

Social Safety Net Primer Series

Subsidies as a Social Safety Net: Effectiveness and Challenges

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Social Safety Net Primer Series

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1. Papers may be added or deleted from the series from time to time.

Abstract

Many governments use price and tax subsidization to meet social protection objectives in lieu of, or in addition to, direct income transfers. Such subsidies may be perceived as influencing behavior to further other socially desirable policies. For example, the price response induced by lowering the price of schooling or key food items will both lower the cost of living for the beneficiaries and also increase the investment in education or health more than a similar income transfer would achieve. Governments may also choose price subsidies because they are easier to administer than income transfers. In many cases they may also be politically more tractable.

The most common form of price subsidy is a direct, untargeted subsidy. However, various other means may be used to deliver price subsidies as well. Untargeted indirect price subsidies, exemptions on value added or other sales taxes, dual exchange rates, export taxes, producer quotas, subsidies on transport and storage, and domestic sales of a commodity below international opportunity cost are all forms of subsidization. While such subsidies do lead to increased consumption towards a commodity in keeping with policy objectives, they usually also distort production incentives. Subsidies on goods available in a rationed amount are a less costly alternative to open ended subsidies on the entire supply of a good.

The incidences of benefits from a general price subsidy are proportional to purchases and can be deduced from a survey of expenditures. For many commodities, including most grains commonly consumed, wealthier households receive larger transfers in absolute terms, yet the amount of transfer a poor household receives will be a larger share of its budget. Some goods, such as meat, are inappropriate vehicles for redistribution since subsidies on them will not only accrue mainly to the rich they will actually increase inequality in welfare. On the other hand, some governments have chosen to subsidize goods for which consumption declines as incomes increase. These are termed self-targeted commodities.

There is substantial evidence that food subsidies do affect nutrient consumption in a manner different than income transfers. The reduced price will have a direct influence on purchases of commodities with general subsidies and for rations that exceed the amount normally purchased. But even in the case of quotas and food stamps there is evidence that the presence of food related transfers encourages increased consumption, possibly due to changes in the share of resources controlled by women.

Successfully implementing subsidy programs presents many administrative challenges. Among the most critical is limiting the sale of subsidized commodities in the higher priced general market. Substantial leakages have been documented recently in several countries. Technology such as optically scanned smart cards can provide cost-effective monitoring mechanisms, and is equally suitable for use with rations and in two-

tier price systems, but may be less appropriate for poor communities without sources of power for scanning devices.

Reforms that separate the government's role as financier from the market's role of providing services have the potential to be the most effective. If, in addition, governments recognize that food policy objectives are often achieved more effectively by delivering income support without any direct or indirect ties to food commodities, reforms can be separated from the consumption of a given commodity or use of a given market channel. This increased flexibility often allows for better targeting as well as an increased likelihood that the transfers will result in the poorest beneficiaries being lifted out of poverty.

The nature and timing of subsidy reforms depend on many factors, including the interplay of diverse interests expressed by local groups and international agencies. Balancing the different interests is not easy, but country experiences suggest several factors contribute to public acceptance of reforms, including advanced publicity, introducing credible safety nets policies to protect the vulnerable, and implementing reforms during periods of favorable international commodity prices.

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Price and Tax Subsidization of Consumer Goods

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I. Introduction

Why use price and tax subsidization to meet social protection objectives? Governments regularly endeavor to reduce the cost of living for their population—or for a subset of the population—by subsidizing the price of goods or services. They do so despite the fact that achieving these objectives through income transfers instead is generally believed to involve fewer economic distortions. I begin this paper by discussing what might motivate governments to choose price and tax subsidies rather than any other instruments. In the course of the subsequent discussion, I will ask how well the expectations of these subsidies are matched by actual outcomes.

First, a government might choose to use pricing as an instrument of social protection because they seek to change demand patterns (Subbarao, et. al. 1997). They may want to do so because of externalities associated with the consumption of certain goods and services; in other words, the benefits to society from the consumption of the good exceed that to the consumer. Thus, if the individual had to pay full costs of the good, there would be less consumption than is economically optimal. This is a well-known theoretical justification for market interventions and is commonly discussed, for example, in environmental economics.

Seldom, however, is this assumed divergence of social benefits and private returns made explicit. Often there is an unstated and patronizing view that, even accounting for their income, the poor invest too little in health and nutrition or education because they are less aware of the benefits of such investments than are the policymakers. Yet, even if they are equally aware of these benefits, poor households may still place different values on these benefits than policymakers would. For example, parents may place a higher value on educating their sons than their daughters or on making intergenerational transfers to particular offspring. Similarly, if the mother of the household has a different assessment of the optimal investment in child health or schooling than her partner, a price subsidy may shift the household's budget towards her preferences.²

¹ The author would like to thank Margaret Grosh, Kathy Lindert, and Steven Tabor for helpful comments on an earlier draft.

² Such a shift may come via the price effects *per se* as well as the implicit targeting of the income transfer that the subsidies imply or both. For the underlying theory of intra-household allocation, see Haddad, Hoddinott, and Alderman (1997). Additional evidence is presented in Thomas, 1994, as well as in Lundberg, Pollack, and Wales (1997). In addition, the evidence that food stamps are not equivalent to cash (Fraker, Martini, and Ohls, 1995 and Senauer and Young, 1986) may be interpreted to be consistent with the hypothesis that preferences are gender-specific although the authors do not make this argument.

There are several reasons why a government may choose to use pricing policy rather than making income transfers to help the poor. First, lowering the price of, say, schooling or key food items decreases the cost of living for beneficiary households and increases their investment in education or health by a greater magnitude than a similar income transfer would have achieved. This increase in investment may be substantial, particularly in the case of low-income consumers since the poor are often more responsive to changes in the price of basic commodities than the non-poor (Timmer, 1981). How much additional consumption or investment this provokes will depend in part on whether the quantity of the subsidized good or service that a household is permitted to purchase is greater than they would have consumed if they had received only an income transfer. As discussed further below, rations or other quantity limits may reduce the overall costs of a subsidy program but at the same time may negate the price effect.

A second justification for the use of subsidies in lieu of income transfers is that society as a whole may value a minimum level of consumption of these goods. In other words, the general population may have a different view of inequity in the consumption of say, food, than of overall inequity (Tobin, 1970). Such goods are sometimes termed merit goods and are given extra weight in economic calculations. Clearly, this is related to the externality argument since it implies that, at one level, individuals derive satisfaction from the fact that other individuals are consuming certain goods. Again, this is rarely made explicit in policy discussions, but it underlies the choice of many subsidies by governments.

A third rationale for food and other subsidies is that it is politically easier to use public funds on such commodities than it is to persuade taxpayers to support direct income transfers. This ties in to the second argument for subsidies. It may, however, be easier to gauge the political acceptability of a proposed subsidy or transfer program than to make a direct assessment of the underlying social value of the consumption of a commodity. In addition, a price support may be more politically sustainable than an income transfer program as a significant share of the benefits of the subsidy will accrue to the middle class, thus broadening public support (Gelbach and Pritchett, 1997). As illustrated further below, governments often take the public's perception of whether a program is fair into account when designing programs and include public information campaigns in program reforms.

Fourth, in some contexts, it may be administratively easier to subsidize a commodity than to deliver an income transfer. Generally with a commodity subsidy the government has to monitor the volume of trade handled by a limited number of agents, say at the border or after commodities leave the processing phase of the marketing chain. This can be simpler to manage than it would be to ensure that each recipient household receives a transfer on a regular basis. Price subsidies may also allow the poor to be targeted without the need to set up an explicit targeting bureaucracy. By choosing to subsidize commodities consumed primarily by the poor, governments can sidestep the need to identify which households are poor. That is, by targeting the revealed behavior of the poor, governments can avoid the economic as well as the political costs of screening individuals on the basis of their incomes, which they generally do not reveal (Alderman and Lindert, 1998).

For countries that have value-added taxes (VAT) or similar sales taxes, a tax exemption for certain commodities affects the income and consumption of consumers in a manner similar to a price subsidy. While tax exemptions and varying tax rates pose both practical and analytical problems compared to a uniform rate, the administrative costs of an exemption within an existing

system are likely to be relatively small compared to the costs of delivering cash transfers at frequent intervals to selected groups.³ In addition to this administrative advantage, using VAT exemptions as a means of lowering the cost of living can have the same targeting and merit goods advantages as subsidizing the price of unrestricted (general) commodities.

A final reason that some governments chose to concentrate on price subsidies—and on in-kind transfers—is that they view commodity markets as inadequate. At times and in some places, this may be a fair assessment. For example, when drought struck Ethiopia in the 1980s, because of poor infrastructure, challenging topography, and a history of state interventions that had severely restricted trade, commodity markets were insufficiently developed for the famine relief strategy to be based primarily on income support without concurrently providing grain (von Braun, Teklu, and Webb, 1999). In less extreme situations, relying on state delivery mechanisms is unrealistic and fails to recognize the speed with which markets respond to new economic environments and develop. Thus, India has relied on the Food Corporation of India, a parastatal, and a network of public distribution shops to provide grain, sugar, oil, kerosene, and other commodities since independence.⁴ Worse, such non-market systems may prevail because they give administrators the opportunity to extract rents. Often such subsidies are not directly administered to the consumer but occur much earlier in a marketing chain. For example, Korea subsidized the costs of price stabilization (Tolley, Thomas, and Wong, 1982), and Pakistan has subsidized the transport and storage of grain. In other cases, governments have subsidized inputs into livestock or dairy farming with the intention of lowering the retail price.

However, it is regularly noted that when the state attempts to create a parallel market infrastructure it crowds out private trade or preempts its development, often resulting in an inefficient distribution network. More generally, in many cases, attempts to reap the administrative advantages of a commodity subsidy impose additional economic costs. For example, subsidies not only increase consumption of the subsidized commodity as intended by the policy, but they also usually distort production incentives in unintended ways (Pinstrup-Andersen, 1988). In general, the costs of such distortions are now well known and will not be stressed in this paper. However, they should be kept in mind when designing transfer programs.

This paper will consider a range of consumer-oriented subsidy instruments including general subsidies and tax exemptions as well as targeted quotas (see box 1). Section II discusses the distribution or incidence of the subsidy expenditures for all of these instruments. It focuses primarily on food as the means by which the subsidy is delivered, although the section concludes with a brief comparison of food subsidies with energy subsidies. The following section asks whether food subsidies actually achieve the nutritional and stabilization goals that they are often claimed to achieve. Some of the administrative concerns about market interventions that policymakers must consider are discussed in Section IV. These administrative concerns as well as their effects on beneficiaries point to possibilities for program reform, which are discussed in the final section.

³ Ahmad and Stern (1991), Newbery and Stern (1987), Agha and Haughton, (1996), and Deaton (1997) present detailed discussions of the theoretical, administrative, and empirical dimensions of taxation.

⁴ However, recent reforms of the Targeted Public Distribution System (TPDS) have shifted its objectives away from being a market of last resort and towards income support (World Bank, 2000a).

Box 1: Types of Price and Tax Subsidies

- ?? Unlimited direct price subsidies
- ?? Tax and VAT exemptions
- ?? Unlimited indirect price subsidies
- ?? Dual exchange rates
 - Export taxes
 - Producer quotas
 - Subsidies on transport and storage
 - Domestic sales below international opportunity cost
- ?? Rationed subsidies (quotas)
 - Untargeted parallel market channels for the general population
 - Targeted access to subsidized goods
 - Coupons, vouchers, and stamps

II. Distribution of Price Subsidies and Tax Exemptions

What share of total expenditures on a price subsidy accrues to the poor? How many poor households benefit from these subsidies? While a full assessment of a subsidy program requires an appraisal of the economic consequences of the subsidy, the most common assessment of a price subsidy is in terms of its incidence. Who gets the subsidy or who does not depends on a number of policy decisions regarding which commodities are chosen, what type of targeting, if any, is used, and what marketing channels are employed. This section reviews how these decisions affect the distribution of the benefits of subsidy programs.

Generalized Consumer Subsidies

Whenever a commodity or service is subsidized in a manner that does not impose quotas, there is an implicit, or *de facto*, targeting of the benefits. These benefits accrue to a household in proportion to the amount of that good that the household purchases. For those commodities that are what economists term normal goods (defined as goods with income elasticities between zero and one),⁵ the wealthier the household, the greater the absolute value of the subsidy it receives. However, with commodities in this category, the poorer the household, the larger the subsidy is as a *share* of household income. Most commonly consumed grains tend to fall in this group. However, occasionally a government chooses to subsidize goods for which the income elasticity is greater than one. This is the cutoff by which luxuries are commonly defined. Despite the term “luxury,” many commodities that are considered part of a normal diet such as meat and dairy products often fall in this category. The economic definition of a luxury, however, implies that the amount spent on the good increases as a share of total consumption as income rises. This also means that the amount transferred by a subsidy on a good is both absolutely and relatively greater for the well off than for the poor.

In contrast, there may be goods that are consumed in greater amounts by the poor than by other segments of the populations. While technically these commodities are referred to in the economic literature as inferior goods, this designation pertains to the purchasing pattern

⁵ Income elasticity measures the percentage change in the commodity purchased with a one percent change in income.

(or negative income elasticity) and not the physical attributes of the commodity. Thus, in some circumstances coarse grains may be inferior goods in the sense that the absolute as well as the relative value of the benefit of a subsidy is greater for the poor than for the non-poor. Nevertheless, from the standpoint of the nutritional qualities of these grains, they are considered superior to more popular highly polished or refined grains.

Subsidies on commodities with low and, ideally, negative elasticities, if such commodities are available, will be progressive. Subsidies on such commodities are often referred to as self-targeted.⁶ This targeting can also be achieved if there are grades of the subsidized good that consumers recognize as distinct. For example, coarse (high extraction) flour is more likely to be consumed by the poor while consumption of low extraction flour may be more evenly distributed through a population. However, as purchases of a commodity are disaggregated into different grades, each good will represent a comparatively small share of a consumer's budget. This small share poses a limit on the amount of income that can be transferred via a self-targeted commodity subsidy.

If the incidence of subsidy benefits were determined wholly by purchases in integrated markets (and, as discussed below, it often is not), the amount of subsidy going to households in different income quartiles would parallel consumer demand and could be identified in advance using consumer expenditure surveys. Most countries have consumer expenditure surveys that can provide a reasonable guide to the distribution of general subsidies. Indeed, such analysis can often be undertaken prior to a policy change to anticipate its likely impact.

While the discussion so far has indicated some well-known patterns in the relative magnitude of demand elasticities—for example, that grain consumption is more evenly distributed across a population than is the consumption of meat—there are few general patterns across all consumer groups. For example, sugar and cooking oil may be consumed in virtually equal amounts across income groups in a given country or region or they may be regarded as luxury commodities.

Studies of subsidies in Egypt have found that the poor consume more sugar and subsidized bread than the well off do and that flour and cooking oil consumption increase slightly with income (Ali and Adams, 1996 and Adams, 2000). An earlier study found that the value of subsidized flour and bread consumed by the poorest urban quartile in 1982 was 15 percent less than that purchased by the rich. At that time, the poorest rural quartile bought 20 percent less from subsidized government channels than did the richest rural quartile, whose consumption was nearly the same as the urban poor (Alderman and von Braun, 1984). This implies that the former distribution was slightly biased towards the well off (although it contributed more to the poor as a share of income). A decade later, government subsidies were somewhat more targeted to the poor. In the interim, the government had implemented a policy that restricted subsidies on refined flour and the bread made from such flour and concentrated on bread made from high extraction flour.

This contrasts with how the subsidies on flour in Algeria were distributed among income groups. In 1991, 8 percent of subsidies on flour went to the poorest quintile, while 36 percent went to the richest (Grosh, 1994). However, semolina (couscous), for which the

⁶ Self-targeting can also be used for services such as subsidized clinics and—via wages—for determining who takes up public work opportunities.

benefit ratio of 9:11 was more equitable, was the principal staple in the economy rather than flour. The importance of the context of the subsidy can also be illustrated by comparing the distribution of rice and wheat in urban Belo Horizonte, Brazil with the same commodities in Sri Lanka prior to the introduction of a targeted program in Sri Lanka in 1978. In Brazil, the poor and the rich consumed similar amounts of the commodities and, thus, the subsidy was only slightly regressive. In Sri Lanka, however, the poor consumed only half as much wheat as the well off. This is probably because in Sri Lanka rice is the main staple for the majority of the population. Thus, urban non-poor households as well as the comparatively few poor estate workers who ate bread were the primary beneficiaries of the untargeted wheat subsidy.

Self-Targeting of General Subsidies

As previously mentioned, when the consumption of a good decreases as income rises, the subsidy on that good accrues mainly to the poor. Some countries have devoted a large share of their subsidy budget to such goods, which can be considered as self-targeted. Such targeting is particularly desirable in that it is based on consumer behavior and does not require a government agency to collect information on consumers' income or other characteristics as in most administratively targeted programs.

One of the most successful attempts to shift general subsidies to self-targeted goods was undertaken by Tunisia between 1985 and 1993. During that period, the Tunisian government shifted from a subsidy program that cost 4 percent of GNP to one that cost half as much. At the same time, the share of total transfers received by the poorest quintile increased from 8 percent to 21 percent (Alderman and Lindert, 1998). The core of this change was a shift to subsidizing self-targeted commodities, for example, reconstituted milk in small cartons rather than fresh milk in bottles. Also, subsidies were applied to purchases of generic cooking oil in bulk from drums; bottled oil was still available but at market prices. Similarly, while subsidies on loaves of bread were retained, those on baguettes were eliminated. Finally, bread markets were liberalized to ensure that the types of bread preferred by the non-poor were available on the open market.

While the Tunisia example indicates the potential for targeting consumer subsidies through a judicious choice of commodities, it also indicates some of the limitations of self-targeted programs. First, although some individual commodities were well targeted, the full package of subsidies and exemptions was less so. Had the set of commodities subsidized in Tunisia included only four commodities of which the poor consumed more than the non-poor, the share to the poorest quintile would have risen to 25 percent. Second, even the most favorable self-targeted commodities will only distribute between one-half to two-thirds of benefits to the poorest 40 percent of the population (Alderman and Lindert, 1998), while the most successful means-tested transfer programs have the potential to deliver over 80 percent of benefits to the poorest two quintiles (Grosh, 1994). Third, since self-targeted commodities generally constitute only a small share of the overall budget even of the poor, they can only bring about modest income transfers. In other words, since household purchases are small under any price regime, there is a limit to the total size of the transfer that can be made using these goods.

Indirect Subsidies

Often commodity price subsidies are not financed by an explicit line item in the central budget but via indirect taxes on producers, including procurement and trade quotas, or by

exchange rate distortions (Kruger, Schiff, and Valdes, 1991). Estimating the distribution of such benefits and costs is more complicated than assessing the direct benefits of a targeted consumer subsidy. This distribution depends, in part, on whether the poor are net producers or consumers. This information can be derived from survey data. This analysis may challenge the generalization that all farmers benefit from higher prices. For example, Trairatvorakul, (1984) and Deaton (1989) indicate that both the smallest and the largest farms in Thailand benefit from the export tax, whereas the tax results in a net loss of income for farmers with medium-sized holdings.

However, the benefits and costs of price distortions also depend on the net supply response in agriculture and on the demand for labor. This step of the analysis is somewhat more complicated than an investigation of budget shares and net sales. Nevertheless, the necessary information is often available in any given country or region so that a partial equilibrium analysis can still be used for understanding the role of indirect subsidies. Beyond this, many changes in taxes and procurement quotas may have a measurable influence on exchange rates and international trade. Under these circumstances, a fuller general equilibrium analysis may reveal additional insights into the cost of the indirect subsidies.

Tax Exemptions

A tax exemption affects a consumer in a manner directly comparable to a subsidy; the effect may be either progressive or regressive depending on whether the relative savings accrue mainly to the poor or the non-poor. Thus, the distribution of the savings to consumers from a value added tax (VAT) exemption follow the same patterns as a price subsidy.

One example that has been recently studied is the exemptions from the 14 percent VAT on a short list of food commodities in South Africa. The poorest 40 percent of the population receive 65.4 percent of the exemption on the maize VAT, but this group receives only 15.3 percent of the exemption on fresh milk. The regressive incidence of the distribution of benefits of the VAT exemption on milk in South Africa represents, in part, differences among income groups in market utilization and in access to refrigeration. On the other hand, the progressive distribution of the exemption on maize illustrates the effective use of self-targeting, as discussed above.

Both of these exemptions cost the South African treasury over 600 Million Rand. Similarly, if a proposed exemption on the tax on meat is implemented, the value of the savings for the poor would be 325 Million Rand (1993 value) compared to the 436.1 M Rand they received with the maize exemption. However, the total revenue lost with the meat exemption would be 1.8 B Rand and, thus, would dwarf the costs of the maize exemption (Alderman and del Ninno, 1999).

Market Access as a Determinant of the Incidence of Subsidies

The use of budget shares to subsidize commodities as an indication of the distribution of benefits presumes that all segments of the population use the same market channels. Otherwise, the redistributive nature of the subsidy will differ according to whether the consumer purchased the good from the channel that was subsidized rather than a parallel channel or consumed the good out of home consumption. While rural residency is not synonymous with participation in agriculture or indeed with self-sufficiency in production, a substantial share of the rural poor do not benefit from consumer subsidies since they either

produce their own food or obtain what they need by direct trade with and purchases from neighbors. This is not an insurmountable barrier to using subsidies as a component of rural social protection; both Sri Lanka and Egypt have managed to include the rural population in their subsidy systems. Nevertheless, it is an obstacle that must be considered.

The poor also may be precluded from benefiting from subsidies by cash constraints. If subsidized commodities are pre-packaged or only available for a few days a month, the poor may be unable to make the scale of purchase necessary to take advantage of the subsidy. This was the case with a rice subsidy in urban Burkina Faso (Delgado and Reardon, 1988) and is often presumed to limit utilization of the subsidized Public Distribution System (PDS) in India. A recent study has provided evidence that supports the contention that the need of the poor to make small purchases influences which market channels they choose. The study in question documented the small size of purchases made by the poor in south India and the relatively higher prices that they paid due to this cash flow problem (Rao, 2000).

Does Willingness to Wait Target Goods to the Poor?

Often a government is unable to supply as much food as would be consumed at the official, or subsidized, price. This may be motivated either by a (comparatively rare) shortage of the commodity or due to insufficient funds to provide a subsidy on the full quantity of a good that is available on the market. In such cases, many governments impose quantity limits as an alternative to allowing the price to rise in order to both reduce consumer demand and limit the subsidy bill. Commonly these restrictions take the form of rations or quotas (discussed below). However, another means of allocating goods when prices are not allowed to rise is simply by distributing as much as is available on a first-come-first-served basis. Consumers respond to this type of distribution by queuing, often before the outlet is even open to the public. The waiting time for goods in short supply discourages their purchase and encourages the purchase of alternatives (including, at times, the same commodity sold at higher prices in a parallel market). In effect, then, the price (as defined by cash plus the value of waiting) clears the market. However, as the retailers only collect the cash and not the value of the time costs, this means that market clearing incurs what is termed a “deadweight” loss to society in general.

Such a loss is implicitly regarded as being necessary for achieving equity in distribution. It is assumed that the poor have more time than cash—or, in economic parlance, that the opportunity cost of their time is lower than that of non-poor consumers. Thus, it is assumed that the poor will be more willing than the non-poor to queue. While theoretically plausible, this is not always borne out in practice. As has been observed in Egypt (Alderman and von Braun, 1984) the poor may not benefit from such rationing by waiting since cash constraints limit the size of the purchase that they can make. A middle-class consumer may be more willing to queue to procure a 10-kilo sack of rice than a low-income person will be for a single kilo. In addition, once markets are segmented in this manner, the location of distribution outlets is a key factor in determining the distribution of the commodity. In the Egyptian example, government employees had the advantage of being able to wait in line during office hours.

Rations and Quotas

A more common means of limiting a subsidy when a government does not choose to subsidize all the sales of a commodity is by imposing limits on the amount that any one household may purchase. Such rationing has often been used to limit consumption in wartime

and to ensure that all consumers have access to a minimum quantity of selected goods. However, rations have also been used to reduce the cost of consumer subsidies when there is no shortage of aggregate supplies. In the latter case, purchases above the rationed subsidized quantities are often permitted in an open market (Pinstrup-Andersen, 1988). Ration systems of this type have been a perennial, albeit fluctuating, feature in South Asia as well as in West Asia and North Africa. Similarly, until recently the Mexican government had put a quota on subsidized and, at times, free tortillas in urban areas.

Clearly, quotas can limit the total cost of the subsidy program. A ration system does not eliminate uncertainty in budgetary planning since the cost of the system is determined not only by known quantities and fixed ration prices but also by the variable cost of obtaining the commodity. Thus, a sudden rise in the local or international price of the good can result in an unplanned increase in the subsidy budget. Nevertheless, this financial risk is less than if the quantity to be subsidized is open-ended.

Against the advantages of greater predictability and lower total volume in a ration system, however, is the disadvantage that in most programs the price that determines the total quantity that a consumer will acquire is not the ration price but the higher open market price. If the ration quota is less than the amount that consumers would have chosen to purchase at the ration price (deemed an infra-marginal purchase in economic literature), consumers will base their decision on how much to buy on the price outside the ration shop, not on the average price. As such, the benefit of a ration program is the implicit income transfer. Thus, the lower price of the ration does not induce increased consumption through a price response. Even in this circumstance, the quantities purchased will usually increase since the subsidy will make the consumer somewhat richer,⁷ but this shift will generally be less than if the marginal price were to fall.

If quotas are uniform across a population, the incidence of benefits will be virtually neutral, with some variation depending on whether the quota is per individual (which generally favors low-income households) or per family. However, the take-up of the rations will generally not be universal. Upper-income households may opt to obtain their food in the higher priced open market if they perceive the quality of the food sold to be higher or if there is some social stigma attached to using the ration system. As mentioned, some of the very poor may also not use their ration allocation if they do not have the cash to procure the full quota. Egypt's ration system is an example where both quotas and take-up have until recently varied little by income group (Alderman and von Braun, 1984).⁸ In contrast, the share of the population using Pakistan's fair price shop to purchase subsidized flour declined steadily in the decade prior to its removal in 1987 (Alderman, 1988). This decline accelerated when sugar was de-rationed and was primarily among upper income groups who viewed the flour as being of poor quality.

Montgomery (1985) presents evidence that consumers in Bangladesh base their decision about whether or not to use their quotas on the fluctuations of the price of rice in the open market. As such, the highly flawed and mistargeted system of rations that was in place in

⁷ His or her income will have risen by the difference between the open market clearing price and the ration price times the quota. The underlying economic theory is presented in Neary and Roberts (1980). See also Pinstrup-Andersen (1988).

⁸ However, Ali and Adams (1996) report that in Egypt the percentage of the population with ration books declined from 90 percent in the 1980s to 80 percent in 1994.

Bangladesh at the time of his study did manage to serve as a safety net. In other words, the rations provided some assistance to poor households during a particularly stressful time, yet the rations were abandoned when conditions improved.

Administrative Targeting

Governments often set higher quotas on subsidized goods for the poor than for the non-poor. In such cases, eligibility for the subsidy is usually determined through administrative targeting. While in principle, an administratively targeted distribution system does not require a quota system—eligible groups may be permitted to obtain all their demand for a commodity at a subsidized price—limits on purchases are generally imposed to restrict the resale of these goods to households deemed ineligible for the subsidy. The general principles and examples of such targeting are discussed elsewhere in this primer. The same factors that decide the success of targeting in the case of income transfers in general also determine the effectiveness of the targeting of in-kind programs. Indeed, the improvement in the targeting of subsidies in Sri Lanka that is often attributed to its food stamp program was actually achieved by reorienting the ration distribution prior to the introduction of the food stamp program (Edirisinghe, 1987).

However, a few points on targeting should be reiterated from the perspective of food distribution systems. While in-kind transfers and rations are generally infra-marginal and, thus, serve as income support, quotas are often not determined on the basis of income. Historically, civil servants, in particular, have been frequent beneficiaries of subsidized grain as, for example, in Bangladesh's multi-level ration system in the first decade after the country's independence (Ahmad, 1988 and Ahmed, Haggblade, and Chowdhury, 2000). Similarly, only in the last few years has the Indian government emphasized large price differentials on a comparatively small amount of grain for the poor in its Public Distribution System (since renamed the Targeted Public Distribution System). This contrasts with previous attempts to increase the share of the total quantity of rationed goods consumed by the poor. This is a potentially significant reorientation since the program has high unit costs for handling grain. Increasing the transfer to the poor per kilo purchased will increase the efficiency of the income transfer (World Bank, 2000a). India also increased the poverty orientation of state quotas, shifting from an allocation formula that favored states with the largest food deficits whether or not they were relatively poor.

Are Energy Subsidies Substantially Different from Food Subsidies?

Many of the justifications for energy subsidies are similar to those outlined above for food subsidies. Indeed, in many countries, energy subsidies may utilize far more resources than are currently devoted to food or other commodities. This is currently the case in the countries of the former Soviet Union and Eastern Europe (World Bank, 2000b). There is also a tendency to subsidize energy when a country is an exporter of gas or oil, often ignoring the opportunity cost of the gas or oil. In other words, countries neglect the forgone export revenues that the oil would otherwise bring in when they choose to set the domestic price of energy. Azerbaijan, for example, a country that falls into both of these categories, devotes 13 percent of its GNP to energy subsidies (World Bank, 2000c). Energy subsidies are frequently examined independently from other subsidies such as food, partly because of the scale and partly because the range of instruments for subsidizing energy differs from food subsidies.

However, it is useful to highlight some key similarities and differences. As with food prices, the incidence of energy subsidies and a first-order approximation of their impact on welfare can be derived from a consumer survey that indicates expenditures on the commodity by income group. Alderman and del Ninno (1999), for example, used such an analysis to find out whether a VAT exemption for kerosene in South Africa would be progressive. In contrast, a kerosene subsidy in Indonesia favored well-off consumers since the commodity is a necessity rather than an inferior good in urban areas and is virtually unavailable in rural communities (Pitt, 1985). Similarly, in most low-income countries, electricity subsidies would be largely skewed to the well off since poor households are not connected to the national grid in many areas. This is not the case, however, in much of the former Soviet Union and Eastern Europe (World Bank 2000b), where energy subsidies can thus be more equally distributed.

Indeed, where connections to the grid are available, subsidies on electricity usage can be rationed with prices increasing as the amount of electricity used increases. In other countries, governments have set different prices for different neighborhoods depending on their level of prosperity. While these subsidy mechanisms have counterparts in the area of food subsidies, other means of providing energy subsidies—for example, by abstaining from suspending service for non-payment in the case of poor households or by subsidizing connections but not usage—have no such parallel. Other characteristics of energy subsidies, such as the fact that these subsidies may go to producers rather than consumers, are not unique to that sector yet are potentially more important in the design of an effective safety net than in the case of other subsidies. As with any general subsidy, there is a danger that untargeted production subsidies may dominate public expenditures on consumer subsidies for the poor. Moreover, the distortions that such subsidies entail give interest groups a reason to oppose such reforms.

III. Externalities

Do price subsidies have a greater impact on nutrition than income transfers? As mentioned, one rationale for policymakers to choose price subsidies as opposed to cash transfers is that such subsidies can encourage the consumption of goods that improve nutrition or lead to greater household investments in health and education. There is ample evidence that the distribution of such subsidies at clinics or schools can increase the utilization of those services (see, for example, Ravallion and Wodon, 2000 on food for education in Bangladesh). These gains can, in principle, also be achieved with cash or coupon transfers based on eligibility determined by clinic or school attendance, however the important issue of the link between behavior and eligibility will not be discussed here (see Bitrán and Giedion).

As previously mentioned, the magnitude of the impact of a subsidy on consumption is largely determined by whether the subsidy is infra-marginal. For an infra-marginal subsidy, consumption will increase in accordance with the increase in household income, while for a marginal subsidy, the consumption increase will be based on the price response. The net effect of a price increase on the consumption of a commodity at the margin can be five or ten times as large as the impact of a similar subsidy on an infra-marginal transfer.⁹ However, the subsidy bill will also be larger in the case of the marginal transfer.

⁹ To illustrate, suppose that the subsidy reduces the price of a commodity by 25 percent. If the amount of a commodity that is subsidized represents 10 percent of the budget of the poor (this assumption favors a relatively large income response), then an infra-marginal transfer increases income by 2.5 percent. This change in income will lead to an increase of consumption proportional to the income elasticity. If it is assumed that this elasticity

Still, for many purposes, policymakers are concerned not with the impact on a specific commodity but with the impact on total nutrient consumption. The increased household income due to the transfer—whether infra-marginal or otherwise—will not only lead to increased consumption of the subsidized good but also of other commodities. The exact magnitude of such a response is a subject of debate, in part because a portion of the increase in expenditures on food may represent an increase in the *quality* as opposed to the *quantity* of food items. However, there is now a semblance of consensus on that topic (Strauss and Thomas, 1995 and Alderman, 1993), which accepts that the quantity of food consumed by households (as measured by calorie intake) tends to increase with income growth while not assuming that *all* income increments are spent on increased food consumption.

In general, low-income households spend half or even more of their increased income on food, but some of this spending is used to buy higher-quality foods and to vary the household diet rather than simply to buy increased quantities of food. The net result is an increase in nutrient intake that is proportionally less than the increase in food expenditures. Since a cash or coupon transfer can achieve this effect, the question is whether subsidies lead to a greater increase in consumption than a cash transfer would encourage. As before, this depends on the price effect. However, the answer also hinges on whether the subsidy increases the income response.

While the mechanism is still unclear, there is evidence that the answer to this question appears to yes. This is indicated in a set of studies comparing food stamps to cash.¹⁰ Similarly, del Ninno and Dorosh (2000) found that the provision of flood relief in Bangladesh in the form of wheat led to an increase in the consumption of wheat and in the total number of calories consumed than would a cash transfer of an equivalent value.

As to the price effect, this, by definition, occurs only in marginal subsidies. The net effect on nutrient consumption is often quite different than the net effect on a single commodity. This is because a change in the price of a single commodity leads both to the increased use of that good and a set of increases and decreases in the consumption of other goods (Pinstrup-Andersen, de Londono, and Hoover, 1976). Thus, the impact of a subsidy on wheat may be partially offset by the change in consumption of rice and maize and *vice versa* (Calegar and Schuh, 1988). Alderman and del Ninno (1999) showed that in South Africa the impact on calorie consumption of VAT exemptions on maize was amplified by the fact that the consumption of beans complemented that of maize. Conversely, in rural areas (but not urban areas), a tax exemption on meat would have *increased* the number of households with a calorie deficit since the increase of meat consumption following a price decrease would also lead to reductions in the consumption of other foods that are cheaper sources of calories.

A number of studies have looked at the impact of food supplementation programs on anthropometric measures of nutritional status such as child growth.¹¹ Others have looked at the impact of prices on nutrition. Yet there are few direct assessments of the impact of subsidy programs on nutrition. Garcia and Pinstrup-Andersen (1987), however, assessed a

is 0.5, consumption of the good will increase by 1.25 percent. If the price elasticity were to be a comparatively modest -0.3, the response for a similar proportional price reduction at the margin will be to increase consumption by 7.5 percent.

¹⁰ See footnote 2.

¹¹ Supplementary feeding and similar programs such as the Women's Infant and Children Program (WIC) in the US are addressed in Rogers and Coates (forthcoming).

subsidy scheme in the Philippines using randomized design and verified that price subsidies can have a measurable impact on nutrition. They also found that this impact is larger if nutritional education is also provided along with the subsidy. The unique feature of this program was not the items that were subsidized (rice and cooking oil) or the means of delivery (rations distributed at local retail outlets) but the fact that the pilot included a control group in order to distinguish the impact of the program from other local trends.

Moreover, studies of how changes in unsubsidized food prices affect nutrition confirm that substitution between commodities does not negate the effect of price movements on nutrition (Lavy et al, 1996). Therefore, it is likely that a subsidy on a staple commonly consumed by the poor will have a direct impact on their nutritional status.

How Much Do Subsidies Contribute to Stabilization?

In addition to lowering the cost of food, price subsidies generally reduce price fluctuations as well. Indeed, many governments have stabilization as their stated objective for introducing subsidies and ration programs, though few in fact concentrate only on price variability without also attempting to lower the mean price. In many economic calculations, the value is low of reducing the variance of prices while preserving the same average price. However, the value of stability may reflect imperfections or frictions in the market. For example, producers acquire and utilize new information at a cost. Similarly consumers' habits may make it easier for them to adjust to a price decrease than to a price rise. Moreover, as price fluctuations increase the risk of making investments, they may lead to less than optimal investment in production and storage. Finally, as Timmer (1991 and 1996) has argued, the preference for such stability is revealed in the political marketplace.

In many circumstances a general subsidy can moderate fluctuations in the cost of living. However, in principal, a subsidy that reduces the cost of a good, can increase the variability in its price. For example, if a commodity is currently subsidized at half the international price, a 25 percent increase in the world price would lead to a 50 percent increase in the local price if the fluctuation was passed through—that is, if the per unit subsidy remained constant. In contrast, a fixed price, whether generalized or rationed, would stabilize the nominal cost to consumers, but would pass on the instability to the budget. Thus, the potential gains from stabilizing wholesale and retail price may be offset by instability transmitted to the macro-economy (Scobie, 1988).

A similar situation arises with price stabilization programs that use market purchases and releases to keep prices within a given range. It is difficult to provide the operating ministries with an annual budget for these activities since, if run effectively, their costs will be unpredictable. In order to justify keeping prices within this range, ministries must make storage agents commit to buying whatever quantity of the good would be necessary to keep prices above the trigger point. Similarly, storage agents must commit to selling as much as is demanded at the ceiling price that they need to defend. Unlike private traders, they are not able to offset losses that they incur when prices do not rise sufficiently high to cover their storage costs with profits earned in other years. Often when governments can not defend a price floor, they often put in a *de facto* or *de jure* quota system with the inevitable result that a two-tier market emerges to the disadvantage of smaller producers. Similarly, there have been situations when budgets have been insufficient to produce as much grain as needed for price stabilization. In these cases, not all traders (or food processors) were given access to

stocks in the post-harvest season; instead, access was granted preferentially to middle-income consumers. For example, in Zimbabwe, maize in government storage is more likely to be processed in roller mills than in the cheaper hammer mills. Thus, the cheaper source of maize becomes scarce both as the post-harvest season lengthens and when the amount of domestic production decreases. Thus, the weighted average cost of meal (from both roller and hammer mills) is more volatile than the cost of the grain itself.

This is not to say that all stabilization attempts assist only those fortunate enough to benefit from quotas. Pakistan, for example, has maintained a program that handles a large share of the marketed surplus and of wholesale demand for wheat. The government's storage policies—as well as relatively low variability in production due to an extensive irrigation network—have contributed to comparatively low price variability (Pinckney, 1989). Accepting the desire for inter- as well as intra-annual price stability, Pinckney then indicates the fiscal costs of policies that aim to achieve a desired level of stability.

Indonesia has also been among the few countries that have been successful in stabilizing prices through its procurement and sales through its logistics agency BULOG (Timmer, 1991 and 1996). Unlike Pakistan, however, BULOG has traditionally avoided getting involved in direct distribution to households. Instead, it has used the open market. Periodically it injects supplies of rice into urban markets to put downward pressure on prices. Indonesia's experience also differs from other countries in that it has at various times imported a sufficiently large share of the rice traded on the world market so that its policies actually affect international prices. Dawe (1998) used the Indonesian government's market interventions following the drastic devaluation of the rupiah in 1997 as an illustration of the potential for price stabilization. Timmer (1996) argued that this kind of stabilization enhances equity since it provides an environment that encourages investment and this contributes to the macro-economy. However, the interplay of consumer price stabilization and macro-economic growth is a controversial issue with little empirical evidence, in part because few countries have been successful at stabilizing prices. Indeed, to summarize, the benefits of stabilization are far harder to quantify than are the costs. Nevertheless, there may be substantial macroeconomic benefits to finding more efficient ways to achieve a certain degree of price stabilization.

Having said this, even Indonesia had to abandon its use of open market sales to stabilize prices in the wake of the 1997 devaluation. Subsidizing rice at well below import prices proved fiscally unsustainable and encouraged smuggling and re-export. However, Indonesia subsequently managed to implement a fairly well targeted safety net consisting of the provision of a quota of subsidized rice to poor households on the basis of a simple formula. Thus, changes in its exchange rate that turned a policy geared to producer subsidies into one that required consumer subsidies prompted Indonesia to institute targeting to achieve its food pricing objectives.

IV. Administrative Concerns

What facets of commodity subsidies entail costs distinct from those associated with the administration of targeting *per se*? One particular consideration is how to limit the sale of subsidized commodities in the higher priced general market. This is not primarily an issue of consumers reselling their ration but rather dealers diverting goods from one channel to another. “Back-door” sales may occur upstream in the marketing channel, that is, at the

wholesale or mill level rather than at either the retailer or household level. Clearly, if grain is sold at open market prices for which a merchant claims and receives a subsidy, this does not fit in with policymakers' aims for their subsidy program. However, it is far less clear that this is the case when a household resells part of its quota. Given some of the justifications for subsidies mentioned in the introduction, policymakers may see the resale of rations by households as a departure from the objectives of the program. However, such resale would enhance the welfare of the household since it would permit them to purchase goods that they may prefer to the subsidized good. In any case, there is little evidence that such sales by households occur in ration distribution schemes, which are often infra-marginal. However, it is widely assumed that participants in food-for-work programs frequently sell their in-kind wages (food). One study that attempted to document the resale of rations in Egypt failed to find any evidence of this phenomenon. Moreover, this study did not find any evidence of upstream leakage; aggregated survey data of purchases reported by households matched quite closely with the Ministry of Supply figures of total sales in the shops that were surveyed (Alderman and von Braun, 1984).¹²

However, this match may be an exception. The gap between grain released to mills and reported purchases of flour in a household survey in Pakistan was 69 percent of the total amount (Alderman, 1988). Similar gaps between official releases and household consumption have been reported for India's TPDS (Ahluwalia, 1993 and Moojj, 1999). It is difficult to trace how much of this leakage occurs at the warehouse and how much at the retail shop. Rao (2000) found evidence to support the common allegation that some retailers simply sell the subsidized grain at the open market price, thus increasing their margin. Similarly, in Mozambique, Dorosh, del Ninno, and Sahn (1996) found appreciable leakage of subsidized yellow maize into the open market.

Because this is not easy to monitor, it is also difficult to prevent. Mexico, however, found a technological solution to this problem. Under reforms introduced in 1991, consumers screened for a means-tested program were provided with smart cards entitling them to a daily quota of free bread (tortillas). These cards were optically scanned by machines that were distributed to the outlets that supplied the tortillas. The procedure did not update information on the card itself and did not scrutinize consumers, but it provided the monitoring agency with an exact reading of the number of customers receiving free tortillas at each outlet. Thus, the baker's reimbursement was easy to track. The cost of the equipment was reported to be a small share of the program's costs. This proportion would depend, in part, on the density of the population served (hence the number of participants using any *tortilleria*). In addition, the modest share of costs for monitoring may reflect the relatively high value of the subsidy per participant.

Mexico took this reliance on smart cards further in 1995 when it piloted a successor program in the urban area of the state of Campeche. Eligible households received a plastic card that could be electronically scanned and that was revalidated on a monthly basis when women—the program stipulated that only *women* would receive the card—visited health clinics with their children. The card, which was to be used to pay for food purchases at

¹² Anecdotes about unrationed but highly subsidized bread being resold to be used as animal feed have been common. However, Alderman and von Braun (1984) found that, if this ever happened, it probably consisted of bakers selling day-old bread at reduced prices. Households reported using 5 to 6 percent of their bread to feed their own animals.

participating retailers, was expected to reduce forgery compared to paper coupons or ledgers. This program was essentially a food stamp program and thus differed from the type of programs reviewed in this paper. However, the technology used is equally suitable for use with rations and in two-tier price systems. Although the technology was manufactured in South Africa, it is not necessarily suitable for use in poor communities since the scanning devices require a source of electric power.

Many subsidy programs require a distribution network. Indeed, some systems may require two distribution networks, one for any coupons or ration certification and one for the commodities themselves. Moreover, in many cases, these costs are appreciably higher than the costs of private marketing. In India, for example, even leaving aside any costs associated with mistargeting, the cost of getting grain to the recipients was nearly 50 percent higher than the value to the consumer (Radhakrishna and Subbarao, 1997 and World Bank, 2000a). This may be due to various inefficiencies inherent in bureaucracies that have no competitive incentives to minimize costs, including centralized and layered management as well as inflexible procurement rules. For example, public marketing systems often use pan-territorial prices. While these pricing schemes may serve other policy objectives, they produce economic distortions. Also, linking procurement for consumer subsidies with agricultural support programs may lead to excessive transportation costs. For example, India procures the bulk of the grain for its public distribution system in the northwest of the country rather than closer to the places where it is distributed to beneficiaries.

Governments often argue that there is a need for the state to transport and store grain because the private market is not sufficiently developed to handle the volume of trade that is needed for a national subsidy programs. There is a large literature on how such central interventions create the very conditions that they were attempting to change. That is, even in the absence of prohibitions on private storage—a common response by governments to production shortfalls—direct and indirect subsidies to state corporations crowd out private investments. Also, in some cases, state market channels will prompt inefficient private investments in response to the distorted price environment. For example, by subsidizing the transportation of wheat but not flour, the Pakistan government has encouraged the construction of small flour mills throughout the country that fail to take advantage of economies of scale (Alderman, 1988).

While few large-scale subsidy programs have any experience with using private contractors to procure, store, and supply wholesale quantities of the subsidized commodities, the concept of separating government financing from private service delivery has been used in various specific parts of distribution programs. For example, Egypt's ration system uses licensed private retailers who are authorized to sell both non-rationed and rationed commodities. Similarly, the Pakistan government formerly used a network of private shops to distribute its flour and sugar rations. Other, similar programs, such as the school meal program in Chile, have gone further in contracting in-kind distribution to private agents.

The difference between the cost to the government for a unit of a commodity included in a distribution program and the value to the consumer may be significant. As previously mentioned, often the government budget does not account for the full cost in that it fails to include the full cost to the economy of grain procured under quotas. Similarly, the costs of credit as well as administrative costs may be under-valued in official accounting. This often leads to a substantial distinction between the per unit costs to the agency involved with

distribution in financial terms and the per unit costs to the economy in economic terms. Both these may differ from the per unit benefit to the consumer, which, in infra-marginal transfers, is based on the difference between the subsidized price and the local price at which the good is available. In a highly regulated market, the local price may not be related to the real scarcity value of the commodity, and the implicit transfer to the consumer offsets some of their economic loss stemming from these market distortions.¹³

V. The Politics of Subsidy Reforms

Who advocates food policy reform and who resists?¹⁴ While few countries have introduced general food subsidies in recent years, many countries have reformed their existing systems. The nature and timing of such reforms depend on many factors, including the interplay of diverse interests expressed by local groups and international agencies. For example, often support for subsidy reform comes from Ministries of Agriculture, which represent farmers' interests, as opposed to Ministries of Food (or Supply), which represent consumers' interests. However, these two interests are often allies in lobbying for subsidies as this is an option that allows the reduction of implicit taxation of farmers (or increased subsidies) without increasing consumer prices. Finance ministries, however, are more likely to see these explicit costs as destabilizing the national budget.

Other key groups in promoting or resisting food policy reform are food processors and marketers. In the USA, food retailers and processors joined with farm groups in opposition to changing the current food stamp program to an income transfer. The retailers and processors stand to lose 14,000 to 25,000 jobs together with the loss of 3,000 to 6,000 farm sector jobs if there were a 20 billion dollar reduction in total food stamp program benefits (Kuhn et al, 1996).

An early, unsuccessful reform attempt in Bangladesh was stymied by millers. In 1955, the then province of East Pakistan attempted to eliminate rural rations *and* to lay off the employees of the Civil Supply Department (CSD), only to reverse its decision the following year. Interest groups, such as the CSD workers, are often able to coordinate their efforts since their stake in perpetuating government distribution is comparatively large and their numbers are sufficiently small that each worker can envisage the personal benefits that may accrue from a joint, well-organized response. Yet, the small numbers in each interest group often also implies that these interest groups have to seek allies. In the case of the 1955 attempted reform, the CSD workers were able to recruit wider support when the harvest failed and prices began rising.

This contrasts with successful reforms in Bangladesh in the 1990s and in Pakistan in the 1980s. In these examples, no coalitions between supply department workers and the general public were formed to oppose the reforms because consumers were receiving few benefits

¹³ Reutlinger and Katona-Apte (1983) made a similar argument regarding food aid. The value to consumers of a commodity provided in food aid that is more expensive locally than on the international market due to various protectionist policies may exceed the cost of the good, including transport. Conversely, the benefit to consumers from goods that are priced locally below import parity may be far less than what it costs to provide them with the good.

¹⁴ Among the few published case studies or reviews of the process of subsidy reform are Bienen, and Gersovitz (1986), Nelson (1985), Alderman (1988), Tuck and Lindert (1996), Adams (1998), and Chowdhury and Haggblade (2000).

due to poor administration and other leakages and thus found little reason to defend their stake (Adams, 1998 and Alderman, 1988). Also, in Bangladesh, the urban ration was curtailed because a lack of supplies of the subsidized good at the local level. This meant that there was only a narrow margin between the subsidized good and alternative goods, which again reduced the value of the program to consumers who were thus even less inclined to fight to keep it.

Market reforms can pre-empt consumer resistance by providing direct benefits that offset the fact that consumers will no longer benefit from the lost subsidies. Zimbabwe's experience in removing subsidies on roller maize meal in 1993 is one example of this. When the Zimbabwean government cut its subsidies on roller milled maize, it simultaneously liberalized private milling and trade. The net result was that the cost of meal for poor consumers was lowered since they were able to switch to cheaper hammer-milled meal (Jayne and Jones, 1997). This separated the millers' interests from those of the wider population and contributed to the public's acceptance of the reforms.

Mismanaged food price reforms weaken governments and often destroy the careers of their advocates. While violent responses occur in wake of only a minority of food policy reforms and widespread consequences follow in even fewer, most governments are well aware of the potential for this to happen. The riots following a selective raising of commodity prices in Egypt in 1977 are particularly well known; more recently, in 1997, food riots occurred in the wake of currency devaluation (and subsequent increases in the costs of traded commodities) in Indonesia and Zimbabwe.

Yet, because these are rare relative to the number of price changes and systematic reforms that have been introduced, policymakers have an interest in assessing what contributes to public acceptance of reforms. A few general patterns emerge from country experiences.

First, the public is more likely to accept a policy change if they are told the rationale behind it, perhaps through advanced publicity. For example, they could be told that the government is seeking to make fiscal savings (presented in concrete terms such as the share of oil revenues, overall taxes, or the number of schools that could be built) or to minimize economic costs such as corruption and the burden on farmers. Early publicity in this regard may prevent some interest groups from hiding their self-interested aims by arguing that the reform will impose hardships on a wider community. To various degrees, this strategy has been used in Bangladesh, Pakistan, and Zimbabwe.

The government of Egypt, which failed to prepare the public for its abolition of subsidies in 1977, regularly compared the cost of the subsidy in the 1980s to the overall size of revenues from the Suez canal in order to impress its magnitude upon the population. Similarly, in Tunisia, which has a history of violent protests against subsidy cuts, the government preceded the reforms in the 1990s by a public relations campaign. The campaign stressed the cost of the system and the services—such as the number of hospital beds—that could be purchased with the same resources (box 2).

Box 2: The Process of Subsidy Reform in Tunisia

In Tunisia, fiscal pressures from a food subsidy bill that reached 4 percent of GDP in 1984 made the food subsidy program unsustainable. An initial attempt to reduce the budgetary costs of the program was made in 1984 and subsidies on several food items were eliminated, effectively doubling their prices. Violent riots erupted in response to these sudden reform efforts, forcing officials to rescind the measures and delaying the adoption of significant reforms until the end of the decade.

Disturbed by the violent responses to earlier cuts in the program, the Tunisian government adopted an innovative approach in 1990 to reduce the budgetary costs of these transfers in a manner that was politically acceptable and that protected the purchasing power and nutritional status of the poor. These reforms self-targeted the food subsidies by (a) shifting subsidies to items that were perceived by consumers as "inferior" (though their nutritional value was preserved) and were thus consumed primarily by lower-income groups; and (b) liberalizing the sale of unsubsidized higher-quality varieties that appealed to the more well-to-do, who would then consume less of the subsidized foods. Rather than drastically reducing subsidies all of a sudden, the government introduced the self-targeting reforms (and associated subsidy cuts) gradually by raising the prices of certain goods in some months and others in other months. Also, subsidies on the most sensitive products were reduced during the summer when the students (who were pivotal in the earlier riots) were not in school. The government also used a media campaign to prepare Tunisians in advance for the reforms and introduced compensating measures to ease political pressure and the impact of adjustment on the poor.

The results of these reforms have been impressive. Self-targeting had halved the cost of the program by 1993 (from 4 to 2 percent of GDP). It also improved the incidence of the program -- subsidies benefited the richest groups two times more than the poorest groups in 1985 but by 1993 the poor benefited 1.1 times more than the rich. Self-targeting also protected recipients' nutritional (caloric) intake more than comparable across-the-board subsidy cuts would have. Finally, widely publicized polls showed that most Tunisians understood, accepted, and agreed with the necessity of the reforms.

Source: Tuck and Lindert (1996)

Alternatively, an intense media campaign can be used during the first months of a program. In Jamaica, generalized food subsidies were replaced by food stamps almost immediately after this change was announced by the government. In the following six months, an extensive media campaign was run using radio, television, handbills, a public address system, and a series of inserts in a major national newspaper to announce and explain the system and to publicize how the public could sign up for food stamps.

Second, governments can mute opposition to subsidy reform from coalitions of the poor and ideologically motivated groups by introducing credible policies to protect the most vulnerable groups. This does not necessarily have to be in terms of food subsidies as cash transfers can have a similar, or greater, impact on poverty. Nor does it have to consist of direct compensation to all individuals for the costs of the reforms. Indeed, compensation as opposed to redirecting funds is ill-advised; if all groups who lose out as a result of a policy change are compensated fully for their loss, not only will there be no fiscal savings but any mistargeting will be perpetuated. Public acceptance is likely to be enhanced if the government introduces safeguards for the poor that are perceived to be equitable as well as credible.

If the safety net program is in place at the time when the inefficient program is reformed, then the government's credibility is guaranteed. Constituents can then assess the fairness of the benefits of the safety net as well as the impact of the market reforms. Credibility can also be enhanced if the program is part of a popular mandate or election manifesto. In some countries, such as Jamaica and Sri Lanka, the reform of untargeted price subsidies was debated in election campaigns. In others countries, the new government has

used the grace period that often follows an election to make reforms in keeping with the party's election platform.

Third, these coalitions of public support may be needed to offset opposition from interest groups who benefit from the subsidies that are due to be abolished. This suggests that governments need to pay particular attention to institutions and merchants who have a vested interest in the economic distortions that many subsidy programs create. This is a very different issue than protecting poor consumers who will see their real income decline when food prices rise. Small interest groups tend to be able to mobilize to protect their concentrated benefits. Whenever possible, governments should try to change administrative structures to shift the economic rents that these groups receive to the general population, even if there are no obvious savings to the treasury. Similarly, reducing many price distortions and indirect subsidies will not yield explicit budgetary savings although the economic gains may be appreciable.

Fourth, changes in international prices will influence the costs of a subsidy program. Often when world prices are low, a food subsidy provides little benefit to the population. This may be an opportunity to change market structures and, thus, allow the government to consider other options including targeted programs or income transfers should prices rise.

The Albanian government failed to take advantage of one such opportunity in the mid-1990s. While it eliminated many price subsidies and instituted a targeted income transfer in its place as it opened its economy, it neglected to remove administrative price ceilings on bread. For a few years, these ceilings were moot as they were higher than the market price. However, when world grain prices shot up in 1995, in order to defend the ceiling on bread prices, the government had to put restrictions on flour prices and to provide subsidized wheat to millers. This entire series of interventions was unplanned and expensive. The system of setting prices was eventually scrapped when prices reverted to trend. Had the government taken this step earlier, it would have been able to compensate poor households for the sharp price though its targeted public assistance programs.

There is less of a consensus on a fifth issue, the pace at which food policy reforms should be introduced. Egypt has been able to reduce the overall costs of its subsidies by making gradual changes in unit costs as well as in the number of products that it subsidizes. Whether this can be applied in other contexts, however, is questionable. Some policymakers favor making small price changes because these are too incremental to be likely to provoke organized protests and can be accommodated by comparatively minor adjustments in household budgets. However, repeated price changes may convey the impression that the government has no plan, or capacity, to hold the line. Thus, the credibility of the government may be called into question. Moreover, if merchants anticipate price changes, they may withhold their products until the changes are implemented. Also, it is difficult to introduce incremental changes in a targeting system or in the method of distribution. However, there are some steps that can be taken to phase in the overall reform package. As mentioned above, this includes ensuring that there is initial publicity spelling out the rationale for the reform. Similarly, in many circumstances, a new targeted poverty program can be introduced, or at least piloted, prior to the abolition of the general subsidies.

Finally, there is a global tendency to assume that two-tier price structures lead to two-tier accounting, in other words, that, over time, ways are found by producers and rent seekers

to divert lower priced goods into higher priced channels. Thus, reforms that separate the government's role as financier from the market's role of providing services have the potential to be the most effective reforms and, perhaps for that very reason, are often resisted by an entrenched bureaucracy.

If, in addition, governments recognize that food policy objectives are often achieved more effectively by delivering income support without any direct or indirect ties to food commodities, reforms can be separated from the consumption of a given commodity or use of a given market channel. This increased flexibility often allows for better targeting as well as an increased likelihood that the transfers will result in the poorest beneficiaries being lifted out of poverty.

Annex 1. An International Comparison of Leakage from Food Subsidy Programs

<i>Type of Program</i>	<i>Country</i>	<i>Leakage to Non- needy</i>
Untargeted Food Subsidies	Egypt (early 1980s), Morocco, Tunisia, Yemen	High (60-80%)
Untargeted Food Subsidies	Brazil	High (81%)
Untargeted Food Rations (i.e., ration shops)	India, Pakistan	High (50-60%)
Ration Shops Targeted Geographically	Brazil, India	Low (5-10%)
Self-targeting Food Rations	Bangladesh (sorghum), Pakistan	Low (10-20%)
Food Stamps - Targeted by Income	Colombia, Sri Lanka (post- 1979), United States	Low-Moderate (10- 30%)
Food Stamps - Targeted by Health Status	Colombia, Indonesia Honduras	Low (3-10%) Negligible
Targeted Feeding Programs	Dominican Republic, Colombia, Pakistan	Low
Supplementation Schemes - On-site or Take-home, Preschooler plus Mother	India, Indonesia	Moderate (30-60%)
Supplementation Schemes - On-site, most Vulnerable Group Targeting	India, Tamil Nadu	Low (3-10%)
Supplementation Schemes - Take-home, Nutritionally Vulnerable	India	Low
Food-for-work Programs	Bangladesh, India, Indonesia	Low-Moderate (3- 35%)
Targeted Food for Education Program (free ration for school enrollment of children)	Bangladesh	Low (7%)
Targeted Vulnerable Group Development Program (free ration for training of destitute women)	Bangladesh	Low (8-14%)

Sources: Subbarao et al (1997), Ahmed (2002), Kennedy and Alderman (1987), Mateus (1983).

References

The word *processed* describes informally reproduced works that may not be commonly available through libraries.

- Adams, Richard. 1998. "The Political Economy of the Food Subsidy System in Bangladesh." *Journal of Development Studies* 35(1): 66-88.
- _____. 2000. "Self-Targeted Subsidies: The Political and Distributional Impact of the Egyptian Food Subsidy System." *Economic Development and Cultural Change* 49(1): 115-136.
- Agha, Ali, and Jonathan Haughton. 1996. "Designing VAT Systems: Some Efficiency Considerations." *Review of Economics and Statistics* 78(2): 303-308.
- Ahluwalia, Deepak. 1993. "Public Distribution of Food in India: Coverage, Targeting and Leakages." *Food Policy* 18(2): 33-54.
- Ahmad, Ethisham, and Nicholas Stern. 1991. *The Theory and Practice of Tax Reform for Developing Countries*. Cambridge: Cambridge University Press.
- Ahmed, Aktar. 2002. "Feeding Minds While Fighting Poverty: Food For Education in Bangladesh." International Food Policy Research Institute. Processed.
- Ahmed, Raisuddin. 1988. "The Costs and Benefits of Food Subsidies in Bangladesh." In Per Pinstrup-Andersen, ed., *Consumer-Oriented Food Subsidies: Costs, Benefits, and Policy Options for Developing Countries*. Baltimore, Md.: The Johns Hopkins University Press.
- Ahmed, Raisuddin, Steven Haggblade, and Tawefiq-e-Elahi Chowdhury. 2000. *Coming Out of the Shadow of Famine: Evolving Food Markets and Food Policy in Bangladesh*. Baltimore, Md.: The Johns Hopkins University Press.
- Ali, S. M., and Richard Adams. 1996. "The Egyptian Food Subsidy System: Operations and Effects on Income Distribution." *World Development* 24(11): 1777-1795.
- Alderman, Harold..1988. "The Twilight of Flour Ration in Pakistan." *Food Policy* 13(3): 245-256.
- _____. 1993. "New Research on Poverty and Malnutrition: What are the Implications for Research and Policy?" In Michael Lipton and Jacques Van der Gaag, eds., *Including the Poor*. Washington, D.C.: World Bank.
- Alderman, Harold, and Carlo del Ninno. 1999. "Poverty Issues for Zero Rating VAT in South Africa." *Journal of African Economies* 8(2): 182-208.
- Alderman, Harold, and Kathy Lindert. 1998. "The Potential and Limitations of Self-Targeted Food Subsidies." *World Bank Research Observer* 13(2): 213-230.

- Alderman, Harold, and Joachim von Braun. 1984. *The Effect of the Egyptian Food Ration and Subsidy System on Income Distribution and Consumption*. International Food Policy Research Institute Research Report No.45. Washington, D.C..
- Ali, Sonia, and Richard Adams. 1996. "The Egyptian Food Subsidy System: Operation and Effects on Income Distribution." *World Development* 24(11): 1777-91.
- Bienen, Henry, and Mark Gersovitz. 1986. "Consumer Subsidy Cuts, Violence and Political Instability." *Comparative Politics*. (October): 25-44.
- Bitrán, Ricardo, and Ursula Giedion. "User Fees for Health Care: Waivers, Exemptions, and Implementation Issues." *Social Safety Net Primer Series* (forthcoming). Washington, D.C.: World Bank.
- Calegar, Geraldo, and Edward Schuh. 1988. *The Brazilian Wheat Policy: Its Costs, Benefits, and Effects on Food Consumption*. International Food Policy Research Institute Research Report No.66. Washington, D.C.
- Chowdhury, Tawfiq-e-Elahi, and Steven Haggblade. 2000. "Dynamics and Politics of Policy Change." In Raisuddin Ahmed, Steven Haggblade, Tawfiq-e-Elahi Chowdhury, eds., *Coming Out of the Shadow of Famine: Evolving Food Markets and Food Policy in Bangladesh*. Baltimore, Md.: The Johns Hopkins University Press.
- Dawe, David. 1998. "Re-Energizing the Green Revolution in Rice." *American Journal of Agricultural Economics* 80(5): 948-953.
- Deaton, Angus. 1989. "Rice Prices and Income Distribution in Thailand: A Non-Parametric Analysis." *Economic Journal* (99 Supplement): 1-39.
- _____. 1997. *The Analysis of Household Surveys: A Microeconometric Approach to Development Policy*. Baltimore, Md.: The Johns Hopkins University Press.
- Delgado, Christopher, and Thomas Reardon. 1988. "Why the Urban Poor Pay More for Their Grain: Transaction Derived Cereal Prices in Burkina Faso." Paper presented at the American Association of Agricultural Economics Annual Meeting. July.
- del Ninno, Carlo, and Paul Dorosh. 2000. "In-Kind Transfers and Household Food Consumption: Implications for Targeted Food Programs in Bangladesh." International Food Policy Research Institute, Washington, D.C. Processed.
- Dorosh, Paul, Carlo del Ninno, and David Sahn. 1996. "Market Liberalization and the Role of Food Aid in Mozambique." In David Sahn, ed., *Economic Reform and the Poor in Africa*. Oxford: Clarendon Press.
- Edirisinghe, Neville. 1987. *The Food Stamp Scheme in Sri Lanka: Costs, Benefits and Options for Modifications*. International Food Policy Research Institute Research Report No 58. Washington, D.C.

- Fraker, T. M., A. P. Martini, and J. C. Ohls. 1995. "The Effect of Food Stamp Cashout on Food Expenditures: An Assessment of the Findings from Four Demonstrations." *Journal of Human Resources*, 30(4).
- Garcia, Marito, and Per Pinststrup-Andersen. 1987. *The Pilot Food Price Subsidy Scheme in the Philippines: Its Impact on Income, Food Consumption, and Nutritional Status*. International Food Policy Research Institute Research Report No 61. Washington, D.C.
- Gelbach, Jonah, and Lant Pritchett. 2000. "More for the Poor is Less for the Poor." Policy Research Working Paper No. 1799. World Bank, Policy Research Department: Washington, D.C.
- Grosh, Margaret. 1994. *Administering Targeted Social Programs in Latin America: From Platitudes to Practice*. Washington D.C.: World Bank.
- Haddad, Lawrence, John Hoddinott, and Harold Alderman, eds., 1997. *Intrahousehold Resource Allocation in Developing Countries: Methods, Models, and Policy*. Baltimore, Md.: The Johns Hopkins University Press.
- Jayne, T. S., and Stephen Jones. 1997. "Food Marketing and Pricing Policy in Southern Africa: A Survey." *World Development* 25(9): 1505-1527
- Kennedy, Eileen T. and Harold Alderman. 1987 (March). "Comparative Analyses of Nutritional Effectiveness of Food Subsidies and Other Food-Related Interventions." International Food Policy Research Institute and WHO-UNICEF.
- Krueger, Anne, Maurice Schiff, and Alberto Valdes. 1991. *The Political Economy of Agricultural Pricing*. Baltimore, Md.: The Johns Hopkins University Press.
- Kuhn, B. A., P. A. Dunn, D. Smallwood, K. Hanson, J. Blaylock, and S. Vogel. 1996. "The Food Stamp Program and Welfare Reform." *Journal of Economic Perspectives* 10(2).
- Lavy, Victor, John Strauss, Duncan Thomas, and Phillippe de Vreyer. 1996. "Quality of Health Care, Survival and Health Outcomes." *Ghana Journal of Health Economics* 15(3): 333-357.
- Lundberg, S. L., R. A. Pollak, and T. J. Wales. 1997. "Do Husbands and Wives Pool Their Resources? Evidence from the U.K. Child Benefit." *Journal of Human Resources* (Summer).
- Mateus, Abel. 1983. "Targeting Food Subsidies for the Needy: The Use of Cost-Benefit Analysis and Institutional Design." World Bank Staff Working Paper 617. Washington, D.C.
- Montgomery, Roger. 1985. "Statutory Rationing and Modified Rationing: Causes and Effects." *Bangladesh Development Studies* 13:109-116.

- Moojj, Jos. 1999. "Real Targeting: The Case of Food Distribution in India." *Food Policy* 24(1): 49-69.
- Neary, J., and K. Roberts. 1980. "The Theory of Household Behavior under Rationing." *European Economic Review* 13(1): 25-42.
- Nelson, Joan. 1985. "Short-Run Public Reactions to Food Subsidy Cuts in Selected Sub-Saharan and North African Countries." February. Overseas Development Council, Processed.
- Newbery, David, and Nicholas Stern. 1987. *The Theory of Taxation for Developing Countries*. Oxford: Oxford University Press.
- Pinckney, Thomas. 1989. *The Demand for Public Storage of Wheat in Pakistan*. International Food Policy Research Institute Research Report No 77. Washington, D.C.
- Pinstrup-Andersen, Per, ed. 1988. *Consumer-Oriented Food Subsidies: Costs, Benefits, and Policy Options for Developing Countries*. Baltimore, Md.: The Johns Hopkins University Press.
- Pinstrup-Andersen, Per, Norha Ruiz de Londono, and Edward Hoover. 1976. "The Impact of Increasing Food Supply on Human Nutrition." *American Journal of Agricultural Economics* 58(1): 131-142.
- Pitt, Mark. 1985. "Equity, Externalities and Energy Subsidies: The Case of Kerosene in Indonesia." *Journal of Development Economics* (17):207-17.
- Radhakrishna, R., and K. Subbarao. 1997. "India's Public Distribution System." World Bank Discussion Paper No. 380. Washington, D.C.
- Rao, Vijayendra. 2000. "Price Heterogeneity and 'Real' Inequality: A Case Study of Poverty and Prices in Rural South India." *Review of Income and Wealth* 46(2): 201-211.
- Ravallion, Martin, and Quentin Wodon. 2000. "Does Child Labor Displace Schooling? Evidence on Behavioral Response to an Enrolment Subsidy." *Economic Journal* 110(1): 158-175.
- Rogers, Bea, and Jennifer Coates. "Food-Based Safety Nets and Related Programs." *Social Safety Net Primer Series* (forthcoming). Washington, D.C.: World Bank.
- Reutlinger, Shlomo, and Judith Katona-Apte. 1983. *The Nutritional Impact of Food Aid: Criterion for the Selection of Cost-Effective Foods*. World Bank Agricultural Research Unit (ARU) Discussion Paper No. 12. Washington, D.C.
- Scobie, Grant. 1988. "Macro-Economic and Trade Implications of Consumer-Oriented Food Subsidies." In Per Pinstrup-Andersen, ed., *Consumer-Oriented Food Subsidies: Costs, Benefits, and Policy Options for Developing Countries*. Baltimore, Md.: The Johns Hopkins University Press.

- Senauer, Benjamin, and N. Young. 1986. "The Impact of Food Stamps on Food Expenditures: Rejection of the Traditional Model." *American Journal of Agricultural Economics* 68(1): 37-43.
- Strauss, John, and Duncan Thomas. 1995. "Human Resources: Empirical Modeling of Household and Family Decisions." In Jere Behrman and T. N. Srinivasan, eds., *Handbook of Development Economics Vol. 3A*. Amsterdam: North Holland Publishing Company.
- Subbarao, Kalandhi, Aniruddha Bonnerjee, Jeanine Braithwaite, Soniya Carvalho, Kene Ezemenari, Carol Graham, and Alan Thompson. 1997. *Safety Net Programs and Poverty Reduction: Lessons from Cross-Country Experience*. Washington, D.C.: The World Bank.
- Suryahadi, Asep, Sudarno Sumarto, Yusuf Suharso, and Lant Pritchett. 2000. "The Evolution of Poverty During the Crisis in Indonesia, 1996-99." World Bank Policy Research Working Paper #2435.
- Tabor, Steven, and M. Hussein Sawit. 2001. "Social Protection via Rice: the OPK Subsidy Program." *Journal of Development Economics* (Tokyo).
- Thomas, Duncan. 1994. "Like Father Like Son; Like Mother Like Daughter: Parental Resources and Child Height." *Journal of Human Resources* 29(4): 950-988.
- Timmer, Peter. 1981. "Is there 'Curvature' in the Slutsky Matrix?" *Review of Economics and Statistics* 63: 395-402.
- _____. 1991. "Food Price Stabilization: Rationale, Design, and Implementation." In Dwight Perkins and Michael Roemer, eds., *Reforming Economic Systems*. Cambridge, Mass.: Harvard University Press.
- _____. 1996. "Does BULOG Stabilize Rice Prices in Indonesia? Should it Try?" *Indonesian Economic Studies* 32(2):45-74.
- Tobin, James. 1970. "On Limiting the Domain of Inequality." *Journal of Law and Economics* 13: 263-277.
- Tolly, George, Vinod Thomas, and Chung Wong. 1982. *Agricultural Price Policies and Developing Countries*. Baltimore, Md.: The John Hopkins University Press.
- Traitvorakul, Prasarn. 1984. "The Effects on Income Distribution and Nutrition of Alternative Rice Price Policies in Thailand." International Food Policy Research Institute Research Report No 46. Washington, D.C.
- Tuck, Laura, and Kathy Lindert. 1996. "From Universal Food Subsidies to a Self-Targeted Program: A Case Study of Tunisian Reform." World Bank Discussion Paper No. 351. Washington, D.C.

- von Braun, Joachim, Tesfaye Teklu, and Patrick Webb. 1999. *Famine in Africa: Causes, Responses, and Prevention*. Baltimore, Md.: The Johns Hopkins University Press.
- von Braun, Joachim. 1988. "Implications of Consumer-Oriented Food Subsidies for Domestic Agriculture." In Per Pinstrup-Andersen, ed., *Consumer-Oriented Food Subsidies: Costs, Benefits, and Policy Options for Developing Countries*. Baltimore, Md.: The Johns Hopkins University Press.
- World Bank. 2000a. "Improving Household Food and Nutrition Security in India: Achievement and the Challenges Ahead." South Asia Region. Processed.
- World Bank. 2000b. "Maintaining Utility Services for the Poor: Policies and Practices in Central and Eastern Europe and the Former Soviet Union." Europe and Central Asia Region. Processed.
- World Bank. 2000c. "Azerbaijan Republic: Quasi Fiscal Deficit Assessment." Energy Sector, Europe and Central Asia Region. Processed.