanisms. Governments can reduce the risk of political disruption by distributing the initial burden of reform fairly and by clearly explaining the cost and benefits to the public.

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Overview

1. The reform of price subsidies has been a key element of IMF-supported programs in many countries. These reforms have brought prices of subsidized items closer to their market-clearing levels and have sought to target any remaining subsidies to the needy. Reform is typically undertaken in the context of macroeconomic adjustment, and its major aim is to achieve fiscal savings consistent with stabilization of prices and exchange rates. Reform of price subsidies may also improve allocative efficiency and promote economic growth, but can—at least in the short run—have adverse social and political effects. These effects can be mitigated or eliminated by establishing social safety nets and, in some cases, by gradually phasing out subsidies.

2. This guide is intended to assist policymakers in achieving the fiscal benefits of price-subsidy reform with minimal social disruption. To this end, the guide draws on the experience of a wide range of countries and lists factors that must be considered in the design of price-subsidy reform. The countries met at least one of the following criteria: the budgetary cost of the subsidies was significant before reform; the Fiscal Affairs Department of the IMF provided technical assistance on reforming price subsidies or assigned a fiscal economist to the country; or price-subsidy reform was a major element of the IMF-supported program. The 28 countries examined are listed in Appendix 1.

3. Section 2 of this guide presents possible reform options; Section 3 provides a checklist of considerations in the design and implementation of price-subsidy reform; Section 4 discusses political considerations; and Section 5 draws key lessons. The appendices describe the nature of price subsidies, discuss different price subsidies (Appendix 2), and illustrate how the impact of price-subsidy reform on real household incomes could be assessed (Appendix 3).

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Economic Issues in the Reform of Price Subsidies

4. Subsidy reform entails price liberalization or adjusting controlled prices of subsidized goods and services, often during macroeconomic adjustment. The economic goals are to correct fiscal imbalances and to improve allocative efficiency. Since the removal of subsidies may have adverse consequences for the poor, these effects must be analyzed and, to the extent feasible, mitigated or offset. In this context, the principal—and interrelated—issues that arise are the speed of price-subsidy reform and the options for protecting the real consumption of the poor.

Speed of Price-Subsidy Reform

5. There is a trade-off between rapidly cutting budget-financed subsidies and avoiding an adverse impact on the poor. A one-time adjustment of prices to eliminate subsidies can yield immediate budget savings and quickly correct distortions in resource allocation. However, it can also result in a sudden and significant drop in standards of living, especially for low-income households. The need to compensate households implies that fiscal savings from price-subsidy reform are usually less than the amount spent on generalized subsidies before the reform.

6. Gradual reform is not without drawbacks. Apart from the fact that it takes longer to reap budgetary and economic gains, progress under gradual reform may falter, or even be reversed. A number of small price increases may engender more public opposition to continuing reforms than a single large increase. In addition, the continued presence during the phase-out period of institutions needed to administer the price subsidies contributes to the risk of a reversal of the reforms (this was a factor in the reappearance of the bread subsidy in Jordan in 1999, after five years of gradual reform).[1] Finally,

[1]Before 1994, generalized subsidies in Jordan covered many food items at an average cost to the budget of 2.2 percent of GDP. These subsidies took two forms: (1) coupons distributed to all households for buying rice, sugar, and milk; and (2) wheat price controls, which provided

a gradual approach may fail if it is adopted to postpone politically difficult reforms. Such failure can be avoided by publicly adopting a detailed timetable of measures.

7. The speed of price-subsidy reform depends on a number of elements (see Box 1). They are:

- *Fiscal considerations.* A high share of *explicit* subsidies in spending implies a greater potential for rapid budgetary savings. However, as noted above, the budgetary savings will be offset in part—at least in the short run—by compensation for the poor. Elimination of *implicit* subsidies, on the other hand, will not generally yield budgetary savings, although the revenues of public-sector agencies could increase. Consequently, the speed of reform of implicit subsidies should reflect the availability of resources, including from external sources. One way to generate resources for targeted compensatory programs is to charge market prices for donor-provided commodities. This policy would also avoid disincentives for domestic production.
- *Availability of social protection instruments and administrative capacity.* Compensating the poor for the elimination of subsidies requires not only resources, but also a system to deliver compensation to those who need it. Price-subsidy reform can be rapid when countries already have social protection instruments that can be adapted to the needs of the poor during reform (see Section 3). If new social safety net instruments need to be established, the administrative capacity to design and implement adequate and well-targeted social protection will affect the speed of reform. Availability of information on the socioeconomic and demographic characteristics of the poor will also influence the speed.
- *Willingness of governments to act on a technically sound reform package.* Political considerations have an impact on whether reforms are

an implicit subsidy for bread. In 1995, the government also began issuing coupons for bread, but the price of bread remained extremely low, leading to wasteful consumption (bread was used for animal feed) and smuggling. In 1996, the price of wheat was increased and the government replaced coupons with a cash transfer for bread. This also led to an increase in prices of other foods like poultry and dairy products, which provoked food riots. In 1999, the fall in international wheat prices offered the opportunity to align the domestic price with its international level and integrate cash transfers into the targeted social assistance programs administered by the National Aid Fund. But the authorities set the domestic price of bread somewhat below its production cost, and a small subsidy reappeared. The domestic price of wheat continues to be controlled, and the bread subsidies may rise if wheat import prices increase.

Box 1. Speed of Subsidy Reform: Country Experience

An examination of 23 countries that underwent price-subsidy reform and for which data are available (see Appendix 1) indicates that most countries did not rapidly reform generalized subsidies. Only two countries eliminated generalized price subsidies in one fiscal year, while an additional six countries achieved budgetary savings in excess of 2 percent of GDP over a two-year period (see below). The speed of reform in the countries studied was affected by:

- *Administrative capacity and availability of social protection instruments.* Many countries adopted a gradual approach to subsidy reform so as to adapt existing social protection instruments or to establish a social safety net (e.g., Algeria, 1992–96; Egypt, 1980–97; Hungary, 1992–94; Indonesia, 1997–2000; Jamaica, 1984–93; Jordan, 1994–99; Sri Lanka, 1978–82; Tunisia, 1990–99; and Ukraine, 1995–2000). In the case of Indonesia, a system of generalized subsidies on food items and petroleum products was introduced in 1997 as the country lacked an effective social safety net. In late 1998, when the budgetary cost of subsidies ballooned to 4.2 percent of GDP, the government began replacing the generalized food subsidies with a targeted subsidy for lower-quality rice. The reduction in the subsidy on petroleum products was delayed because of disagreement between parliament and government on the mechanism for delivering protection to the poor.

  In the short term, fiscal arrangements between the federal and subnational governments can complicate the implementation of price-subsidy reform. In the Russian Federation (1995–2000), the federal government has established the standard for cost recovery for housing and communal services

implemented in a timely manner. In part, they are determined by the popularity of the government and by the level of organization of the middle class (see Section 4 for more details). But, even under favorable conditions, governments may opt for a slower pace of reform in order to assess and react to unintended consequences, including any adverse political repercussions, and adjust the timing and speed of reforms accordingly. (As noted above, however, this runs the risk of reform reversal.)

Temporary Mechanisms to Protect the Poor

8. Poor households can be temporarily protected from the effects of reforming implicit and explicit price-subsidies by:

provided by subnational governments. However, it is up to the subnational governments to apply this standard; they can choose to squeeze other (more productive) programs or accumulate arrears instead.

- *Lack of political support.* Even when countries have had the institutional and administrative capacity to protect the poor, the lack of political support has stalled or reversed reform efforts in some cases. For instance, in Ukraine, the objective of achieving full cost-recovery of housing and communal services is delayed, despite the availability of a well-functioning means-tested program targeted to the poor (see Box 2). A change in government led to the reversal of reforms in Sri Lanka (1982) and Mauritius (1995), although targeted income-support programs in lieu of generalized price subsidies had been established.

On the other hand, reform has been *rapid* where governments were politically strong and the social consequences of reform were largely ignored. Newly elected governments with mandates to deal with economic crisis sharply increased prices in Peru (1990) and Zambia (1991), effectively eliminating generalized subsidies in one fiscal year. Other quick reformers obtained important savings over a two-year period (Algeria, 1991–93, Egypt, 1991–94, Jordan, 1990–92, Sri Lanka, 1978–80, Yemen, 1997–99, and Zimbabwe, 1990–91). These latter reforms were aided by a relatively small social disruption—large-scale millers were the main losers in the elimination of the maize subsidy in Zimbabwe (1990) and government officials were the main losers in the elimination of the wheat subsidy in Yemen (1997–99) (Razmara and others, 1999). Reform can also be more rapid under favorable exogenous circumstances, such as low prices for imported staples.

- *Providing cash compensation to all or selected consumers—perforce including the poor—in lieu of the subsidy.* This can take the form of a separate benefit or be merged with existing social benefits (e.g., by increasing the minimum pension).[2] Cash transfers have many advantages. They allow for consumer choice, the cost to the budget is known with greater certainty than in the case of generalized subsidies, and they can be targeted to the poor. However, their real value may erode quickly during periods of high inflation and they may be prone to corruption.

[2]In some instances, the government awarded wage increases at the time of price liberalization. This policy is tantamount to a cash compensation targeted to workers in the public sector and recipients of social security benefits.

- *Limiting price subsidies to a subgroup of the population—again, including the poor.* If the target group is carefully selected and the scheme is effectively implemented, targeting can produce substantial budgetary savings with minimal social disruption (e.g., in Jamaica in 1984).

9. These *temporary* measures should be phased out and eventually subsumed under existing or new social assistance programs as the economic adjustment envisaged under economic reforms is completed. As the social impact of price-subsidy reform dissipates over time, the imperative of providing a coherent system of social protection for the poor overtakes the need to provide special protection to those affected by the reform. In practice, however, it has proven difficult to phase out temporary social safety nets.[3] To avoid this, their temporary nature should be addressed at the outset, through public pronouncements and, where feasible, sunset provisions. Alternatively, the cash compensation or targeted subsidy, as well as the qualifying criteria, can be held constant in nominal terms. In this case, the real value of the transfer and the number of recipients will decline over time with increases in the price level and the growth of nominal household incomes (e.g., as happened with the food stamp program in Sri Lanka during 1979–82; Edirisinghe, 1988).

10. During reform of producer subsidies, selected small producers and workers can be compensated for lower output prices or higher input prices by targeted cash transfers. Producers can be given income support (e.g., in relation to the size of landholding in agriculture). Unemployed workers can receive severance payments or benefits from an existing or adapted unemployment scheme.

Targeting of Compensation and Consumer-Price Subsidies

11. The primary issues in deciding how to target compensation and price subsidies are the ability to identify the poor, the administrative capacity to deliver assistance, and the political support for the targeting scheme (see also Chu and Gupta, 1998a). The first two issues are discussed below and in Section 3; the third issue is taken up in Section 4.

12. The following economic objectives should guide the design of a targeting mechanism:

[3]Korea has been successful in phasing out safety nets after the effects of the 1998 financial crisis dissipated.

- *Promote efficient targeting.* Targeting is subject to two types of errors. If the targeting is too tight, some people in the target group are excluded from the subsidy (errors of exclusion); conversely, if the targeting is too loose, the subsidy is granted to people for whom it is not intended (errors of inclusion). In this context, targeting should provide adequate protection to the poor, while minimizing leakage of benefits to the nonpoor in a cost-effective manner.[4]

- *Emphasize economic incentives and ensure consistency with overall fiscal and macroeconomic targets.* The disincentive to work stemming from income transfers should be recognized in the design, and the time and cost of travel to claim benefits should not be so high that it discourages participation by the poor (although it can be helpful if it limits participation by the well-off).

13. The goals of efficiency and equity can best be served if the government can limit its assistance to those truly in need. This requires the ability to design and implement an effective means test. A means test sets an income threshold above which benefits are phased out (see Box 2 for its application to Ukraine). Simple means tests do not value in-kind or seasonal income, or consider other individual adjustments. More sophisticated tests adjust family income according to, for instance, family size or the costs of major items such as housing and major medical expenses. A means test should be graduated, with benefits declining as income rises, to avoid discontinuities in labor supply.

14. Means tests have been difficult to implement in developing countries and transition economies because of the difficulty of observing in-

[4]Based on a sample of 24 targeted-subsidy and cash-transfer programs in 11 countries in Latin America, Grosh (1994) finds that the administrative cost as a share of total program cost ranges from 3 percent to 10 percent for self-targeted programs, against 4 percent to 16 percent for geographically targeted programs, and ½ percent to 29 percent for programs that assess eligibility individually for each participant. These wide differences in administrative cost are not reflected in the targeting efficiency; for all programs for which data were available, the share of benefits accruing to the poorest 40 percent was within or near the 70 percent to 75 percent range. This result can be attributed to the small share of screening cost of participants in the overall administrative cost of subsidy programs and disparity in the availability of existing mechanisms to channel benefits. Another reason might be that the administrative costs do not vary significantly with the level of the benefits; administration of a scheme that pays beneficiaries very little will thus tend to absorb a large share of the total program cost, independent of the targeting mechanism (see Foster, Goméz-Lobo, and Halpern, 2000).

Box 2. Ukraine: Targeting of Housing and Communal Services Subsidy

Since May 1995, the government of Ukraine has successfully implemented a targeted income-transfer program to cushion the impact on the poorest segments of the population of the gradual tariff increases to achieve full cost-recovery of housing and communal services. The objective of this program is to limit outlays on housing and communal services to 20 percent of total household income. Targeting is based on total household income (total reported income of all family members over age 16). Households have to requalify every six months by submitting income statements for the previous three months. The subsidy takes the form of a budget transfer to the providers of housing and communal services which in turn accept a discount on the amount households have to pay for these services.

In 1999, approximately 4.7 million households (25 percent of the population) were covered at a budget cost of 0.8 percent of GDP, down from 5.5 percent of GDP in untargeted subsidies in 1995. In addition to providing income support, this program established the administrative structure necessary to means test a general poverty benefit.

come earned in the informal sector. A clustering of incomes around a narrow range, implying a large change in the number of beneficiaries with a small change in the threshold, can also add to design and administration difficulties. In countries that are devolving responsibilities to lower levels of government, weak administrative capacity of subnational jurisdictions can limit the effective implementation of transfer programs.

15. In countries that are unable to establish an efficient means test, the poor have to be targeted indirectly.[5] Table 1 provides stylized examples of how to choose among the indirect targeting options listed below (see also Chu and Gupta, 1998b).

- *Target benefits to population groups that are likely to be poor on the basis of socioeconomic and demographic characteristics.* These groups could include the elderly, children, or the unemployed (categorical targeting), or those residing in specific areas within a country (geographical targeting). Categorical and geographical targeting are

[5]See also Van de Walle (1998). Several studies have shown that the targeting of social safety nets tends to become more efficient over time; see Hammer, Nabi, and Cercone (1995) and Lanjouw and Ravallion (1999).

associated with relatively low administrative and economic costs but tend to suffer from relatively large targeting inefficiencies. In some countries, including Chile, Colombia, Mexico, and a number of transition economies, categorical targeting has been further developed by using a combination of household indicators that are correlated with poverty but are more easily observed (proxy targeting). These indicators may include housing characteristics and location, family structure, occupation, education, gender of household head, and ownership of durable goods. Using more indicators can improve targeting efficiency and reduce program cost but will raise administrative costs.[6]

- *Link the subsidy or cash benefit to a self-targeting work requirement.* The benefit payment can be made in-kind through, for example, food-for-work programs (e.g., in Bangladesh, India, and Mexico). The obligations for the recipient can also come in the form of the requirement to send children to school (e.g., in India). Alternatively, beneficiaries can receive wage payments for participating in public-works programs (e.g., in Indonesia). The (monetary or in-kind) wage rate must be sufficiently low so that only those workers who are in need are willing to trade their time for the assistance (the wage rate should, in general, be below the prevailing wage for unskilled labor).[7] This would also allow more families to be helped. Such self-targeting also provides an exit incentive: once the economic situation of the participating families or individuals has improved, they will opt out of the programs. Self-targeting also requires less information than other targeting mechanisms. As a result, program and administrative costs can be low. A major drawback is that coverage of the poor may be imperfect because public works and food-for-work programs may not be available in all areas in which the poor live and because of the social stigma associated with such programs (e.g., in Brazil and Korea) (Alderman and Lindert, 1998). Moreover, such programs cannot target the working poor or those who are unable to work (e.g., the disabled, elderly, and mothers with young children).

[6]Targeted food supplements and nutrition interventions for women and children, including school feeding programs, are a special case of such targeting. The drawbacks of these programs are imperfect coverage of the poor and high administrative costs. On the other hand, they are not associated with labor market disincentive effects, and are subject to minimal leakage.

[7]In Zambia, where cash-for-work road construction projects offered a relatively high wage rate, some beneficiaries subcontracted their jobs to others at a lower wage.

TABLE 1. STYLIZED OPTIONS FOR TARGETING

Socioeconomic and Demographic Characteristics of the Poor	Administrative Capacity	Existing Social Protection Instruments	Available Targeting Options
Rural landless workers and smallholders who are net purchasers of food; workers in the urban informal sector.	Information on the poor is lacking; weak governance and administrative capacity.	Nonexistent or limited.	Food-for-work and public works programs; commodity targeting; food transfer programs that build on existing efforts by nongovernmental organizations (NGOs); guaranteed minumum amount for all, equivalent to amount consumed by the poor using coupons.
Pensioners living alone; large families headed by single mothers; disabled.	Weak governance and administrative capacity.	Well-functioning social protection programs, including pensions, unemployment insurance, and family allowances.	Means-tested cash compensation; categorically targeted cash compensation and subsidies; public works programs; guaranteed minimum amount for all, equivalent to amount consumed by the poor using coupons.
Rural and urban informal sector workers and long-term unemployed.	Information on the poor is lacking; weak governance and administrative capacity.	Pensions with limited coverage of formal sector workers and limited social assistance programs.	Commodity targeting, as well as guaranteed minimum amount, for all, equivalent to amount consumed by the poor using coupons; public works programs.
Urban unemployed and low-skill formal sector workers; rural smallholders.	Information on the poor is lacking; governance and administrative capacity is somewhat weak, but there is experience with targeted social protection schemes.	Pensions for public sector workers.	Commodity targeting; limiting subsidies to amount consumed by the poor using coupons; public works programs.

Note: In all cases, the subsidy to be reformed is assumed to be a generalized subsidy for basic food staples. The targeting options are meant to provide an indication of what may be appropriate under different circumstances. The choice would crucially depend on prevailing conditions, such as the incidence of corruption and available financing.

- *Self-target through subsidization of lower-quality items.* Commodity targeting limits price subsidies to items that are viewed as necessities for low-income families, but consumed in very low quantities—or not at all—by other groups (e.g., "inferior" items in the sense that the quantities consumed, and thus the subsidies, go down as household income rises). It is self-targeting in that benefits are available to all, but the program is specifically designed so that only the poor elect to participate. Brown sugar, coarser varieties of rice and wheat, and generic medicines are attractive options for commodity targeting.[8] The choice of packaging can also enhance the efficacy of self-targeting. Commodity targeting suffers from the same problems as other self-targeting schemes (imperfect coverage of the poor and, in some cases, lack of political support). Further, if the targeted commodity is consumed by the nonpoor, leakage of benefits will occur. In practice, at least one-third of the commodity-targeted subsidy can be expected to benefit the nonpoor (Alderman and Lindert, 1998).
- *Limit a generalized subsidy to or below the amount consumed by the poor.* A uniform benefit to all households at a low level equivalent to the consumption of the poor protects those below the poverty line and is likely to attract more political support than a scheme targeted just to the poor. On the other hand, by covering the nonpoor, the targeting is imperfect and the budgetary costs are raised. However, improvements can be made through the choice of delivery mechanism (e.g., the provision of food subsidies via health clinics in Jamaica—see Box 3). This kind of targeting has been used in various rationing schemes for administrative ease, including direct quantity rationing (e.g., the provision by the government to the consumer of a fixed quantity of the subsidized item at zero or below-market cost, as in India), cash transfers (at a value equal to or below the loss to poor households from price-subsidy reform as in Mauritius), and the issuance of coupons as in Sri Lanka. This principle also underlies the establishment of two-tier tariffs for electricity and water. In this case, households pay a lower tariff up to a certain level of consumption.

[8]The principal factors that underlie self-targeting in the broader sense are the opportunity cost of time used for obtaining benefits in work programs, the attractiveness of products to the poor, and social stigma.

Box 3. Successful Price-Subsidy Reforms

A successful price-subsidy reform should achieve significant budgetary or quasi-fiscal savings within a relatively short period of time, while avoiding social and political disruptions.

- *Tunisia* realized substantial budgetary savings from increased targeting of its generalized system of food-price subsidies, reducing spending from 2.8 percent of GDP in 1990 to 1.0 percent in 1999. Reform was gradual and involved repeated price adjustments, sensitizing the population to the need for reform, introducing compensatory measures (e.g., higher social assistance benefits, minimum wage adjustments, and increased student aid), and limiting subsidies to items perceived to be of lower quality (e.g., subsidized milk, bread, and wheat flour were packaged unattractively).
- *Jamaica* implemented a food stamp program in 1984 to provide staples to pregnant and lactating women, young children, the poor, the elderly, and the handicapped, in lieu of a generalized food-price subsidy. The cost to the budget fell from about 6 percent of GDP in the late 1970s to around 0.1 percent since 1993. Moreover, the innovative delivery mechanisms (such as the distribution of benefits through the health care system) allowed for a substantial increase in targeting efficiency. In 1998 the real value of the food stamps was only 73 percent of its value in 1990, and the program covered only a small share of the low-income consumption basket.
- Targeting in *Hungary* during the early 1990s relied on social assistance offices to target housing allowances to poor households, while raising housing rents to market levels and eliminating interest subsidies.
- The price-subsidy reforms in *Jordan* and *Ukraine* were successful in that they achieved reductions in government outlays while providing protection to vulnerable groups. Sustainability of the reform has been a problem in Jordan, however, while progress in Ukraine toward achieving full-cost recovery for communal and housing costs has been slow.

16. The choice among targeting options depends on the ability and willingness of governments to target subsidies and cash transfers. In cases where the country lacks both the administrative capacity to target price subsidies and social protection instruments that can be quickly adapted to compensate the poor, *self-targeting mechanisms or provision of a limited subsidy to all* are likely to be the only available options for compensating the poor, at least in the short run. Box 3 lists selected examples of countries where price-subsidy reform has been successful.

3

Checklist of Economic Considerations in Price-Subsidy Reform[9]

17. Based on the above discussion, policymakers should do the following to the extent information is available:[10]

18. *Assess the nature of existing subsidies*—their objectives, beneficiaries, administrative mechanisms, and costs. The analysis of current subsidies should be the starting point and should include an assessment of their economic rationale and efficiency in achieving their objectives. Special attention should be given to identifying the extent of implicit subsidies, which in contrast to explicit subsidies, cannot be easily gleaned from the budget. In the case of *producer subsidies*, design considerations are different. The goal of producer subsidy policy is to protect incomes of producers and support employment. In such cases, as noted in Appendix 2, output prices are set above market-clearing levels. Compensatory measures should then be targeted at smaller, less wealthy, producers and those rendered unemployed by reforms.

19. *Assess the socioeconomic and demographic characteristics of the population affected by higher consumer prices, particularly the poor.* The poor may be clustered in certain socioeconomic groups or regions. For instance, in Europe and Central Asia, single mothers, families with many children, pensioners living alone, and workers with little or outdated education are very often poor (Grootaert and Braithwaite, 1998); much of the poverty in Africa, on the other hand, is concentrated in rural areas (Demery, 1999). Such information is typically available from the World Bank's Poverty Assessments and household surveys. The poverty line is crucial for assessing the characteristics of the poor. In the design of social safety nets, the usual practice has been to use country-specific

[9]In practice, the design of price-subsidy reforms will be the outcome of a collaborative process involving the country authorities, the IMF, the World Bank, and other stakeholders, particularly if such reforms are part of a poverty reduction strategy paper.

[10]If full information from existing sources is lacking, substantial resources would be required to take into account all relevant considerations set forth in the guide.

poverty lines, rather than international poverty lines defined in terms of daily consumption measured in U.S. dollars in purchasing-power-parity terms.

20. *Assess the gains from price-subsidy reform.* These would include improved resource allocation (e.g., improved availability of price-controlled items), resource savings that could finance critical public services, or reduce the deficit or taxes, and the beneficial impact on real incomes of some households (see below).

21. *Examine the short-term impact of increasing prices of consumer items on real household incomes, particularly the incomes of the poor.* Both the direct and indirect effects of changes in the price of subsidized items must be considered by following these steps:[11]

- *Assess the direct impact of a reduction in subsidies on real household incomes.* A pragmatic approach to estimating this impact is provided in Appendix 3. Such estimation requires information on the share of subsidized spending in total household expenditure. These data can usually be obtained from household surveys, but are often available only with a substantial lag or with less detail than desired for these purposes (see Deaton, 1997). For example, in Poland in 1993, an increase in household tariffs for heating, electricity, and natural gas to market levels (an increase of about 80 percent) would have resulted in an immediate 5.9 percent fall in real income of the households in the bottom 20 percent of the income distribution (Freund and Wallich, 1997). In Indonesia, in the aftermath of the 1997–98 financial crisis, food price increases had an immediate and significant impact on the level of real consumption of low-income households. This was attributable to the high share of food (over 70 percent) in total expenditures of low-income households and the high increase (over 75 percent) in food prices during 1998 (Gupta and others, 1999).

  Not all poor households lose from price-subsidy reform. For example, households that produce more food than they consume may gain from the liberalization of food prices. Those employed in the traded-goods sector may also benefit from the elimination of implicit exchange rate subsidies.

[11]For a number of countries, World Bank staff carries out analyses of the impact of price subsidies in the context of the Poverty Assessments and Public Expenditure Reviews.

- *If possible, assess second-round effects.* Increases in subsidized commodity prices may trigger price increases in other items, such as locally produced foods (e.g., in Jordan, elimination of the wheat subsidy in 1996 prompted producers of poultry and dairy products to raise their prices sharply; see Footnote 1). Reducing the subsidies on energy products will increase the production cost of a broad range of items. Although such effects on the production cost of nonsubsidized items are typically difficult to assess ex ante, an initial, tentative estimate can be made by using the input share of subsidized items in the production of other major goods and services consumed by households. Data on such input shares can be obtained from social accounting matrices (e.g., see Thorbecke, 1998).
- *The impact of price-subsidy reform on real household income (particularly of the poor) should be monitored.* With the support of the World Bank, units have been established in a few countries to continuously monitor social outcomes during the implementation of reforms (e.g., the Social Monitoring and Early Response Unit in Indonesia, in 1998).

22. *Examine the macroeconomic stance.* Typically, price-subsidy reform is undertaken at a time of fiscal consolidation to help achieve macroeconomic stability. The scope of the compensation scheme and the speed and extent of the reform must be consistent with these overall policy targets. Macroeconomic policy should also take into account the impact of price-subsidy reform. The reduction of consumer-price subsidies will be reflected in a one-time increase in prices. Monetary and fiscal policies should prevent these price adjustments from triggering a period of sustained higher inflation through, for example, a price-wage spiral.

23. *Examine the capacity to use, on a temporary basis, existing social protection instruments to compensate the poor.* These instruments may include formal social security arrangements, including social insurance (such as public pensions and unemployment insurance), family allowances, and social assistance. In cases where speed is of the essence, the administrative structure of existing social security programs can, in principle, be used to transfer benefits quickly to those poor individuals and households affected by the price-subsidy reform. It will be important, though, to ensure that such use of existing social security programs is temporary and that any additional cost is funded separately. Since these

instruments—particularly social insurance programs—do not have poverty reduction as their principal aim, they may need to be adapted, a process that has often encountered political resistance, especially in transition economies. Finally, although some countries—particularly many transition economies—have a variety of such instruments, others—notably in Africa—may lack them.

24. *Assess the interaction with other elements of the adjustment program.* The adverse impact of price-subsidy reform can be exacerbated by other adjustment measures (e.g., an exchange rate devaluation and civil service reform). Specific measures, though not designed to compensate for price-subsidy reform, may help to ameliorate its adverse impact on certain population groups (e.g., the provision of severance pay to assist those laid off from civil service and public enterprises). On the other hand, in a number of transition economies, enterprises provide in-kind subsidies to their workers (e.g., for housing, day care, school, health care, sports, and food) (Hu, 1998). Enterprise reform can deprive households of such in-kind benefits, and this fact should be reflected in the design of safety nets.

25. *Assess governance and administrative capacity.* In many countries, weak governance and administrative capacity hamper the targeting and delivery of benefits. Weak governance can divert and waste resources allocated for price subsidies. Weak administrative capacity reflects the lack of cost-effective mechanisms to channel income transfers or targeted price subsidies to the designated population groups, and can be rooted in such factors as insufficient information on the poor and lack of equipment. Even where administrative capacity exists, targeting and delivery can be difficult. Determining eligibility on the basis of income may lead to mistargeting benefits if the administrative capacity is weak. Furthermore, incomes change over time and frequent updates of income data are costly (Van de Walle, 1998). For example, the cost of administering a means-tested rice-subsidy program in India's Andhra Pradesh state in 1996 was Rs 1.75 for every rupee reaching the poor, and another Rs 3.6 were lost in leakage to the nonpoor (Radhakrishna and others, 1997).

26. *Take account of available financing.* The reform of explicit subsidies is usually undertaken to achieve, inter alia, budgetary savings. Depending on the size of required fiscal adjustment, part of those savings can be used for targeted programs. On occasion, access to foreign funds and commodity assistance may provide additional resources for compensatory measures.

27. *Assess the impact on the environment.* Price-subsidy reform is usually, but not always, beneficial for the environment (Gupta, Miranda, and Parry, 1995). Input subsidies for pesticides, fertilizers, and irrigation can be harmful for the environment. They also provide incentives for land clearance, which can lead to soil erosion. Subsidies for energy may contribute to global warming, acid rain, and respiratory and other health problems. On the other hand, subsidies for kerosene have been defended because they tend to benefit the poor and they can reduce reliance on firewood and protect forests.[12] However, the most efficient way to internalize environmental costs and benefits is to penalize behavior that harms the environment, as with a carbon tax, rather than subsidize alternatives to this harmful behavior.

[12]However, Pitt (1985) found that kerosene subsidies in Indonesia disproportionally benefited the nonpoor and that the elasticity of substitution between firewood and kerosene was very small.

4

Political Considerations

28. When reform targets benefits to truly needy families, less needy families will suffer. The latter families may be part of politically powerful groups. If governments perceive the risk of political fallout—including apprehension about violent protest—as too large, they may be deterred from implementing reforms. In some countries—Ecuador in 1998–99, for instance—the government's popularity was eroded in the wake of the implementation of reforms.

29. As noted above, political considerations influence the speed of reform. These considerations include (see also Box 1):

- *Popularity of the government.* It is easier for a popular government to implement difficult policy reforms. For example, the election of a new government with strong public support can provide an opportunity for rapid reform. Furthermore, an economic crisis may temporarily engender greater support for actions that would be otherwise unpopular. For example, in Peru, President Fujimori continued to enjoy approval ratings of 64 percent in 1992 and 69 percent in mid-1993 despite sharp reductions in price subsidies without accompanying compensatory measures. Graham (1994) attributes this to the extreme economic shock that preceded reforms and to the on-going civil strife.

  In some instances, a reduction in the international price of imported subsidized items has provided a window of opportunity for governments to implement reforms (e.g., Yemen in 1998). When such opportunities arise, a government intent on reform should act quickly. Indeed, implementing reforms rapidly may even bring political benefits. Evidence from transition economies suggests that incumbent radical-reform governments have done well in elections, whereas incumbent slow-reform governments have been defeated (Åslund, Boone, and Johnson, 1996). In the same vein, evidence from the Russian Federation suggests that in regions that have implemented radical reforms, support for reformist parties is stronger (Warner, 1997). Governments that lack political and economic credibility may face insurmountable obstacles in the implementation of price-subsidy reform (e.g., Indonesia in 1998 before the change in government).

- *The level of political organization of the middle class.* In many cases, protests against price-subsidy reforms are fueled, and sometimes led, by the urban middle class (civil servants, teachers, university students, and affiliated labor organizations). These groups may protest because they would lose the benefit from existing, poorly targeted subsidies without a compensating reduction in their tax burden (Hausmann, 1998, and Nelson and others, 1994). In Venezuela, in the early 1990s, for instance, the lukewarm political support of the middle class for a cash-transfer and food-stamp program targeted through the basic education and primary health care system sharply contrasted with this group's opposition to realigning public-sector prices with their true economic cost. Over time, subsidies can become entrenched as entitlements for current and future generations, which intensifies resistance against reform (Samuelson, 1995).

30. In general, violent reactions to price-subsidy reform are the exception rather than the norm, and often are not triggered by the reform alone (Box 4). Subsidy reductions that have touched off civil unrest are those for staple foods, such as bread (Egypt, Jordan, and Morocco), maize (Zambia and Zimbabwe), and petroleum products (Ecuador, Indonesia, Nigeria, and Venezuela).

31. To assess the political risks associated with price-subsidy reform, policymakers should, to the extent feasible:

- *Identify the winners and losers from price-subsidy and other economic reforms.*[13] One way to establish winners and losers is to examine the benefits of existing subsidies for different income classes (see, for example, Chu, Davoodi, and Gupta, 2000). Furthermore, the characteristics of the winners and losers need to be identified. For example, urban dwellers tend to be hit the hardest by food price increases, while

[13]Hausmann (1994) argues that entitlements, such as subsidies, imply a negative-sum game leading to a highly inefficient but stable political (Nash) equilibrium. Moving to a better, Pareto-efficient equilibrium, requires a package of policies that yields benefits over the medium term for all groups. Ravallion and Lokshin (2000) examine support for government redistribution in the Russian Federation in 1996. They find that support for redistribution not only depends on whether the population is poor or well-off, but also on whether it expects to suffer an income loss or gain.

Box 4. Subsidy Reform and Civil Unrest

The following examples illustrate the risk of political disruption where rapid reform was attempted without credible social protection mechanisms and governments were unpopular:

In *Jordan*, in April 1989, an attempt to raise fuel prices resulted in riots that brought down the unpopular prime minister. In August 1996, Jordanians again took to the streets in response to a 200 percent increase in the price of bread and associated price increases for other items (see Footnote 1 in main text). Observers noted that the unrest was also rooted in the absence of economic opportunities (GDP per capita fell by 2.5 percent in 1996) and dissatisfaction with the lack of public participation in decision making.

In *Zimbabwe*, in 1998, riots erupted in the wake of a currency devaluation when the poor and the middle class faced higher prices for a wide range of items. Higher-income groups were perceived to be benefiting through large wage adjustments amid accusations of widespread and growing corruption. In early 1999, the government pegged the Zimbabwean dollar at a fixed rate against the U.S. dollar.

In *Zambia*, in 1990, the government faced public protest and a coup attempt when it announced an increase in the price of maize meal without an explanation. The subsequent government, after great efforts to explain its reform program to the public, freed the price of maize, resulting in its quadrupling, virtually without public protest (Graham, 1994).

rural consumers are less affected because they grow more of their own food. Some ethnic groups can be poorer than others; opposition against price-subsidy reform was strong among the poor indigenous population in Ecuador in 1998–99.

- *Assess the magnitude of the losses.* This will likely provide an indication of the intensity with which those who lose will oppose price-subsidy reform.

- *Assess the political strength of the winners and losers.*

32. Even if price-subsidy reform is associated with considerable risk of political disruption, certain policies can ameliorate those risks:

- *Embed the subsidy reductions in a reform program that engenders broad support and yields widespread benefits—the stakeholder ap-*

Indonesians took to the streets in May 1998 to protest energy price increases proposed by the Suharto regime. In March 2000, there were renewed protests against a proposed hike in fuel prices and the price increase has been postponed until a compensatory scheme for the poor households can be put in place. The current government, elected in 1999, has been actively campaigning to explain why subsidy cuts are needed to support economic recovery and to finance the expansion of social programs.

In *Ecuador*, in September 1998, the government increased prices of cooking gas, gasoline, and diesel. To compensate poor households, the government introduced a cash-transfer program targeted to poor women with dependent children, senior citizens, and the disabled. Despite the success in reaching 1.3 million beneficiaries (50 percent of households), the government changed its position on the price increases after street protests in July 1999. Subsidies for fuels reemerged in 1999 as import costs increased and the exchange rate continued to depreciate.

In *Nigeria*, in June 2000, the government increased the price of gasoline by 50 percent. This price increase followed an effective doubling of civil service wages and a major adjustment of the minimum wage in May. However, in reaction to protests by organized labor and students in the major cities, the government agreed to a reduced price increase of 10 percent, while apologizing for not consulting various stakeholders more widely. Observers have linked the protests to an IMF-supported program and the absence of social safety nets in an environment of widespread poverty.

proach (Graham, 1998). By providing compensatory measures to the poor, the government can gain the support of an important constituency for implementing and sustaining price-subsidy reform. In the short term, resistance from the middle class may be overcome by providing them with temporary compensation (De Donder and Hindriks, 1998; and Gelbach and Pritchett, forthcoming). In such cases, an appropriate option for targeting may be to limit generalized subsidies to the amount consumed by the poor.

The stakeholder approach implies that governments should avoid reforms that impose an unfair burden on a narrow group of vulnerable socioeconomic or ethnic categories. Public intolerance for price-subsidy reform can be exacerbated by widespread discontent with initial living standards—for instance, in case of a high incidence of poverty, particularly among certain population groups and in some regions.

In the longer term, sustained support for reforms needs to be crafted through consultative processes (see, for example, Nelson and others, 1994). In this context, consultations with civil society for the drafting of a poverty reduction strategy paper should help to alleviate public concerns. It is desirable that the program of economic reform is "owned" by the government and is not perceived to be designed by others. Greater transparency of the budget and enhanced accountability of public spending would also promote support for price-subsidy reform.

Decisions to target compensating measures to the nonpoor on the basis of political considerations are extremely difficult to make and should be approached with great caution. The fiscal cost of providing income transfers to the nonpoor may be considerable, and there is a risk of eliciting claims from other groups for similar transfers. For international financial institutions, including income transfers in one program and not in others also raises the question of fairness of country treatment. The ultimate goal of successful reform is to target assistance to the truly needy only.

- *Encourage the authorities to organize mass information campaigns.* In successful reforms, governments were able to communicate effectively to the population the drawbacks of the prereform situation and the advantages of pressing ahead with the package of reform measures. There are two basic options for such communication:
  - *Present the cost of subsidies in concrete terms.* In Egypt, for example, the budgetary burden of subsidies was illustrated by comparing outlays with the revenues from the Suez Canal. In Tunisia, the cost of subsidies was cast in terms of those of other public services, such as provision of hospitals (Razmara and others, 1999).
  - *Explain to the public how the reform package affects real household incomes.* In Zambia in 1991, for example, the government emphasized the people's historical willingness to pay high black market prices for maize in times of shortages and the improved availability of this staple after reforms. In Peru in 1991, the presentation of the reform package on television by a popular mem-

> ber of government successfully promoted the view that the government's proposal presented a viable option for addressing the severe economic crisis (Graham, 1994). In Venezuela, on the other hand, the government's efforts to explain its reforms were timid and suffered from the inability of public officials and agencies to communicate their actions clearly and credibly (Naim, 1993).

If targeted subsidies are introduced, the public should be informed about *eligibility criteria* and the steps they need to follow to obtain benefits. In Jamaica, procedures for obtaining food stamps were explained through a media campaign involving radio, television, posting of handbills, public address systems, and a series of newspaper inserts. Similarly, in Ecuador in 1998, the rapid introduction of a cash compensation program in lieu of generalized subsidies for cooking gas was aided by a comprehensive publicity campaign.

5

Key Lessons

33. **Speed**

- *Large budgetary savings* from price-subsidy reform are difficult to achieve in the short run. Most countries have adopted a *gradual* approach.

- When reform is *gradual,* the government can reduce the likelihood of policy reversal and inadequate progress by *adopting and making public a detailed timetable* of reform measures.

- *Rapid* reform is feasible only when governments are *politically strong* and the *social disruption* from reform is assessed to be small. Reform can also be more rapid under *favorable exogenous circumstances*, such as low prices for imported staples.

34. **Social protection mechanisms**

- *Mechanisms for protecting the poor* should be established *before* the reform of generalized price subsidies is initiated and prices of subsidized items change.

- Compensation schemes that protect households from real income losses should be *temporary*, to be replaced with permanent social policy instruments.

- Using *income* for targeting benefits in developing countries and transition economies is often not a practical option in the short term. Targeting benefits to *households with specific characteristics* can be relatively efficient in certain cases.

- The choice among targeting options can be severely constrained by *lack of data on the poor* and by *weak governance and administrative capacity. Self-targeting* may remain the only feasible option.

- *A generalized subsidy limited to, or below, the amount consumed by the poor* protects both the poor households as well as politically vocal groups, while generating budgetary savings.

35. **Political disruption**

- The *risk of political disruption* is highest when *rapid reform* is attempted without *credible social protection mechanisms*, and the government is unpopular.
- Governments should be encouraged to adopt the *stakeholder approach to reform*, thus avoiding an undue burden on any single group, and *initiate mass information campaigns* for explaining to the public the benefits of price-subsidy reform and the working of social safety nets.

Appendix 1

List of Examined Countries[14]

Sub-Saharan Africa:

Mauritius (1992–95)*
Nigeria (1999–2000)*
Zambia (1991–93)*
Zimbabwe (1990–91)*

North Africa and Middle East:

Algeria (1991–93)*
Egypt (1991–94)*
Iran (1992–95)*
Jordan (1990–92 and 1994–99)*
Morocco (1996–99)*
Tunisia (1989–99)*
Yemen (1997–99)*

Europe and Central Asia:

Albania (1992–97)
Belarus (1997–99)*
Hungary (1992–94)*
Poland (1993)
Russian Federation (1994–99)*
Ukraine (1995–99)*

Western Hemisphere:

Colombia (1997–99)*
Ecuador (1997–98)*
Jamaica (1984–93)*
Mexico (1981–91)*
Peru (1990–91)*
Rep. Bolivariana de Venezuela (1989–91)*

South and East Asia and Pacific:

Bangladesh (1991)
India (1994–95)
Indonesia (1998–2000)*
Pakistan (1984)
Sri Lanka (1978–82)*

[14]An asterisk indicates that data on public spending on price subsidies before and after reform are available for the country.

Appendix 2

The Nature of Price Subsidies

36. A price subsidy reduces the consumer price of a good or service below what it would be in the absence of the subsidy (consumer subsidy) or increases the price received by a producer above its market level (producer subsidy). In practice, consumer subsidies are often implemented with price controls, resulting in shortages of the subsidized item. Producer subsidies, on the other hand, are often administered through producer support prices. When support prices are set too high, there is an oversupply of the subsidized item.

37. Explicit price subsidies are recorded in the government budget as expenditures, although not necessarily under the category "subsidies."[15] Explicit subsidies can take many forms. In the case of a consumer subsidy, a public agency can make direct payments to producers to compensate them for charging lower prices for their output. Alternatively, the government can directly provide goods and services free of charge or at below-market prices through a public distribution system.

38. Implicit price subsidies are not easily identifiable in the government budget, but can show up as (1) losses of the banking system (e.g., owing to below-market interest rates or directed credits); (2) losses of state-owned enterprises, owing to setting prices below cost recovery levels; (3) differential tariffs for various consumers (e.g., by charging industrial users a higher tariff for electricity and water); (4) tax expenditures (e.g., tax exemptions, concessions, and deferrals); (5) below-market procurement prices, which act as a tax on producers and a subsidy for consumers; (6) equity participation in state-owned enterprises without an expectation of a market return or net lending to them at preferential interest rates; (7) regulations that alter market prices or restrict market access (regulatory subsidies); and (8) distribution of

[15]Subsidies paid to consumers, as opposed to producers, are typically classified as transfers in the public sector accounts. Subsidies that are administered by extrabudgetary funds (such as agricultural subsidies in a number of countries) are sometimes not consolidated with the budget.

donor-provided commodities at below-market prices. All these subsidies affect the government budget, although some (tax expenditures, equity participation, and net lending) more directly than others.

39. A price-subsidy policy can be helpful in pursuing social and economic goals. Price subsidies can be designed to correct market imperfections. For example, the provision of basic education and childhood immunizations free of charge or at reduced tariffs can promote broad-based human and economic development. Subsidies can also be used to address domestic market imperfections in domestic factor and product markets of traded goods. In that case, a subsidy policy is preferable to imposing tariffs (Bhagwati and Ramaswami, 1963). Other price subsidies, such as for basic commodities, can provide food security and improve the well-being of the lowest-income individuals and households in a society. Transitory subsidies may be the only means of cushioning against sharp losses of purchasing power (e.g., following the CFA franc zone exchange reform, and in the wake of the 1997 financial crisis in Indonesia).

40. In practice, price subsidies have also been motivated by other goals, including providing subsidies to nonpoor special interest groups (e.g., in 1999, only 21 percent of kerosene subsidies reached the poorest 30 percent of households in Indonesia).

41. Even when price subsidies achieve their intended objectives, their economic and social benefits have to be weighed against their costs:

- *Explicit and implicit price subsidies burden the government budget* and can aggravate the country's fiscal position. Government spending on subsidies averaged 1.6 percent of GDP in a group of 65 advanced, developing, and transition economies in the mid-1990s.[16] Such spending was relatively high in industrial countries (1.8 percent of GDP), especially in the European Union. On the other hand, in develop-

[16]Data on subsidies are from the United Nation's System of National Accounts (SNA), which defines subsidies as current unrequited government payments to enterprises on the basis of their production, sales, or imports. Thus, the SNA data on subsidies exclude payments to consumers, such as food stamps, which are recorded under transfers, as well as implicit subsidies. The IMF's *Government Finance Statistics* (GFS) uses a similar definition of subsidies as the SNA; however, for most countries, the GFS does not report separately on subsidy payments but instead lumps these outlays together with government transfers.

ing countries, spending on subsidies averaged 0.9 percent of GDP, and in transition economies, 2.3 percent of GDP.[17]

- *Price subsidies reduce allocative efficiency by distorting relative prices.* Consumer price subsidies often are associated with overconsumption or underprovision of the subsidized item, and producer subsidies with excess production. The welfare cost of such price distortions (i.e., the excess burden of price subsidies) increases faster than the rate of subsidization. In addition, price subsidies have been associated with smuggling (e.g., subsidized wheat and wheat flour in Yemen and subsidized petroleum products in Nigeria have all been smuggled out of these countries) and waste (e.g., subsidized bread was used as animal feed in Belarus, Jordan, Ukraine, and the Russian Federation, and wheat flour was used to mark soccer fields in Peru). In some cases, subsidizing of inappropriate commodities has led the poor to consume a less nutritious diet (e.g., in the Dominican Republic, the poor's intake of calories and protein fell when they substituted less nutritious subsidized chicken for rice, beans, and oil plantains). In the European Union, estimates for 1978–95 suggest a net income loss of between 0.3 percent and 2.7 percent of GDP from the Common Agricultural Policy. The inefficiency of this policy is also reflected in its high cost; in 1980, the budgetary cost of transferring $1 to a farmer was, on average, close to $2 (Rosenblatt and others, 1988).
- *The methods used to finance subsidies*—higher taxation or higher deficit financing—*further worsen resource misallocations.*
- *The capture of benefits of subsidies by middle- and upper-income households raises issues of equity and fairness.* Moreover, price controls—used frequently to implement price subsidies—often result in black markets that limit the access of the poor to scarce items.
- *Subsidies for certain activities*—agriculture, energy consumption, and timber exploitation—*can contribute to environmental degradation.* For example, subsidies for certain activities, including cattle raising, under the Polamazonia Program in Brazil in the 1970s adversely impacted the environment in the Amazon (Davis, 1977).

[17]Clements, Rodríguez, and Schwartz (1998) find that a large government, a large external current account deficit, and a relatively large manufacturing sector are associated with a higher level of explicit subsidies.

Examining the Short-Term Impact of Reducing Price Subsidies on Real Household Incomes: An Illustration

42. This appendix provides two competing pragmatic approaches to estimating the impact of price-subsidy reform on households in the short term.

- Estimate the loss of real household income as the arithmetic mean of the relative price change, using the shares of the consumption items in household expenditures as weights. This amounts to the following:

$$\mathrm{RL} = \sum_i w_i \frac{P_i(1)}{P_i(0)} - 1,$$

where RL denotes the impact on real household income in percent, w_i is the share of item in household expenditures, $P_i(1)$ is the new (in most cases, higher) price of item i, and $P_i(0)$ the price before the reform of price subsidies. This estimate of the loss of real household income can be illustrated with an example. Suppose the price of subsidized rice rises by 50 percent, and that the weight of rice in the expenditures of poor households averages 30 percent, and that of nonpoor households, 10 percent.[18] Using the above equation, the average impact on the real income of poor households can then be estimated at 15 percent. For nonpoor households, the corresponding loss in real income is smaller—5 percent, on average.

This estimate provides an upper boundary on the increase in living costs. If households respond to changes in relative prices by shifting away from the item for which the price has increased, the actual loss

[18]Data on household expenditures can be obtained from household surveys.

will be smaller. The loss will be close to the above estimate if the subsidized item is a basic commodity for which no ready substitutes are available. If there is a perfect substitute, households will react to even a small change in the price of the subsidized item by shifting completely out of that item and into the substitute, suffering no loss in real income. The procedure below recognizes the likelihood of a consumer response.

- Alternatively, *estimate the real loss of household income as the geometric mean of the relative price change, using the shares of the consumption items in household expenditures as weights*. This can be calculated as follows:

$$\mathrm{RL}' = \prod_i \frac{P_i(1)^{w_i}}{P_i(0)} - 1.$$

Using the same example as before, the estimated loss of poor households from a rise in the price of rice by 50 percent can be calculated at 13 percent, and for nonpoor households, 4 percent. These estimates reflect the case when households are responsive—but not infinitely so—to changes in relative prices.[19]

43. Which estimate of real-income loss is more appropriate? The above approaches provide a reasonable range within which the correct answer is likely to fall. Which point in this range is most relevant for estimating the desirable level of compensation for price-subsidy reform depends on many factors, including whether the subsidized item is a basic commodity and some substitution possibilities exist. To be more precise, which estimate is more accurate depends on the size of the income effect of the price change versus the substitution effect. What is reassuring, however, is that the difference between the two estimates is typically small for poor households. In the above example, the estimates differ by only two percentage points.

[19]The estimate reflects households who respond to price changes in such a way that the shares of spending on different consumption items in their total expenditures remains constant. This behavior is consistent with preferences that can be described by (a monotonic transformation of) a Cobb Douglas function, which has unitary compensated own-price and cross-price elasticities. Preferences of this type also underlie calculation of the Consumer Price Index in a number of countries, including many components of the CPI for the United States.

Index Guide to Concepts and Issues[20]

[20]The numbers refer to paragraphs, text boxes, and tables.

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