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A persistent false dichotomy places theory as distinct from empirically based pragmatism. In actuality, good theory attempts to provide a rational explanation for patterns in observed phenomenon, and even a hard core phenomenologist uses preconceived notions and guidelines in directing his senses to process and filter the myriad bits of information potentially accessible. While the question addressed here—whether food subsidies reach the poor—is primarily a question about institutions and, hence, is contingent on historical and often extremely transitory events, the inquiry can use what is, perhaps, a surprisingly large specialized literature on the theory of rationing and targeting of programs as a point of departure.

The widespread introduction of various forms of rations during the second world war gave impetus to the study of consumer behavior under what may be considered a dual currency system (Rothbarth 1941, Tobin and Houthakker 1951, Tobin 1952). Such studies indicated that rationing imposes an additional quantity constraint on consumers utility maximization which can be decomposed into income and substitution effects in a manner analogous to the Slutsky decomposition of the effects of price changes. A quota on one commodity can be shown to influence the consumption of other goods through its cross price effect (Pollak 1969, Neary and Roberts 1980) and the welfare impact determined accordingly.

More germane to the current study is the fact that ration quotas are analogous to money transfer payments, although there are some differences if the quota is not convertible. When quotas are convertible or if a black market exists which provides, in effect, an exchange rate from quotas to currency, rations can generally be treated as income. Such convertible coupons can be shown to be preferred by the poor to other distribution systems (Sah 1987).

When there is a parallel market for the rationed good the income transfer pertains to the subsidy on the presumably lower priced rationed good. When the

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quota is *inframarginal*, that is, when the allocated amount is less than would be consumed at the market price in the absence of a quota the income transfer is just this value of the subsidy. The evaluation of various ration systems, then, must include a consideration of the convertibility of the ration or whether the quota is *inframarginal* as well as, of course, the institutional questions of who receives the rations and how are quotas determined. Coate's conclusion that the selling of food aid at a price below the market price can never improve distribution, for example, is a lucid mathematical exposition that confirms an essential feature of *inframarginal* quotas.

Food stamps can be considered a special case of rations. In this case there is a subsidy on a parallel currency which is valid for a category of goods rather than a single commodity, but the advantage in theory comes mainly from the fact that food is considered a merit good. Many planners and government officials consider increased consumption of food by the poor to be either politically more acceptable or socially more desirable than programs aimed at a more generalized income increase (Tobin 1970, Thurow 1973, Ross 1988). Under such a framework, food stamps become more desirable than general income transfers because when the stamps are purchased it is possible to set the price such that food budgets are higher than under an equivalent cash transfer (Reutlinger and Selowsky 1976). Food stamps are often advocated because it is believed that it is more convenient to target food stamps than either cash or individual commodities. But there is no *a priori* reason why this should be expected. This will be discussed further in the review of various countries' experiences below.

The inclusion of time as one argument in the theory of consumer budget allocation (Becker 1965) provides the basis for an approach to the targeting of goods and social services to the poor. It is argued that the asset of time is more equitably distributed than other assets, hence, the poor would benefit disproportionately if free or subsidized goods are allocated by willingness to wait (Nichols, Smolensky, and Tideman 1971, Barzel 1973). However, the welfare impacts of such a distribution depends in part on whether there is a parallel market for the good at a higher price if one is unwilling to stand in line. Moreover, if waiting in line is a fixed cost of entry and one can purchase varying quantities once one has reached the front, then queuing is not necessarily favorable to those with lower opportunity costs of time (Alderman 1987). Furthermore, while the relative opportunity cost of time is an empirical question, unless opportunity costs are unrealistically assumed to be zero, such a distribution system involves deadweight loss to society. This is because waiting is a cost paid by the consumer but not received by either the merchant or the government.

Economic theory provides a few additional guidelines of the targeting of subsidies. Reutlinger and Selowsky argued for the importance of such targeting and indicated that the targeting effectiveness of generalized price subsidies is proportional to the relative budget shares of different groups in society for the subsidized commodity. It is straightforward to show that if the income elasticity for a commodity is negative the poor will obtain more of the subsidy in absolute terms. If the elasticity is positive but less than one they will obtain more relative to their income, and if the elasticity exceeds one, wealthier consumers will obtain more of the subsidy both in absolute terms and relative to their incomes.

By raising the question whether price responsiveness differs by income groups, Timmer (1981) added another dimension to this use of conventional analysis of consumer preferences to the determination of the relative welfare gains from a subsidy.¹

Conditional on a class of poverty indices, Kanbur (1986) provides guidelines for targeting poverty alleviation (see also Ravillon and Chao 1987). Besley and Kanbur (1988) indicates that for normal goods a subsidy on inframarginal purchases is more effective at poverty alleviation than an equal budgetary allocation for subsidies at the margin. Elsewhere, Kanbur (1988) indicates some of the limitations of targeting. The identification of the target population is never perfect. It would be necessary to know what the administrative costs of such a process are before the optimal degree of targeting can be determined. Moreover, as households can modify their behavior to qualify for targeted programs, the economic costs included the impacts of the incentive structure introduced by such programs. Kanbur also brings up the political economy of targeting. Once these aspects are recognized, we go from a review of theoretical insights to an attempt at drawing generalization from specific examples.

This approach is followed below and is able to build upon two recent reviews of food subsidies (Mateus 1984 and Pinstrup-Andersen 1988).² The specific question addressed is whether subsidies reach the poor. This differs from the question of the effectiveness of subsidies. To evaluate the effectiveness of a program one needs to know its goals; to evaluate its efficiency one needs a common metric by which to measure both benefits and costs. Clearly the goals of subsidies are varied and often have little to do with poverty alleviation. Commonly, for example, subsidies are instituted in an effort to reduce pressures on the urban cost of living or as an alternative to raising wages. No attempt will be made to ascertain the effectiveness of such an endeavor nor will this study address the effectiveness of subsidies in achieving another oft-stated goal, the reduction of malnutrition, although this issue is closer to the focus of the paper.³

Moreover it is necessary to be somewhat evasive in addressing an issue which must be central to the review which follows, namely who are the poor. It is overly ambitious to attempt a definition of absolute poverty. Even the discussion of the relatively poor is limited by the data available in the case studies reviewed; the data on the amount of subsidies received by the poor in some studies may refer to what Lipton terms the ultra-poor (1983) and in others may refer to nearly half the population. Nevertheless, from such information it will be possible to indicate in which societies or under which operational structures

1. For an example of the relative gains to different groups stemming from a price change, albeit one due to a supply shift, see Pinstrup-Andersen et al. 1976.

2. A contributor to the volume edited by Pinstrup-Andersen, the current author has few differences with the conclusions of that study. The current study differs mainly in its more limited focus and in the advantage of having access to more recent information.

3. The reader is again referred to the volume edited by Pinstrup-Andersen for discussions of subsidies in relation to the macroeconomy, agriculture, or nutrition. Another review of the relationship of food subsidies and nutrition is found in Kennedy and Alderman. See also Behrman's contribution to this volume.

subsidies are progressive and in which they are, by design or by reversal of initial intent, subsidies which primarily benefit the elite.⁴

The Concept of Targeted Subsidies

The rationale for targeting social programs rests on a simple premise—that the social returns for a given level of services (or a unit of transfer) differ across members of society. If the costs of a program do not differ according to who receives the benefit, it is obvious that the optimal program would provide the service to different social groups in order of the gain to each group until marginal costs and benefits are equal. A modification of this guideline that recognizes that it is difficult to quantify social returns although it is sometimes possible to make an ordinal ranking would be to deliver the services in order of highest returns until the allocated resources are exhausted.⁵

A key to the effectiveness of such a program, then, is the degree to which the services are actually delivered to the intended group. Targeted services then require a mechanism by which the general population can be screened in order to determine which individuals belong to the priority groups.

The effectiveness of screening processes is determined by how specific and how sensitive the screening process is (Timmons, Miller and Drake. See also Kumar and Stewart). To the degree that a program is specific it excludes those who are not in the target group while a sensitive program is one which does not exclude those who belong to the target group. These are sometimes termed vertical and horizontal targeting efficiency. Generally one can improve the sensitivity of a screening process at the expense of a loss of specificity, and vice versa.⁶ Improvement in both criteria is usually obtained only at increasing cost per degree of precision; at some point it becomes more expensive to remove ineligible individuals from a program than it costs to deliver the service.

The above consideration of the relation of errors in sensitivity and selectivity pertain to situations in which the program budget is not fixed. When real resources for the program are a given, any changes in eligibility is a zero sum consideration; the more resources that go to the non-needy the less for the needy and visa versa.

Another difficulty inherent in any screening process is the fact that the ratio of mistaken to properly classified individuals is higher the smaller the target population. To illustrate with a numerical example, suppose that a screening

4. Throughout this study subsidies refer to explicit subsidies on food. Clearly there are myriad other type of subsidies such as energy subsidies or input subsidies which have different distributional consequences. Moreover, the issue of implicit subsidies, for example when a government obtains and sells food below its opportunity cost but without an explicit fiscal subsidy, will only be discussed briefly.

5. For the purpose at hand it is not necessary to discuss how the budget allocation of the program is determined. It is also expedient to postpone discussion of the important issue that the costs of delivering a service are often highest for those groups for whom benefits are also highest.

6. This is analogous to the probability of type two and type one errors in statistical inference.

process misses 5 percent of all eligible individuals and includes 1 percent of all those ineligible. If 5 percent of the population are truly in the target group, 5.7 percent will be determined eligible, of which 16.7 percent are in fact not eligible. (This is 95 percent of the eligible 5 percent, plus 1 percent of the ineligible 95 percent). By contrast, if the true eligibility is 25 percent, the same rate of errors would lead to 24.5 percent of the population qualifying. Of these, only 3.06 percent will be from the non-target population. Even in the absence of data on the cost of targeting, the two principles of increasing marginal costs of screening and decreasing effectiveness the narrower the definition of eligibility, provide some perspective of targeting to small subgroups of the population.

Highly targeted programs also have a small political base, both in terms of actual beneficiaries and in terms of public visibility. An alternative approach is a universal scheme in which the targeting comes through a progressive tax system to raise the necessary revenue. Such an approach to the provision of government services is widespread, but clearly is not without its own political as well as efficiency drawbacks. Moreover, such programs may not be truly universal (Kanbur 1988).

This touches upon a critical point. Even when no explicit screening exists most programs are de facto targeted, at least partially. Indeed, it is difficult to conceive of a program in which the net benefits are neutrally distributed.⁷ For example, the choice of a commodity to subsidize implies a distribution of beneficiaries, as does the location of outlets or service centers. Similarly, panterritorial pricing for consumer goods is in fact a policy in which the benefits are distributed roughly in proportion to the distance one lives from a producing or importing center, just as such schemes for producer prices are implicit taxes depending on the locale. The determination of the extent that low-income families benefit from a program often hinges on such de facto targeting.

Beneficiaries of programs which are explicitly targeted are often screened by level of income. As is well known, such screening is difficult, if not impossible, when the majority of household work is in agriculture or in the informal sector for non-agricultural activities. If there is an incentive to participate in a program there would also be incentives to misrepresent self-reported incomes. Accordingly, many indicators which correlate with income, such as area of residence, are used to determine eligibility. Such geographic targeting has the advantage of requiring relatively little administration, but is often neither sensitive or specific. Asset ownership, particularly of land, is also a candidate for an indicators of eligibility of targeted transfers (Ravallion, 1988). Programs may also be specific to a certain work environment, either because those employees are believed to be relatively poor or, more often, because the sector is politically visible.

Willingness to work for low wages is often considered to be correlated with poverty. Thus, it has been used to screen recipients of famine relief (Dreze 1987) and is an inherent feature of food for work programs.

7. Even the benefits of a program as universal as a postal system differ not only in regard to how many and what type of mail is received, but with regard to the average costs of delivery.

Beneficiaries may also be screened by criteria that do not strictly correlate with income but are correlated with need. For example, food subsidies are often allocated to pregnant women, or to families in which a child indicates failure to grow normally. Not only are the costs of various screening procedures different, but they differ in their suitability for alternative types of distribution systems or means of subsidization.

De Facto Targeting of Generalized Subsidies

A government may provide a broad-based subsidy to consumers by paying a portion of the total production, storage, and marketing costs of a commodity. Commonly, such subsidies have no explicit targeting mechanism although allowing marketing channels to determine the distribution of a subsidy involves an implicit or *de facto* targeting. There is, for example, an inherent tendency for such subsidies to accrue mainly to urban consumers. While this may reflect what Michael Lipton has termed urban bias (Lipton 1977) it also stems from practical considerations of market channels. It is administratively most feasible if the price wedge is administered at some central point in the market channel, say the point of import, or a point of processing or storage.⁸ Rural consumers often bypass these channels through home production, local trade, and barter, as well as the receipt of wage in-kind.

The influence of the marketing system on the distribution of an untargeted general subsidy between urban and rural consumer is illustrated by a comparison of the flour and bread subsidies in Egypt and Pakistan. The former country produces only a quarter of the wheat it consumes while the latter is largely self-sufficient. Rural per capita subsidies on flour and bread in Egypt exceed those in urban areas when indirect benefits through legal resale are considered (Alderman and von Braun, 1984). The generalized wheat subsidy in Pakistan was introduced in April 1987 and has not been formally studied, but the current market channels are such that it is unlikely that per capita benefits in rural areas approach those in urban areas.⁹

The urban bias of food subsidies, however, may reflect more than differences in marketing channels. Lardy (1983) states that when state sales of grain in urban areas in China were priced below cost, resales to peasants were generally at prices sufficiently above procurement prices to cover distribution and storage. Occasionally, however, a dual price policy was followed in rural areas, particularly in time of harvest shortfalls or for poor households.

Rural producers may directly benefit when a subsidy occurs at a point of processing and there is a backflow of food into producing regions. For example,

8. This applies mainly to explicit subsidies. While this study does not focus on implicit subsidies, mention should be made of the role of export taxes which affect rural households to the degree they are net purchasers of the exported food. For Thailand, see Trairatvorakul (1984).

9. The transition from a flour ration to a general subsidy in Pakistan is discussed in Alderman, Chaudhry and Garcia, 1988. That study discusses possible changes in market channels that may occur if the new policy remains in place.

subsidized milled maize meal flows back into rural Zambia (Kumar 1988). Such a marketing pattern has occurred in Zimbabwe as well.

While not denying the extent of implicit taxation of rural producers that often occurs when governments seek to keep urban prices low by price ceilings and forced procurement, it must also be noted that explicit subsidies of foodgrains may be used to put the burden of such pricing policies on the exchequer rather than the farmer. Von Braun and de Haen (1983) observed a decline in implicit taxation of producers as explicit subsidization of flour and bread increased in Egypt. Horton (1988) reports a similar pattern for maize prices in Tanzania.

This touches upon an essential point which, although beyond the scope of this study, must be kept in mind. Any evaluation of the full distributional impacts of a subsidy program must also consider sources of financing, including indirect taxation and deficit financing. Similarly, a complete study of impacts must consider the consequences of the subsidy on total demand and, consequently, on price. This entails consideration of whether the economy is open or closed with respect to grain trade. Binswanger and Quizon (1988) report different estimates of distributional impacts when sources of financing or the openness to international trade are allowed to vary.

It is not uncommon for producers and consumers to receive subsidies on the same commodity. Such has been the case for rice in Sri Lanka. Similarly, Korea's consumer's subsidies are largely designed to compensate consumers for the high costs of protecting agriculture. Another feature of Korea's subsidy system is also common; the cost of subsidies include a large element of price stabilization (Tolley, Thomas and Wong 1982). The subsidy element of stabilization which can be attributed to a risk-reduction premium is, however, relatively small compared to the storage subsidies by which the government absorbs part, or all, of the real costs of holding grain from the time of harvest to the time of consumption.

Pakistan's role in marketing wheat is another example of a government bearing the bulk of storage costs. Such storage subsidies benefit consumers in proportion to the level of purchase. Rural consumers, however, often bypass such marketing and storage networks and benefit, if at all, from the conceptually distinct producer price stabilization policies that often accompany such governmental involvement in storage.

As mentioned earlier, marketing channels also determine the distribution of subsidies when transport is subsidized or a policy of panterritorial pricing is followed. This has occurred in a number of African countries as well as in Pakistan. To the degree that more remote areas are also poorer, such a form of geographic targeting will be de facto targeted to the poor, albeit with a fair amount of allocative inefficiency.

Occasionally, geography provides a means for explicit, deliberate targeting of subsidies as well. For example, the choice of regions and villages within regions in the pilot Philippine subsidy program discussed by Garcia and Pinstrup-Andersen (1987) was based on the relative poverty in the recipient community. Similarly, after an unsuccessful attempt to target subsidies on the basis of income in urban Brazil, the principle of geographic targeting in low-income neighborhoods was adopted with apparent success (Berg 1987, see also Musgrove and Galindo, 1988).

Mexico's National Basic Foods Company (CONASUPO) operates a similar system through its retailing affiliate, DICONSA, which sells a number of staple commodities at 5–30 percent below market prices (World Bank 1987). It maintains roughly 12,000 rural outlets and 4,700 urban stores. Only about 20 percent of the urban stores, however, subsidize sales. The criterion for urban subsidies is the income of the neighborhood.

Despite the potential to target by region or locale, the distribution of benefits from a generalized subsidy largely follows from the choice of commodity. As mentioned above, this is inherent in the tendency of upper-income groups to consume greater quantities of all but a few subsidized commodities. The choice of commodity may also influence the distribution of benefits between sectors. Thus, the former subsidy of tortillas in Mexico accrued mainly to urban households. Rural households—who generally made their own tortillas from unsubsidized maize or flour—received relatively little of the benefits of the subsidy (Lustig 1986).

Similarly, while the rice ration in Sri Lanka in 1979 was roughly distributed in proportion to the population in the rural, urban, and estate sectors, the per capita value of the subsidy on wheat (available without quotas) was twice as high for the estate sector as for the rest of the population (Edirisinghe 1987). This reflected different customs among ethnic groups, rather than income. Bread or flour consumption, hence the value of the subsidy, increased with income in all three sectors.

The absolute value of Brazil's wheat subsidies are highest for middle- and upper-income households as well as in the relatively prosperous South and Southwest due to preference and purchase patterns (Calegar and Schuh 1988). Lower-income groups receive larger subsidies relative to their income than do upper-income groups. Hence, the subsidy reduces inequality. Although rice is not directly subsidized, were equal subsidies to be allocated to that commodity the benefits would be skewed more towards the poor, although the administrative and marketing structure for such a subsidy is lacking (Calegar and Schuh, *op. cit.*).

Governments often choose to subsidize commodities for which consumption rises with income more rapidly than it does with grains. This would be the case with subsidies on meat, milk, edible oils or sugar. Morocco is an example of a country which has subsidized the latter two commodities with regressive distributional impacts.

Conversely, subsidies can be self-targeted when the subsidized commodity is an inferior good. While few such goods exist under a broad definition of a commodity, a number of examples can be found when different qualities of a commodity are considered as distinct commodities.¹⁰ Thus, while the value of subsidies of bread and flour as a category increases with household incomes in Egypt, the benefits of the subsidy of fine flour accrue mainly to upper-income urban consumers, while the benefits from coarse flour subsidies accrue in

10. Korea subsidizes barley as well as rice. The former is an inferior good and seems to dominate the subsidy budget (Tolley, et al.). This is a bit puzzling as the unit subsidy is higher on rice. No explicit studies of the distribution of subsidies in Korea are known to the author.

higher amounts to low-income groups. Similarly, the poor are the principal beneficiaries of subsidies on rice in the Dominican Republic. This reflects the fact that subsidies differ according to three recognized grades of rice (Rogers and Swindale 1988).

Other examples of self-selection of subsidized commodities are discussed in the section on quotas and rations below. It should be noted, however, that there is often not a clear distinction between universal and rationed subsidies. Unless a government is committed to making an unlimited quantity of the subsidized commodity available, a disequilibrium situation is likely to arise. When a government is either unwilling or unable to maintain a horizontal supply curve at the subsidized price, the market clearing price may exceed the subsidized price. Under such a two-tiered market, rents accrue to those individuals able to gain access to the limited quantities of the lower-priced commodity. Often these are the urban middle class. It is for this reason that Horton argues that the urban poor were, in general, not losers when Tanzania eliminated its explicit subsidy on maize in 1984; they seldom had access to the grain at the official price before the policy change.

Quotas are often imposed in disequilibrium situations in which the demand at the official price exceeds the actual supply. Often these are administrative and not statutory; quotas may not be by individual or household but by outlets, depots, or neighborhood. The often-observed phenomenon of individuals waiting in lines for scarce goods, be they sugar, meat, or tickets to rock concerts, does not reflect the slowness of distribution but the size of the gap between supply and demand. Earlier entrants gain priority rights, but at the cost of their time. In Egypt's multipriced marketing system, a number of commodities are distributed on such a basis. Due to the middle class being able to purchase larger quantities for a given time in line as well as some possible biases in availability by neighborhood, this means of allocation of subsidies was skewed towards the urban upper-income groups (Alderman and von Braun 1984).

Rations and Quotas

One means that is often employed to assure an equitable distribution of a subsidized commodity is to make the item available in limited amounts on quota or rations. Occasionally, rationing is intended to allocate the entire available supply of a scarce commodity, particularly in the wartime predecessors to many of the existing or recent ration systems. Such strict rationing is, however, relatively uncommon. More often, a quota exists for the purchase of a commodity at a price which is below the market clearing price, while purchases of unlimited amounts are permitted in the parallel open market.¹¹ As mentioned above, when ration quotas are not binding due to the ability to decline the ration as well as the ability to increase purchases on the parallel market, rations resemble an income transfer. They differ from such transfers, in part, because they are more or less fixed in real terms. For the purposes of assessing the degree of tar-

11. Most of the theoretical literature on rationing concerns the former strict ration.

getting, the main features that determine the distribution of benefits are the availability of supplies and outlets as well as the size of the quotas.

The most extensive and most extensively studied ration systems are descendants of systems established either under British colonial rule (Bangladesh, India, Pakistan, Sri Lanka) or under indirect British wartime administration (Egypt). These five countries all have relatively well-developed administrative capacity and extensive internal and external trade networks. While these systems have shown longevity—all five endured for over three decades, although two of these have been replaced by other subsidy schemes—they also have exhibited flexibility within the basic administration.

The Sri Lankan ration system (discontinued in 1979) was able to make rice available to consumers in all sectors on a regular basis, although quotas were often changed according to financial and political requirements (Gavan and Chandrasekera 1979). Similarly, the Egyptian ration system reaches 92 percent of rural and urban consumers with only slight distinctions between the two sectors in the size of quotas. India's fair price shops, however, are not uniformly distributed throughout the country due to the decentralized administration under the various states. George (1985) reports that only Kerala and Jammu and Kashmir have extensive regular rural distribution. Data reported by De Janvry and Subbarao (1986) indicate that in 1977 only in Kerala was per capita distribution equal in urban and rural areas. Only in another 5 of the 13 states covered did per capita rural distribution exceed 10% of urban. After Kerala where both urban and rural residents received 60 kilogram of grain per capita from public distribution the next most equitable distribution in sector terms was in Maharashtra where rural recipients received an average of 11.2 kilos of grain per capita compared with the urban residents 50 kg. In times of crop shortfalls, however, allocation of subsidized grains to other rural regions increase. The extent that such grains actually are delivered has not been formally studied and anecdotal evidence is conflicting. Harriss reports some evidence for one subdistrict in Tamil Nadu in which distribution was inversely proportional to the local harvest, but Dreze finds that increased supplies were not forthcoming in the 1972 drought in Maharashtra. The seasonal patterns reported by Bapra provide some confirmation for Harriss's findings.

Bangladesh's subsidy system and the former ration system of Pakistan also show an urban bias in the placement of distribution centers, although large numbers of rural families have been eligible for generally smaller quotas in those two countries.¹² Where it was available, however, rural households were as likely to use the ration system to purchase flour as were urban households.

When supplies are limited, government workers often have first access to quotas. This feature of the distribution in Bangladesh increased from the period 1973-6 to 1977-82 (Ahmad, 1988). Targeting to civil servants was also a feature of allocation in Tanzania, where the military, parastatals, and universities had first claim on maize supplies.

Mexico currently has two types of targeted rationed distribution. The LICONSA milk ration is limited to residents of low-income neighborhoods in

12. The Bangladesh distribution system is discussed in Ahmad (1988) and Montgomery (1987). Pakistan is discussed in Alderman et al. *op.cit.*

the largest cities. Moreover, within these neighborhoods income and maternal status and the presence of young children are used for further targeting. The program is apparently effective as an income transfer, although some of the poorest families fail to benefit because they lack the income to purchase even the subsidized milk and its perishability limits purchase for resale (World Bank 1987).¹³

Mexico also distributes tortilla stamps through a targeted program initiated in 1986 to replace a more universal subsidy on tortillas. Eligibility for the portion of this urban program which is administered through the DICONSA network is on the basis of family incomes less than twice the minimum wage. While income is self declared, social workers make visits to the households to verify external indicators of living standards. Only about 5 percent of applicants have been declared ineligible. The design of the program includes provisions for revisits and reassessment every 6 months, although these rarely took place in the first year. Households participating in the milk distribution scheme are automatically eligible for the tortilla coupons, leading to pressures for the expansion of the milk scheme. An additional network for the distribution of stamps are labor unions; the obvious potential for abuse of this distribution mechanism has not been fully studied. One drawback with the targeting of the program is that the program was initially designed for 500,000 families, while a greater number of families are eligible under the current criteria. This has led to waiting lists for participation.

The ration systems in South Asia also have a degree of income targeting. While the difficulty in ascertaining incomes precludes a rigidly enforced means test, various states in India do issue cards on the basis of income, and the ration system in Sri Lanka was briefly targeted on the basis of self-reported income before it was phased out. Similarly, quotas in Bangladesh are determined on the basis of tax classification.

At times the poor have been inadvertently excluded from such programs due to difficulties in obtaining ration books. Migratory workers or families with no fixed abode have been ineligible in Bangladesh. In Burkina Faso, low-income households are less likely to gain access to concessional sales due to their often not being able to provide the requisite documentation (Delgado and Reardon 1988). However, the main obstacle for the poor in Ouagadougou is the volume of purchases required. Since concessional sales of grain are on the basis of 100 kilogram sacks, with credit provided only for civil servants and military, the poor are sometimes excluded by liquidity constraints as well as difficulties in transport.¹⁴

Commonly, however, low-income households are disproportionately represented in ration systems even when income targeting is a minor element in the program design. This reflects the fact that there is scope for consumer preference with most two-tiered markets. Whenever the rationed commodity is of a lower quality, or perceived to be of a lower quality, than the open market al-

13. Kennedy and Alderman (op. cit.) indicate that the program has had only a limited impact on nutrition.

14. Berg (1987, p.15) reports similar difficulties with transportation and liquidity with fortnightly subsidized sales in Brazil.

ternative, self-selection is likely. This then is similar to the generalized subsidies referred to above. Such self-selection was observed in Bangladesh when users of the ration shops were offered a choice of a quota of wheat flour or a larger quota of sorghum flour. Lower-income families were more likely to opt for the sorghum flour (Karim, Majid, and Levinson 1980).¹⁵ Mozambique is currently using yellow maize in its subsidy program, allowing consumers with means to opt for unsubsidized white maize.

Pakistan provides another example of such self-selection within a ration system. Various studies have reported a pronounced pattern of declining utilization of the ration system with higher incomes (Rogers 1978, Khan 1982, Cornelisse and Naqvi 1984, Alderman, Chaudhry and Garcia 1988). Moreover, there appears to be a trend in utilization rates that reflects consumer responsiveness to changing circumstances. More households declined the subsidized flour after the elimination of the sugar ration in 1982. This is consistent with the increase of the unit cost of flour in terms of transport and time when sugar purchases at the depot were no longer mandatory.

Significant own- and cross-price responses, indicating substitution between rationed and nonrationed commodities, have been measured for Bangladesh (Montgomery 1985), India (George 1985), and Pakistan (Alderman et al. 1988). Such behavior is more consistent with the rationed good being considered a separate commodity than an identical one available at two prices. In the latter case one would expect most consumers to choose the lower-priced good before the higher-priced identical commodity. If transaction costs differ across households, however, the observed pattern of price response could be consistent with consumers viewing the rationed commodity as identical with the open market form.

In general, studies which have quantified the share of subsidies in rationed systems which go to the poor indicate a slight progressive tendency in such systems. For example, the poorest quintile in Sri Lanka received a subsidy of 11 rupees per capita per month from the rice ration while the highest-income group received only 3.3 rupees in 1979. At the same time, unrationed subsidies on food were 5 rupees per capita for the poorest quintile and 9 for the wealthiest (Edirisinghe 1987). Similarly, in Kerala the poorest 59 percent of the population received 87 percent of the subsidized grain (George). Targeting effectiveness, however, differs by state in India; only half the subsidized grain went to the poorest 65 percent of the population in Tamil Nadu.

While the priority distribution of rations to institutions and to government workers in Bangladesh leads to greater per capita benefits among the urban middle class, Ahmad (op. cit.) also has observed that in the 1970s and early 1980s the urban poor obtained over 90 percent of their grain from the ration system. While the rural area was underrepresented in terms of its population share, it did receive about 45 percent of the total grain distributed.

Table 1 illustrates the pattern of declining ration usage in Pakistan as incomes increase. It also indicates the marked decline ration usage, despite increases in government releases, that occurred 1977 and 1986. Moreover, the earlier year

15. Subsequent unpublished work by these authors indicate that the differences among income groups narrowed in the second—and final—year of the experiment.

Table 1 Percentage of Urban Families Purchasing Subsidized Flour in Pakistan, by Expenditure Group

Survey	Expenditures (1986 Rs/capita/month)				
	Less than 100	100-150	150-250	250-400	Greater than 400
1986	50	41	31	29	21
1977	56	78	77	71	59

Source: Alderman, Chaudhry and Garcia, 1988

illustrates the difficulty the poorest families had in obtaining eligibility. During the final year of distribution of rationed flour in Pakistan 48 percent of offtake reported by consumers went to the poorest third of the urban population. In contrast, the poorest third of the population are predicted to receive only 22 percent of the subsidy on wheat released for generalized sales in urban areas in the program that replaced rationing.¹⁶

While rations are generally more progressive than open market sales, both the Egyptian ration system and the generalized sales of bread and flour were virtually neutral in both urban and rural sectors (see Table 2). This is in contrast to the cooperative system, which was predominately urban, and which subsidized the poorest urban quartile one third less than it subsidized the wealthiest urban quartile.

Food Stamps

Conceptually, food stamps differ little from rations, the main difference being that with the stamp the value of the quota is in terms of a nominal currency unit while the commodity ration is usually in terms of a weight or volume of a commodity. There are, however, some critical administrative differences in the functioning of the distribution. Food stamps do not require the government to directly handle any commodities.¹⁷ They do, however, require that retailers accept a parallel currency and are able to redeem this currency conveniently.

The difficulty in establishing the stamps as an alternate currency may contribute to the gap between the appeal and the application of such a program. Four multicommodity stamp programs have been tried, in the United States, Sri

16. The Pakistan example requires a major caveat, however, as the system was characterized by widespread upstream diversion of releases. If one assumes that the poor did not have access to this grain, then their share of total releases under the ration system (as opposed to offtake) was only 20 percent.

17. Note, however, that some ration systems, including Egypt and Pakistan, use private licensed retail outlets as the final link in the chain to consumers.

Table 2 Annual Income Transfers to Consumers in Egypt from Food Subsidies

<i>Source of Transfer</i>	<i>Urban Expenditure Quartiles</i>			
	1	2	3	4
	<i>1982 Egyptian Pounds (Percent of household expenditures)</i>			
Rations	8.8(5.0)	8.8(2.9)	8.8(1.9)	8.4(0.9)
Staples from cooperative	1.1(0.6)	1.6(0.5)	1.9(0.4)	3.0(0.3)
Frozen meat from cooperative	2.1(1.2)	1.9(0.6)	2.2(0.5)	1.6(0.2)
Flour and bread from government channels	15.4(8.7)	17.5(5.7)	16.7(3.6)	18.1(3.4)
Other cereals from open market sales	0.7(0.4)	2.2(0.7)	3.0(0.7)	1.3(0.1)
<i>Source of Transfer</i>	<i>Rural Expenditure Quartiles</i>			
	1	2	3	4
	<i>1982 Egyptian Pounds (Percent of household expenditures)</i>			
Rations	6.4(5.7)	6.6(3.3)	6.6(2.5)	7.1(1.3)
Staples from cooperative	0.3(0.3)	0.3(0.2)	0.3(0.1)	0.7(0.1)
Frozen meat from cooperative	0.1(0.1)	0.4(0.2)	0.3(0.2)	0.7(0.1)
Flour and bread from government channels	11.9(10.8)	11.6(6.4)	10.1(2.8)	15.2(2.7)
Other cereals from open market sales	6.6(6.0)	9.9(5.4)	13.5(5.1)	19.3(3.4)

Source: Adapted from Alderman and von Braun, 1984. Tables 18, 19, 20.

Lanka, Jamaica, and Colombia. The Colombian program was never implemented beyond the pilot program (Uribe, 1986). A fifth stamp program is currently operating in Mexico, but is limited to one commodity, tortillas, and is, therefore, identical to a ration coupon program. This is generally true of coupons which are defined in terms of units of a food commodity. Food stamps

have been planned, but not implemented, in Egypt, Peru, Venezuela, and the Mariana Islands.

As mentioned, planners often consider food stamps to be desirable because they can be used to encourage households to shift their budget allocation to more food. This requires a purchase requirement, that is, a minimum payment necessary to obtain stamps. The United States and Colombia have utilized this feature.¹⁸ In the United States it was found that this requirement discouraged a number of low-income households, particularly elderly, from participating (Fersh 1981) and the requirement was eventually eliminated.

While the reliance of food stamp programs on private retail trade has the advantage of allowing governments to concentrate more of their administrative resources to screening, other aspects of food stamps differ little from rations. Self-selection has been observed due to a welfare stigma in the United States (Ranney and Kushman 1987) and due to commodity choice in Colombia (Uribe, *op. cit.*). Food stamps cannot easily take advantage of self-targeting, however, without sacrificing its major advantage of utilizing normal marketing channels.

The experience of Jamaica and Sri Lanka in attempting to target their stamp distribution according to need provide illustrations of inherent issues in means testing. The Jamaican program was inaugurated in 1984 as part of a policy of protecting vulnerable groups from the full impacts of exchange rate reforms. The program had two groups of beneficiaries, pregnant and nursing mothers as well as young children regardless of household income and low-income families. Registration procedures for the two classifications differed. Lack of available staff contributed to the former quota not being filled 15 months after initiation of the plan while the latter category had waiting lists due to the number of poor exceeding quotas (Miller and Stone 1987). While the program provided three distinct mechanisms for individuals to qualify for the means targeted stamps, there was no procedure to establish a priority when the number of eligible households exceeded the available resources.

The Jamaican program appears to be moderately well targeted. While 23% of all households received stamps in 1988, over half the households in the poorest quintile were recipients (Glewwe and Grosh). In contrast, only 6% of those in the wealthiest quintile obtained stamps. While few ineligible household were included, a number of households which appeared eligible by one or more criteria did not receive stamps.

The distribution of subsidies on food stamps contrasts with the distribution of benefits through general food subsidies. The later program was valued at 135 million Jamaican dollars in 1987 compared to only 45 million dollars for food stamps. The poorest quintile received only 14.1 per cent of general food subsidies while the wealthiest quintile received nearly 26 per cent of such benefits. These benefits are mainly from subsidies on wheat flour, although powdered milk and cornmeal are also subsidized and also consumed in greater quantities by the relatively well off.

18. In addition, a number of researchers have found that households spend food stamp currency different than other currency (Senauer and Young 1986). This is relevant to the nutritional impact, but does not directly affect the targeting of benefits.

The Sri Lanka targeted stamp program replaced a curtailed rice ration which was itself a transition step from a more expensive general ration. The targeting was a partial success. The poorest 40 percent of the population received 67 percent of food stamps in 1982 while they received only 50 percent of subsidies in 1978/9 (Edirisinghe 1987). The targeting is not completely specific to the poor—the wealthiest 40 percent received 15 percent of benefits in 1982—but it is an improvement over the 30 percent of benefits that went to the relatively well off in 1978/9. Table 3 presents this information in a slightly different form, that of transfers per capita by expenditure quintile, but the difference in targeting as well as the decline in real transfers between the two distribution systems is no less apparent in this format.

Another important issue which is masked by the quintile presentation is the fact that the food stamp targeting is not sensitive in that it has missed a number of the poorest households. This is particularly the case in the estate sector, where incomes are generally documented, unlike the rural areas, where incomes are usually self reported. The estate sector, which has the highest rates of morbidity, infant mortality, and malnutrition, received 10 percent of benefits under the earlier program and only 1 percent of benefits after the reform.

In a subsequent note, Edirisinghe (1988) discusses an attempt in 1986 to reduce the roles further in order to increase the level of subsidies per beneficiary. The administration of the system was transferred from the Food Department to the Social Services Department, in part, to stress the welfare nature of the program. Administrative guidelines for publicizing names in order both to discourage false reporting and to allow for local committees to screen applicants were set up. While Edirisinghe does not present details on the political pressures of this move, apparently the bureaucracy was capable of putting this

Table 3 Monthly Transfer from Food Stamps and Other Subsidies in Sri Lanka

Source of Transfer	Per Capita Expenditure Quintile				
	1	2	3	4	5
	1978/9 Rupees (Percent of Expenditures)				
Food Stamps					
1981/2	7.0(12.4)	5.6(6.6)	5.0(4.3)	3.2(2.0)	1.3(0.3)
Rice Rations					
1978/9	11.1(19.6)	10.0(12.0)	7.9(7.7)	6.4(4.6)	3.3(1.6)
Wheat and Bread					
1978/9	4.3(7.6)	5.6(6.6)	6.7(6.5)	7.2(5.2)	7.8(3.8)
Sugar					
1978/9	0.7(1.2)	0.8(1.0)	0.8(0.8)	0.9(0.6)	1.2(0.6)
Total (1978/9)	16.2(28.6)	16.3(19.5)	15.4(15.0)	14.5(10.5)	12.4(6.0)

Source: Adapted from Edirisinghe, 1987. Tables 2, 6 and 9.

reform in operation, but the President declared that no family receiving stamps would lose them; when finally implemented in June 1986, the new scheme had 7.2 million beneficiaries. This implied a 6 percent increase in the number of persons receiving the stamps and no increase in the value to recipients.

Food Subsidies in Nutrition and Health Centers

Most of the programs referred to above are programs administered under ministries of food or agriculture or their equivalent and often use variants of normal commodity marketing channels. A number of other programs which provide food subsidies use health and nutrition clinics as distribution centers. Such programs are often under the administration of ministries of health, although private voluntary agencies often play a major role in distribution as well. While conceptually such programs resemble rations targeted by need, the location of these programs under the health network implies a specific type of professional training among the administrators which distinguishes such programs from many of the food programs discussed above.

Comprehensive reviews of food supplementation programs found extensive leakages of such food from the intended beneficiaries (Beaton and Ghassemi, see also Andersen, et al. 1981). Such a finding, however, reflects a definition of beneficiaries in terms of nutritionally vulnerable groups—generally children under 5—and much of the so-called leakage went to siblings of the target population.¹⁹ This form of leakage can and has affected the nutritional outcome of programs, but is secondary to the current concern of targeting to low-income households.

It should be noted that some nutritionally oriented programs of food subsidies are often not means tested, being targeted instead on the age of the child and the state of pregnancy or lactation of the mother. The Jamaican food stamp program included such a component and the Women Infant Children (WIC) program in the United States originally had such a scope. Such programs, then, only become targeted to the poor to the degree that they have more pregnancies or to the degree that the poor self-select (as is reported in Jamaica). Targeting may also occur when the clinics which distribute the supplementary food are geographically targeted. Conversely, the placement of clinics may work to discriminate against the poor, especially the poor in remote regions. There is, however, more evidence on the placement of clinics in general than on the placement of supplementation programs within a network of clinics.

Untargeted supplemental programs have a wide range of costs per beneficiaries; Per Pinstrup-Andersen (1988b) reports a range of \$24 to \$160 per intended beneficiary per year. The range indicates differences in services as well as targeting effectiveness. The same premise that underlies other types of targeting—that returns differ by beneficiaries—provides a rationale for reducing such cost by designing more focused programs. Since such programs have as their principle goal the reduction of malnutrition, targeting is more often on the basis of

19. Kennedy and Alderman (1986) discusses this clinical approach to targeting in the context of other approaches.

nutritional indicators than on income. While nutrition and income are often strongly correlated, the association is by no means perfect. Programs which target supplements on the basis of nutritional indicators are unlikely to consider a malnourished child ineligible, even if the child comes from one of the relatively well off families of the village.²⁰ It is unlikely, however, that there is much scope for willful misrepresentation in such programs. While there is a possibility that eligibility for subsidized foods based on nutrition may be a disincentive for proper nutritional practices, no evidence for this having occurred has been reported.

These programs are often costly in terms of cost per individual recipient, although not necessarily in terms of total costs. This reflects, in part, the costs of the administrative skills necessary for screening. Moreover, it should be recalled that such programs generally provide weighing, nutrition education, and often a variety of health services, the costs of which are distinct from the costs of food subsidies per se. For example, Sahn (1980) indicates a 3 to 1 ratio of costs for supervised feeding and food distribution out of primary health centers in India. The difference in costs for food per se was only 30 per cent; other costs differences stem from increased medical care and growth monitoring.

The Tamil Nadu (India) Integrated Nutrition Project is an example of such screening by nutritional indicators—here, the velocity of growth. The project, which has been successful in terms of its nutritional goals (Berg 1987), provided 90 days of feeding for children who indicated short-term nutritional risk. This targeting can be considered temporal. While only 25 percent of the monitored children received the supplement at any one time, 85 percent required supplementation at least once.²¹

A similar approach to the provision of food to pregnant women and malnourished children through health clinics is administered in Chile. The current program has an explicit goal of moderating the consequences of economic recovery measures (World Bank 1986). Eligibility for food distributed by the Complementary Feeding Program (CFP) administered under the Ministry of Health is on the basis of age, pregnancy, and malnutrition. For a few years, eligibility was also conferred on the family of recently unemployed workers (Vial, Muchnik and Kain 1988). This distribution system reflects the interaction of fiscal pressures for targeting as well as a history of active government involvement in nutrition programs by all administrations since the 1920s (See also, Harbert and Scandizzo 1982). While distribution of the CFP is through 286 urban clinics and over 2000 rural outposts and health stations, there are apparently more urban beneficiaries per clinic. Distribution is skewed towards lower-income groups. The poorest urban quintile has 35 percent of the recipients in that sector while the corresponding figure for the poorest rural quintile is 34 percent.

20. It may be possible, however, to recover the costs of services on a sliding scale. Few examples of such pricing are reported from developing countries.

21. A consultant report indicates that the costs of the targeted program were half those of the program it replaced while at the same time it was far more effective in accomplishing its nutritional objectives (Dapice 1987). In 1986/7 the program cost \$.80 per capita in the target area. This was approximately \$10.00 per beneficiary year.

Another category of food subsidy program which is often discussed as a substitute for feeding programs at clinics is school feeding. From the standpoint of nutritional impact, school feeding programs actually differ greatly from programs administered through clinics, as the former lack the potential synergism with health services and generally reach a different target group.²² In keeping with the objectives of this paper we can focus on the distribution of subsidies through such programs rather than their potential nutritional impact.

Just as the distribution of other subsidies is partially determined by the choice of commodities to be subsidized, the distribution of benefits from school feeding programs largely reflects enrollment patterns. The availability of subsidized meals may, however, affect marginal behavior, encouraging enrollment, often of children from low-income households and of girls (Levinger). Moreover, targeting of benefits can be achieved by means testing or by geographic criteria. An example of the former is the program in Jamaica in which 10–20 percent of the children are exempted from paying the lunch fee. However, as this fee only covers a small portion of the total cost of the program this can be considered more of a sliding scale subsidy than a means tested targeted program.

Chile has increased the targeting of its school feeding program on the basis of nutrition and income as its coverage has been reduced. Ninety two per cent of the urban recipients of this program—which also operated in the summer months—come from the three lowest income quartiles (Vail et. al. op. cit.). Chile also administers a network of day care centers which provide food to over 50,000 preschoolers.²³

Sri Lanka provides a novel illustration of geographic targeting for school lunch programs. The criterion for selecting schools was the average nutritional status of pupils in 8,082 primary schools (Anderson 1986). This screening is administratively uncomplicated and is effective in proportion to the homogeneity of the populations in each district. Mexico's National Program for the Integration of the Family (DIF) also concentrates its school feeding in the poorest urban districts.

The role of DIF can be used to illustrate another feature common to subsidy programs. In addition to its school feeding program DIF manages preschool child centers and other social assistance centers. Furthermore, the Ministry of Health distributes a small amount of food through health facilities. Such forms of food distribution often function in different areas or reach different subpopulations than the tortilla stamp program, the sale of subsidized milk or the DICONSA outlets. Other examples of parallel programs discussed in this paper include the fair price shops and distribution through clinics in Tamil Nadu and a variety of programs and targeting mechanisms in Jamaica and Chile. Similarly, non-governmental organizations in Morocco operate a substantial network of maternal child health centers in parallel to school feeding programs and general food subsidies. Whether such programs actually complement each

22. Levinger (1986) reviews school feeding programs and discusses their potential impacts.

23. Data cited in Vail et. al. indicate that this program which provides 80 percent of daily food requirements costs US\$300 per child per year. About a third of this is for food.

other by reaching different populations or providing different services is a difficult question to assess, often involving complex evaluation and extensive data collection. Such an evaluation is more likely feasible as a research task than a component of daily operations of targeted programs.

Flexibility Of Consumer Subsidies

Whether subsidy programs can respond to changing economic circumstances is central to the question of whether the poor benefit from subsidy programs. Can programs respond to cushion households during times of economic downturns and, conversely, can programs be phased out when conditions justify changes, are questions about political constraints as well as about administrative structures.

The role of administrative structure is apparent in a comparison of food stamps and quotas under inflation. The default value—the action that automatically ensues when the government fails to take explicit action—differs greatly under the two types of programs. Inflation undermines the value of food stamps. Thus, in two years the real value of food stamps in Jamaica halved. The values of benefits in Sri Lanka declined at a similar rate. In contrast, the real price of subsidized foods in Egypt declines annually and the government's steps to hold down the subsidy bill in the 1980s have more or less been a race to keep pace with the impact of inflation. The tortilla stamp distribution in Mexico sets the price of tortillas, rather than the value of the stamps. In lieu of administrative action, inflation leads to increasing costs of the program in a manner similar to other ration systems.

Similarly, administratively set prices have an internal countercyclical mechanism; subsidies rise when food prices rise and fall when the market softens. This, as much as fiscal policies, accounts for the general decline in food subsidies observed by Pinstrup-Andersen and Jaramillo (1987) for the period 1980–1985.

Consumers may also shift from subsidized commodities in a countercyclical manner. This implies that they may utilize subsidized distribution systems mainly during periods of relatively high prices for unsubsidized alternatives or declining earnings. This is illustrated in the studies of price responsiveness in the ration systems in South Asia referred to above which indicate that consumers decline subsidized commodities when the price of substitutes drop.

In principle, ration quotas (or administratively set prices) may be designed to subsidize foods only during the months preceding the harvest when prices are at a seasonal high. This is done for beans and lentil quotas in Egypt and appears to be an element of distribution in fair price shops in India. It is, however, administratively difficult to operate a distribution system which is fully seasonal.

Only a few targeted programs are designed to allow families or individuals to enter or leave as their personal financial prospects change.²⁴ Most programs

24. The U.S. Food Stamp program has proven to be sensitive to changes in household conditions. Analysis of panel data from Michigan indicate that most recipients use the program only for portions of a year (B. Senauer personal communication.)

do not renew the screening on a regular basis and there is no incentive for a family to self-report when its fortunes improve. An exception to this generality are the programs which use nutrition as a criterion for screening. The Tamil Nadu program has already been presented as an example of temporary eligibility. Similarly, Chile's PNAC has an element of flexibility, although there is limited evidence as to such fine tuning in practice. Jamaica also intended a responsive screening program, but this responsiveness has been diminished by the quotas on the number of individuals eligible and, consequently, the presence of waiting lists.

Political response is an alternative to flexibility built into a program. It is, of course, politically easier to extend services than to curtail benefits and to modify existing structures than to initiate a program. Nevertheless, bureaucratic momentum being what it is, it can be taken as an encouraging sign that countries like Jamaica, Chile, and Mexico have been able to restructure their social services during periods of economic reforms.

More often it is difficult to reduce either the level of benefits or the number of beneficiaries. The latter step, of course, being a key component of a targeted program. Examples of abortive attempts at reducing subsidies—such as riots in Egypt in 1977, or in Morocco in 1981 as well as 1984, Tunisia in 1984, Zambia in 1986, and Jordan in 1989—are often remembered by governments removed in time and place from the actual incidents. Bienen and Gersovitz (1986) point out that while such cases receive the most attention, in fact, widespread violent reaction is the exception rather than the rule. Moreover, they argue that in the majority of the cases in which riots occurred, the government was not destabilized. This may be scant consolation to the sacked minister; nor is it clear that governments are generally willing to play straight odds without a large risk premium. The risk is aggravated by the observation that neither the magnitude of the increase nor the availability of low-priced substitutes seems to indicate the acceptability of the price increase (Bienen and Gersovitz, 1986). Furthermore, on closer examination a number of the cases in which subsidy cuts did not lead to destabilization are cases in which the government restored peace by rescinding the subsidy cuts.

It should also be noted that countries which have had violent reactions to changes in subsidies have made subsequent smaller reforms which proved politically acceptable. Egypt and Morocco are recent examples of this pattern. The history of food subsidies in Sri Lanka, is replete with major riots and politically expedient increases and cuts in quotas and distribution prices, yet Sri Lanka was the first South Asian country to dismantle a nationwide ration system.

The study of the politics of food prices is clearly not an exact science. Enough cases of successful reforms in subsidy programs are reported, however, that some generalities regarding the potential success of subsidy cuts might be risked from the examples presented in the review cited above.²⁵ Major shifts in food pricing policies have been possible following an electoral success in democratic countries (Jamaica, Sri Lanka, Zimbabwe) or following major steps from military to civilian governments (Turkey). The perception of fairness or its

25. For further discussion of the politics of subsidy cuts see Alderman, Chaudhry and Garcia (op.cit.), Alderman (1986), Hopkins (1988) and Utting (1985).

lack apparently is a general issue which implies that the government must take pains to publicize its rationale. While governments often stress the fiscal crises (often attempting to shift the burden of blame on international organizations), that is not the only rationale that may be accepted. For example, Pakistan stressed the degree of corruption in its publicity preceding the recent change in its policy on flour subsidies.

The example of derationing of flour in Pakistan also indicates various forms of short-term measures that may be taken to limit adverse public reaction. Pakistan actually added compensatory programs that cost 80 percent of the cost of the previous system in the initial year of the change and which has the potential to exceed those costs over time. Pakistan also linked the removal of some subsidies to the decontrol of markets, an approach followed more fully in Sri Lanka and Madagascar. Nicaragua also removed a variety of market controls while reducing its food subsidies from 6.3 percent of government expenditure in 1984 to 0.7 percent the following year (Utting).

Pakistan derationing measures were also tied to a salary increase for low-salaried government workers. Again, this was an element in Sri Lanka's reform and one often discussed in the context of policy reform in Egypt. Similarly, Mexico has included its unions in discussions of pricing reforms and in the administration of its targeted programs. In addition, other changes in wages (Zimbabwe, Nicaragua) or in taxes (Turkey) have been tied to changes in food prices. Such changes must, of course, be included in any calculation of the costs and benefits of the new pricing policies.

Conclusions

Most food subsidy systems are inherently targeted. Often, such targeting is in keeping with the policy objectives that motivated the program. For example, the targeting of subsidies to civil servants or to the military may have little leakage from its intended beneficiaries. At other times, however, food subsidy programs have an objective to alleviate poverty, or to maintain a minimum level of consumption in vulnerable populations until market conditions improve or successful development programs reduce the population's vulnerability.

There is a fair amount of evidence on the de facto targeting of such programs towards or away from the poor; less evidence is available on the costs and effectiveness of more explicit and, generally, more narrowly targeted programs. In particular, administrative budgets are rarely known to consultants and even more rarely published in a format accessible to researchers. Administrators directly responsible for programs often are themselves not fully aware of program costs as there is a tendency to underestimate the opportunity costs of personnel whose monitoring and distribution tasks are in addition to previous responsibilities. This gap is a major obstacle to designing more effective targeting schemes.

It is apparent, however that it is difficult to design a subsidy program using commodity marketing channels that does not provide more benefits for urban populations. This is, to a large degree, inherent in trade and transport infra-

structure. While many of the rural poor are net purchasers of food, the types of foods and the linkages to centralized points on the market chain of rural poor differ greatly from urban consumers. There are, however, examples of programs which reach the rural poor through ration shops or open market subsidized sales such as programs in Sri Lanka and Kerala. Most other programs that reach the rural poor have either been extensive—and expensive—programs or pilot projects which were not subsequently implemented.

Before discussing other distribution mechanisms that may reach the rural poor, it is necessary to recall that residence in an urban area is not synonymous with membership in the urban elite. It is often the case that a larger number of poor households in urban than rural areas can be reached with the same level of budgetary outlay. This reflects as much the relative costs of distribution as it does the average depth of poverty. There is often interest in addressing urban poverty, particularly during periods of unemployment or economic retrenchment. A number of examples presented in this study indicate that with judicious choice of commodities or grades of a commodity food subsidies can be neutrally or progressively distributed even in the absence of complex means testing. Similarly, examples were presented of programs which were geographically targeted, generally by neighborhoods within urban centers but also by regions within countries. Within the subset of urban oriented projects there are few administrative obstacles to such targeting. To be sure there are political drawbacks and the potential for wholesale diversion of supplies exists when dual pricing is attempted within a small geographical confine, such targeting is apt to achieve efficiency gains over more general programs.

Some success in using nutritional status to screen for eligibility for food subsidies has also been reported. Most of these examples are from Asia and Latin America. Here, as with much of the other evidence on subsidy programs reviewed, it is not clear to what degree this reflects inherent conditions that are either politically or economically unsupportive of explicit subsidy programs. It appears that targeted programs are less common in sub-Saharan Africa, but it may also be that the programs which have been implemented—particularly by nongovernmental organizations—are less likely to have been researched and reported in English.

Programs for which eligibility is determined by nutritional status are expensive per recipient, but not necessarily in per capita terms. They are also limited because both the capital and recurring costs of the health care system on which they rely are often prohibitive. However, where such an infrastructure is in place, the marginal costs of using such an administration to target subsidized food distribution may not be high. Note that this does not necessarily imply that the health network should be directly involved in food distribution, even though this is the case in some successful programs. In other programs, nutritional screening determines eligibility for stamps or coupons which are redeemed through other market channels.

Unlike geographic targeting or targeting through self-selection, targeting by nutritional status or by other correlates of need, including income, requires a network of trained administrators. Moreover, in some regions, custom dictates that if women are to be the direct recipients then women must also perform the screening, even if this merely involves interviewing mothers or weighing

infants. Clearly many countries potentially interested in designing effective programs to target services to the poor currently lack the necessary human infrastructure. Funds for training, then, may be an effective component of any material aid programs that also express an interest in reducing or redirecting fiscal outlays.

Screening criteria are effective to the degree they are both sensitive and selective. A program can be targeted more specifically when more than one screening criterion is applied. For example, a relatively inexpensive geographic screening can be used for an initial reduction of potential beneficiaries and a income- or nutrition-based criterion used to target within the restricted subset. Conversely, greater sensitivity to poverty can be achieved when eligibility is conferred by more than one indicator or when more than one program is in place. While the cost reductions that can be achieved by a series of progressively more-expensive, but progressively more-accurate, screening criteria is readily apparent, it is less obvious that parallel programs are not redundant or inefficient. As few programs have more than partial overlap, however, there may be advantages in parallel programs. Taken together these programs may provide a comprehensive safety net for the poor. Unfortunately, there is little available evidence on the synergism of poverty programs.

If the public's perception of the fairness of a subsidy system is an element of successful policy design—perhaps one of many—then a well-targeted program may be able to achieve much of the political support that a larger, less-focused, program obtains. Furthermore, often the optimal level of spillover into non-target groups will be appreciable. This is likely the case from a political standpoint. Considering the high marginal costs of selective screening it is surely the case from an economic standpoint. For subsidies to be successful at poverty alleviation it is necessary that the subsidies reach the poor; it is not necessary that subsidies reach *only* the poor. There is evidence that in a number of countries the poor do receive a relatively high share of subsidies. It is also clear that most programs remain expensive and that the gains in efficiency theoretically possible from targeting have remained only partially achieved.

Appendix: Program Costs

Table 4 provides a point of departure for a discussion of the vexing question of program costs. The table, which is an abridgement of one reported in Garcia and Pirstrup-Andersen, is one of the more detailed presentations of fairly comparable data on food subsidy programs in a number of countries. While such studies often focus on nutrition—in particular net increases in calories—they are also useful to indicate some of the range of costs for food subsidy programs. The available data can be standardized in terms of calories or presented in terms of total costs. This is useful to indicate differences in programs which stem from subsidies on expensive foods such as milk in Mexico. It also indicates that supplementary feeding programs such as those in Brazil, Indonesia and Tamil Nadu are relatively more expensive than commodity subsidies in terms of food provided.

It cost \$1.19 to deliver \$1.00 worth of subsidies to participants in the Philippine pilot project. Garcia and Pinstrup-Andersen also report that since only 73 percent of the households which participated consumed less than 80 percent of recommended caloric intakes and only 33 percent had malnourished children, it cost \$1.63 and \$3.61 for every dollar delivered to households in these two respective subgroups. This is a common way of reporting nutrition cost effectiveness. Unfortunately, this is misleading in that it may be misinterpreted as implying that the costs of targeting to households with malnourished children is \$2.42, that is \$3.61 minus \$1.19 per household. In actuality such data do not reveal anything about the costs of targeting per se. The results indicate, instead, only that when transfers to non-target populations are valued at zero for cost effectiveness calculations, effectiveness declines rapidly as specificity decreases.

Table 4 also indicates some of the costs which are attributable to either administration or the provision of attendant health and similar services. Moreover, a search through published documents may permit one to augment this data with data on the costs of food relative to transport, storage and packaging (See, for example, George; also Kennedy and Alderman). There is little information, however, from which to determine what it might cost to provide, say, a transfer of a dollar to 1000 households compared to what it might cost to provide the same transfer to the poorest half of that group. That is, with effort one can find published information that indicates what it costs to deliver food to a given population; it is harder, if not actually impossible, to use such sources to determine the costs of identifying that population. This lack of information is a major obstacle to designing more cost effective transfer programs.

**Table 4 Comparative Costs of Selective Programs
(Costs in US dollars)**

	<i>Annual Cost Per Beneficiary</i>	<i>Food Transfers in Calories Per Day</i>	<i>Fiscal Cost to Deliver 1,000 Calories</i>	<i>Fiscal Cost to Deliver \$1.00 Subsidy</i>	<i>Fiscal Cost of Transferring 100 Calories Per Day Per Person For For One Year</i>
Philippines					
Pilot food price subsidy scheme, 1984	9.18	272	0.11	1.19	3.38
Sri Lanka					
Food stamp, 1982	8.60	228	0.10	n.a.	3.77
Brazil					
Food subsidy (PINS), 1980	21.32	300	0.30	1.21	7.11
Brazil					
Preschool feeding and nutrition education, 1980	46.48	500	0.53	2.38	9.29
Colombia					
Food subsidy, 1981	35.04	300	0.79	1.58	11.68
Indonesia					
Feeding program, 1982	56.01	n.a.	n.a.	2.48	...
Mexico					
Milk subsidy, 1983	38.16	248	n.a.	n.a.	15.38
Tamil Nadu, India					
Weighing and feeding, 1982	33.10	300	n.a.	1.74	11.03
Philippines					
Mother and child health	31.00	n.a.	0.25	n.a.	...
School feeding	11.50	n.a.	0.42	n.a.	...
Day care	19.20	n.a.	n.a.	n.a.	...
Mothercraft center	400.00	n.a.	n.a.	n.a.	..

Source: Garcia and Pinstrup-Andersen, 1987, Table 23.

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