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**DESIGNING AND EVALUATING SOCIAL SAFETY NETS:  
THEORY, EVIDENCE, AND POLICY CONCLUSIONS**

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### **Abstract**

This paper reviews the literature on the performance of commonly found social safety net programs in developing countries. The evidence suggests that universal food subsidies have very limited potential for redistributing income. While targeted food subsidies have greater potential, this can only be realized when adequate attention is given to the design and implementation, as well as to the social and political factors influencing the adoption, of these programs. Although well-designed public works programs have impressive targeting performance, they have large non-wage costs; thus, to be cost-effective, they need to produce outputs that are especially beneficial to poor households. Social funds, which emphasize both community involvement and asset creation, have been cost-effective, but they are difficult to target to extremely poor households. Traditional public works programs are particularly attractive for addressing vulnerability, but they require flexibility regarding choice of output. Targeted human-capital subsidies appear to have great potential for addressing extreme poverty; but again, their design needs to reflect the human capital profile of countries and the administrative capability of the government.

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**Key words:** safety nets, poverty alleviation

## 1. Introduction

For more than a decade the performance of developing countries in tackling poverty has been mixed. In some regions it has been dismal: the number of people living in poverty in South Asia has increased by about 10 percent, and the prevalence of malnutrition has remained substantially higher than in other developing countries. Over the same period, the poverty rate has increased slightly in Sub-Saharan Africa—to around 48 percent—and the prevalence of malnutrition has also increased. It is clear, therefore, that a business-as-usual approach is inadequate. A more effective poverty alleviation strategy is urgently required.

While there is an emerging consensus that renewed broad-based economic growth is a necessary condition for alleviating poverty within an acceptable time frame, in isolation it is insufficient (World Bank 1997; Sahn and Stifel 2000; Haddad et al. 2003). In particular, it is now widely accepted that effective social safety nets are also important components of any comprehensive poverty alleviation strategy. In fact, for many of the world's poor, such programs are the only hope of a life free from chronic poverty, malnutrition, and disease. The importance of these transfers is magnified as informal private networks—such as those based on kinship or community—become less effective with increased economic development.<sup>1</sup>

Social safety net programs are defined here as programs whose primary objective is to directly reduce poverty. However, as the nature and causes of poverty differ, so, too, do the nature and design of social safety net programs. For example, it is common to distinguish between chronic (persistent) and transient (temporary) poverty. The former refers to households that remain in poverty over time due to their low asset base. The

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<sup>1</sup> The development process is often characterized as involving a simultaneous increase in idiosyncratic risk and a breakdown of the informal relationships that provide social assistance and insurance functions. In the words of Rodrick (2000, p. 19), “Social insurance legitimizes a market economy because it renders it compatible with stability and social cohesion.” Traditional systems are often less effective because of population pressures, incentive problems, and covariate risks. Thus, an effective social security system must go beyond an exclusive reliance on traditional institutions—but not neglect the contribution that such institutions can make (Platteau 1991).

latter refers to households that fall into poverty due to their inability to sufficiently protect themselves from shocks, whether anticipated or not. Consistent with this classification, Drèze and Sen (1991) identified two distinct but interrelated roles for public policy. First is the *promotional* role, the elimination of chronic poverty by enhancing the asset base of households. Second is the *protective* role, the prevention of households vulnerable to adverse shocks from entering into a spiral of poverty.<sup>2</sup>

However, as widely practiced, existing social safety nets are perceived to have a number of shortcomings that substantially reduce their effectiveness.<sup>3</sup> First, they often fail to reach the intended target group—the poorest households. Second, they are made up of a myriad of small, uncoordinated, and duplicative transfer programs. Third, a combination of operational inefficiencies and corruption results in an unnecessarily high cost of transferring resources to households. Fourth, even when the transfers do reach intended beneficiaries, they fail to generate a sustained decrease in poverty independent of the transfers. Fifth, the transfers are often too small, and program coverage too low, to have any noticeable effect on overall poverty.

This paper reviews issues that need to be considered in designing cost-effective social safety nets, with particular reference to the above shortcomings and a primary, though not exclusive, focus on their roles as social assistance for the poorest households.<sup>4</sup> Section 2 sets out a general analytical framework. Sections 3–5 provide a more detailed discussion of three broad categories of programs.<sup>5</sup> First are food subsidies, both universal and administratively targeted. Second are public works schemes that employ the poor on projects that maintain or create community assets. Although such schemes involve the construction of infrastructure that can enhance future incomes, it is usually

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<sup>2</sup> See Morduch (1994) and Baulch and Hoddinott (2000) for related discussions.

<sup>3</sup> For further discussion of some of the issues set out below, see Ahmad et al. (1991); Haddad and Zeller (1997); Subbarao et al. (1997); Coady, Grosh, and Hoddinott (2002); Smith and Subbarao (2003); and Ravallion (2003).

<sup>4</sup> Various papers on the World Bank social safety net website discuss many of the issues set out below in greater detail: <[www1.worldbank.org/sp/safetynets/](http://www1.worldbank.org/sp/safetynets/)>.

<sup>5</sup> The Appendix Table summarizes the relative pros and cons of the various program types.

the transfer component (wages) that is emphasized, especially in Asia and Africa. More recently, social fund projects have become popular, especially in Latin America. These typically differ from public works in that they put more emphasis on asset creation. They also tend to be demand driven, i.e., communities are involved in identifying, designing, and implementing projects. Third are targeted human capital subsidies (transfers conditioned on children of the poor attending school or health clinics), which have recently become popular, again especially in Latin America.

Although this set of programs by no means covers the myriad types of social safety net systems found worldwide, it does account for a very large proportion of total social safety net expenditures, and many of the issues raised here apply equally to other expenditures (such as pure cash transfer programs).<sup>6</sup>

## 2. An Analytical Framework

This section provides a simple, yet general, evaluation framework in which the welfare impact of alternative policy interventions may be understood and compared, particularly from the perspective of their distributional impact. It starts with a very simple model comprising two groups—households and government—that incorporates the various policy instruments under consideration.<sup>7</sup> Although the model can be adapted to incorporate a wider set of second-best economic structures (Drèze and Stern 1987), in order not to add notational complexity and maintain accessibility, we confine ourselves to this simpler version. (However, where relevant, we discuss how the model can be extended to address various issues.) After a discussion of the model, this section focuses on the various safety net components and the derivation of analytical expressions to capture their more important welfare impacts.

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<sup>6</sup> According to Tabor (2003), pure cash transfer programs (e.g., child benefit and noncontributory pensions) are very rare in developing countries, especially low-income developing countries, and tend to serve more a social insurance role rather than a social assistance role.

<sup>7</sup> The model is a special case of the more general model presented in Drèze and Stern (1987), which, in turn, draws on Guesnerie (1979); see, also, the seminal paper of Diamond and Mirrlees (1971).

### A Simple Model

Households are assumed to maximize utility,  $U$ , subject to a budget constraint:

$$\text{Max } U(\mathbf{x}, x_{tr}) \quad \text{s.t.} \quad \mathbf{q}\mathbf{x} + q_r x_{tr} - w_p l_p = (q_r - p_r)x_r + m,$$

where

$\mathbf{x}$  = consumption of nonrationed private goods (with a household's labor supply in the private sector,  $l_m$  entering as a negative number),

$x_{tr}$  = is total consumption of a rationed good (i.e., rationed consumption,  $x_r$ , plus market consumption,  $x_m$ ),

$\mathbf{q}$  and  $q_r$  = are their respective market prices,

$p_r$  = is the ration price,

$l_p$  = is the labor supplied to a public works program at wage  $w_p$ , and

$m$  = is cash transfers from the government.<sup>8</sup>

The budget constraint captures the fact that net expenditures on private goods (i.e., net of earnings from the labor market) plus rationed goods, minus wage earnings from public works employment, must equal the sum of food subsidies and cash transfers from the government. Employment on a public works program is determined (or rationed) by the government, and one can think of total labor supply as fixed with

$$l_m + l_p = l,$$

where  $l$  is total labor supply and  $l_m$  is labor supply to the market. By writing the budget constraint this way, we are implicitly assuming that the rationed good is also available on the free market, and ration levels are inframarginal (i.e., less than household's total consumption) or resale is possible.

Let  $\mathbf{p}$  denote producer prices, so that

$$\mathbf{t} = (\mathbf{q} - \mathbf{p})$$

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<sup>8</sup> Vectors are indicated in lower-case bold type.

can be interpreted as commodity taxes (negative if subsidies), and  $q_r$  as the price at which the government procures the rationed good from the free market. Then the government budget constraint is given by

$$R = (\mathbf{q} - \mathbf{p})\mathbf{x} - (q_r - p_r)x_r - w_p l_p - \sum_h m^h .$$

The objective of the “social planner” is then to optimize social welfare subject to households’ maximization of their utilities and to the government budget constraint. The social welfare function is modeled in the standard way through a Bergson-Samuelson function as follows:

$$W = W (\dots, V^h(\mathbf{q}, q_r, p_r, x_r, l_p, w_p, m^h), \dots),$$

where  $V(\cdot)$  is the indirect utility function of households (denoted  $h$ ). The Lagrangean for the planner’s problem can be written as:

$$L \equiv W (\dots, V^h(\mathbf{q}, q_r, p_r, x_r, l_p, w_p, m^h), \dots) + \lambda R \quad (*)$$

where  $\lambda$  is interpreted as the social cost of raising extra government revenue, which will depend on how expenditures are financed and the associated equity and efficiency impacts. Without loss of generalization, this parameter can be normalized at unity.

The government thus has a number of policy instruments that it can use to transfer resources to households:

1. *Cash transfers*. Transfer of cash to a target group of households (captured by  $dm^h$ ) using, for example, geographic or household targeting based on some means test.
2. *Food subsidies*. Subsidization of a commodity  $i$  consumed disproportionately by the poor (usually food) by keeping its market price below the producer (or world) price, i.e.,  $q_i < p_i$ .

3. *Subsidized rations.* Provision of a fixed supply of a given commodity (usually food) through ration shops at subsidized prices, i.e., supplying  $x_r$  at  $p_r < q_r$ . Ration levels and/or prices can be differentiated across households, in which case the ration levels and prices will have an appropriate superscript. For convenience, we assume that ration levels are inframarginal so that total consumption of the rationed good (i.e., market purchases plus ration levels) exceeds ration levels.
4. *Public goods.* One can similarly think of  $x_r$  as the public supply of a good not available on the free market so that  $x_{rr} = x_r$ . In this case, one can interpret  $q_r$  as the cost of producing the good (which then does not enter into the household budget constraint) and  $p_r$  as the price charged to households.
5. *Public works.* Provision of employment on public works schemes that produce a private good or a rationed public good not available on the free market. The supply of the public good is treated as above.

The welfare impact of each policy instrument can be derived by simply differentiating (\*) with respect to the relevant policy parameter. This provides a set of analytical equations that will help structure the review of the empirical evidence. To save space, we provide a detailed example of the derivation of such an equation only for the case of cash transfer programs.

### **Cash Transfers and Welfare Weights**

The welfare impact of cash transfers is derived by differentiating (\*) with respect to  $m^h$  to get

$$\frac{\partial W}{\partial m} dm = \sum_h \beta^h dm^h + \lambda [\sum_j \sum_h t_j \frac{\partial x_j^h}{\partial m^h} dm^h - \sum_h dm^h], \quad (1)$$

where  $\beta^h$  is the social valuation of extra income to household  $h$  (typically referred to as “welfare weights”) and  $dm^h$  is the cash transfer to the household; the vector  $dm$  can be interpreted as a transfer program. The first term captures the welfare impact of the

transfers to households; the second captures the implications of the transfers for government revenue, including the second-round revenue effects arising from the fact that these transfers change the consumption levels of taxed (or subsidized) commodities.

A general equilibrium benefit-cost statistic for any cash transfer program can be constructed by dividing the first term in equation (1) by the second. However, most of this discussion focuses on the partial equilibrium statistic. The partial equilibrium benefit-cost statistic is derived by ignoring the indirect effects on revenue due to demand changes so that the revenue cost of the transfer program is captured by the sum of transfers, to get

$$\lambda_m = \frac{\sum_h \beta^h dm^h}{\sum_h dm^h} = \sum_h \beta^h \theta_m^h = \theta_m^p, \quad (2)$$

where the denominator is the total transfer budget for the program, and  $\theta_m^h$  is the share of each household in the total transfer budget (Coady and Skoufias 2001). In general, the welfare weights,  $\beta$ , are assumed to decrease continuously with income. However, for our purposes, it suffices to use a more restrictive version, which attributes a welfare weight of unity to households classified as “poor” and zero to the “nonpoor.” Using this formulation of welfare weights, the benefit-cost statistic can be interpreted as the share of total transfers going to poor households. Therefore, the better the transfers are targeted at poor households, the higher the welfare impact.

This statistic can easily be adapted to allow for administrative costs associated with transfer programs by including such costs in the denominator to get

$$\lambda_m^c = \theta_m^p \cdot \theta_t,$$

where  $\theta_t$  is the share of transfers in the total program budget (or 1 minus the share of administrative costs). Therefore, ceteris paribus, programs with relatively high administrative costs will have a low  $\theta_t$  and relatively low benefit-cost ratios. (Note that higher administrative costs may be associated with a higher social value of transfers, e.g.,

when higher administrative costs are associated with the use of administrative targeting methods that result in a higher proportion of the budget going to poor households.) The concept of costs can also be broadened to include other costs (e.g., those related to corruption or distribution). Similarly, private costs, such as income forgone or other private costs incurred in taking up the program, can be incorporated through the numerator by appropriately reducing the transfer to each household.

In equation (1) above, the only distortion in the economy is the existence of commodity taxation (including leisure). Cash transfers lead to a change in consumption of commodities with varying tax and subsidy rates. This, in turn, leads to a change in government revenue, which is valued using the social value of government revenue. In other words, in a distorted economy, income effects have efficiency implications through the impact on consumption patterns, which were originally distorted by commodity taxes. Therefore, some other important “indirect welfare effects” are ignored in the above specification. For example, the eligibility rules for receipt of transfers may incentivize households to decrease their income (or devote resources to “hiding” income) to qualify for the program. This decreases the welfare impact of the program, both through the imperfect targeting that results when income cannot be perfectly observed, as well as through the inefficient reallocation of labor by households. Note that the latter is somewhat different to the reallocation of labor because of income effects. In the absence of any initial distortions (including commodity taxes), such reallocations have no indirect welfare impacts, since households were already optimizing. However, if one focuses more narrowly on income (i.e., ignoring “leisure”), as is the case with poverty indices, such perverse income effects will show up as decreasing welfare.

Another indirect welfare impact often identified in the literature relates to public transfers “crowding out” private transfers (or informal safety net mechanisms), so that the net income increase for program beneficiaries is less than the program transfer. The net welfare impact of such responses will depend on the distribution pattern of informal transfers. If poor households receive private transfers mainly from other poor households, then the net welfare impact of crowding out is minimal. However, if these

are financed by rich households (i.e., those with much lower welfare weights relative to the poor), then they can have a substantial negative impact on welfare.

There is also an emerging theoretical literature that focuses on the dynamic effects of cash transfers when credit and insurance markets are imperfect (see Ravallion 2003 for a review). In the presence of such market imperfections, cash transfers can have important indirect welfare impacts. If the poor face imperfect credit markets in the sense that they face a private cost of capital higher than the true opportunity cost of credit, then redistributing income to poor households will increase their investment levels and thus their future consumption. Similarly, if the poor are unable to insure against risk, they will tend to underinvest in risky but higher return projects. Public transfers provide them with an additional source of certain income and thus encourage them to take on more of these projects.

### Universal Food Subsidies

As above, one can construct a partial equilibrium benefit-cost statistic for universal food subsidies as:

$$\lambda_i = \frac{\sum_h \beta^h x_i^h}{x_i} = \sum_h \beta^h \theta_i^h = \theta_i^p, \quad (3)$$

where  $\theta_i^h$  is the share of household  $h$  in the total consumption of commodity  $i$ , which captures the household's share in the total subsidy bill, and  $\theta_i^p$  is the aggregate share of poor households. The greater the share of the poor in total consumption of  $i$ , the greater their share of the total subsidy bill and thus the higher the benefit-cost ratio. From this perspective, one should subsidize commodities consumed disproportionately by the poor.

The general equilibrium benefit-cost statistic can be derived as before, by dividing by an appropriate revenue elasticity to get

$$\lambda_i^G = \theta_i^p / E_i.$$

The term  $E_i$  is a revenue elasticity with respect to the price of good  $i$  and depends on demand responses. It thus captures the efficiency costs associated with taxes and subsidies. In the case of taxes, the more elastic the demand, the lower  $E_i$  and thus the greater the welfare decrease due to the tax. In the case of subsidies, the more elastic the demand, the higher  $E_i$ , and thus the lower the welfare increase due to subsidies. This suggests that efficiency costs are lower if one manipulates the prices of commodities with low-price elasticities.

### Subsidized Rationed Foods

The welfare impact of increasing the *ration subsidy* is derived by differentiating (\*) with respect to  $p_r$  to get

$$\lambda_p = \frac{\sum_h \beta^h x_r}{Hx_r} = \sum_h \beta^h \theta_p^h = \theta_p^p \quad (4)$$

where a fixed ration level across all households is assumed,  $\theta_p^h$  is the share of total expenditures on this reform received by each household, and  $\theta_p^p$  is the share of the subsidy received by poor households. Again, the welfare impact of this reform is higher if rations are targeted at poor households. Administrative costs can also be incorporated by multiplying by  $\theta_r$ , the share of ration subsidies in the total budget.

### Public Works

Consider first the case where the government employs labor at a fixed wage to produce a private good such as  $x_p$ , which, for the present, can be thought of as being sold at  $q_p$  on the open market. The direct effect on government revenue is

$$dR = q_p x_p - c_f - w_p l_p x_p,$$

where

- $q_p x_p$  = the revenue generated from the output,  
 $c_f$  = the fixed cost incurred to produce the output (e.g., capital equipment and administrative costs in setting up the project),  
 $w_p$  = the wage paid,  
 $l_p$  = quantity of labor used per unit of output, and  
 $w_p l_p x_p$  = the wage bill.

The benefits to the household come from employment on the public works at a wage higher than their market wage (or reservation wage if the work on nonmarket activities); only those with  $w_m < w_p$  will take up the employment opportunity, where  $w_m$  is the market wage. The social valuation of these gains is  $\beta(w_p - w_m)l_p x_p$ .

The total impact on welfare is again derived by differentiation of (\*) with respect to  $x_p$ , setting  $dx_p = 1$  for convenience, to get

$$\frac{\partial W}{\partial x_p} dx_p = \sum_h \beta^h (w_p - w_m^h) l_p^h + \lambda \left[ \sum_j \sum_h t_j \frac{\partial x_j^h}{\partial m^h} (w_p - w_m^h) l_p^h + q_p - c_f - w_p l_p \right].$$

The partial equilibrium benefit-cost ratio can then be derived as

$$\lambda_p = \frac{\sum_h \beta^h (w_p - w_m^h) l_p^h}{(c_f + w_p l_p - q_p)}. \quad (5)$$

If we ignore the output benefits, assume that forgone income is a fixed proportion ( $\alpha$ ) of the public wage, and set  $\beta = (0,1)$  for (nonpoor, poor) respectively, then

$$\lambda_p = (1 - \alpha) \theta_w \theta_p, \quad (6)$$

where  $\theta_w$  is the share of wage payments in total program costs (i.e., wage plus non-wage costs) and  $\theta_p$  is the share of total wage payments received by poor households.<sup>9</sup> The welfare gains per unit expenditure are therefore greater the higher the proportion of the labor employed is from poor households, the greater the gap between project and market wages (or, more generally, forgone earnings), and the greater the share of wages in total program costs.

If, instead, the output  $x_r$  is a public good made available to households at  $p_r$  (possibly zero), then the value of the output is taken out of the denominator and placed in the numerator with the output valued at household willingness to pay

$$\lambda_p = \frac{\sum_h \beta^h (WTP^h - p_r) + \sum_h \beta^h (w_p - w_m^h) l_p^h}{(c_f + w_p l_p - H p_r)}, \quad (7)$$

where  $H$  is the number of households receiving, and being charged for, the public good. The welfare impact of the project is now greater if the benefits of the output (i.e., the consumer surplus calculated as the difference between  $WTP$  and the price charged) accrue disproportionately to the poor either in terms of current or future welfare.

Note that when we ignore the income benefits from the employment side (e.g., because workers are paid their social opportunity costs), we get an expression for the welfare impact arising from the supply of a public good:

$$\lambda_x = \frac{\sum_h \beta^h (WTP^h - p_r)}{H(c - p_r)}, \quad (8)$$

where  $WTP^h$  is the household's willingness to pay for the extra public supply,  $p_r$  is the charge for this supply, and  $c$  is the unit cost of supply. One can think of human

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<sup>9</sup> Note that the total welfare impact could have been derived by focusing solely on the “shadow profits” generated by the project, where inputs and outputs are valued at shadow prices and labor is valued using the formula for the Little-Mirrlees shadow wage rate ( $swr$ ), i.e.,  $swr = w_p - \beta(w_p - w_m)$ . See Little and Mirrlees (1974) and Drèze and Stern (1987) for a more detailed discussion of these issues. Equation (6) is essentially the decomposition presented in Ravallion (1999).

capital subsidies as reducing the private cost ( $p_r$ ) of access by the amount of the subsidy thus inducing extra demand.

### 3. Food Subsidies

This section begins with a discussion of the distributional impact of universal food subsidies, subsidized rationed food, and food stamps.<sup>10</sup> All of these involve transfers that are essentially conditioned on the households consuming subsidized food. A universal food subsidy involves the government fixing the food price below market (or world) price, with households free to consume as much as they wish. Subsidized rationed food involves the sale of a fixed amount of food at a subsidized price through ration shops. Food stamps involve the transfer of a coupon, which can be exchanged in private outlets for certain foods at market prices up to the face value of the coupon.

The objectives of such subsidies have varied, but typically they include increasing the purchasing power of low-income households, reducing calorie and micronutrient deficiencies, maintaining low urban wages, and ensuring social and political stability. The focus here is primarily on their distributional power as measured by their ability to get a large amount of a poverty alleviation budget into the hands of the poorest households.

During the 1960s and 1970s, universal food subsidies were a major component of poverty alleviation strategies in many developing countries. Countries such as Bangladesh, Egypt, India, Pakistan, Sri Lanka, and Tunisia introduced universal food subsidies in the early 1950s. These typically took the form of a combination of implicit and explicit taxes on agricultural outputs (e.g., import subsidies, export taxes, and low domestically controlled procurement prices). Two events highlighted the shortcomings of such an approach. First was the large increase in world food prices in the mid 1970s. The cost of subsidies became enormous, leading governments to try to absorb the higher

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<sup>10</sup> See Alderman (2002) for detailed information and discussion of many of the programs and issues discussed below.

costs through higher public expenditures and budget deficits. In the early 1980s, the cost of such programs was as high as 4–5 percent of GDP in Sri Lanka and Tunisia. Second, the stabilization and structural adjustment programs introduced in the early 1980s emphasized the need to cut back on ineffective government expenditures to reduce budget deficits and inflation. Universal food subsidies were seen as inefficient because a large proportion of the benefits leaked to the nonpoor, and the price manipulations inherent in such an approach were often highly distortionary.

One of the first substantial pieces of research into the role and implications of food subsidies was Pinstrop-Andersen (1988), which summarized the findings of the early research on South Asia (in the late 1970s) and Egypt (in the early 1980s). This research highlighted the trade-offs between the distributional implications of universal food subsidies and the efficiency costs of the price distortions imposed to finance such transfers. While recognizing the important role played by food subsidies in increasing food consumption and nutrition in poor households, it also emphasized the need to minimize any adverse impact on agricultural production. It also noted that budgetary pressures on public expenditures necessitated a greater effort to target these subsidies to the poor.<sup>11</sup> This approach was consistent with the emphasis of structural adjustment programs in the early 1980s.

The previous section showed that the general equilibrium welfare impact of universal food subsidies can be derived as

$$\lambda_i = \theta_i^p / E_i,$$

where  $\theta_i^p$  is the share of transfers going to poor households (which equals their share in the total consumption of  $i$ ) and captures the equity (or distributional) implications of the tax or subsidy.  $E_i$  is the elasticity of revenue with respect to this tax and captures the efficiency implications. For a tax, the welfare impact on households is negative, and  $E_i < 1$  when demand decreases with the tax, thus magnifying the welfare losses. For a

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<sup>11</sup> For a detailed discussion of the adverse effects on agricultural production, see Mellor and Ahmed (1988).

subsidy, the welfare impact on households is positive, and  $E_i > 1$  when demand increases with the subsidy, thus reducing welfare gains. Crudely speaking, one can think of  $E_i$  being closer to unity when efficiency costs are small.

The standard result in the empirical literature relates to the trade-off between equity and efficiency when setting tax and subsidy rates. Efficiency concerns require taxes to be inversely related to commodity price elasticities (the so-called inverse elasticity rule). But, since elasticities are typically relatively low for necessities such as food, which account for a relatively substantial proportion of the expenditures of the poor, efficient taxes are highly inequitable. However, the corollary of this is that such commodities are good candidates for transfers through universal subsidies since they are consumed disproportionately by low-income households and their low price elasticities imply low efficiency costs.

In the context of developing countries, where many rural households are both consumers and producers of food, the “inverse elasticity rule” relates to net trade elasticities (i.e., the elasticity of marketed surplus).<sup>12</sup> Many households consume a substantial proportion of their food production on-farm so that net market trades are often only a small proportion of their total consumption or production. For example, using the price controls existing in Pakistan in the mid 1970s, Coady (1997) showed that fixing producer prices for such commodities as wheat below world prices can be a very powerful redistributive policy instrument, since the poorest households are net consumers and the richer households are net producers, implying a high  $\theta_i^p$ . Therefore, low prices are essentially a subsidy to the poor financed by the rich. However, the large proportion of consumption out of own production means that net trade elasticities are very high (even if consumption or production elasticities are relatively low) so that

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<sup>12</sup> For more detailed discussion, see Ahmad and Stern (1984, 1991), Drèze and Stern (1987), and Newbery and Stern (1987).

producer price controls are highly inefficient. Thus, the standard trade-off between equity and efficiency is magnified in developing countries.<sup>13</sup>

From the perspective of structural adjustment, the required policy response was seen as obvious: price liberalization implied shifting the burden of transfers to the public sector (i.e., away from agricultural producers) by financing these out of general revenues, while cost-effectiveness required targeting public expenditures more directly at the poor. One option is for the government to procure food at market prices and make it universally available at a subsidized price, thus avoiding production inefficiencies and incurring only the inefficiencies associated with distorted consumption patterns. This essentially involves the targeting of universal subsidies using “self-selection” targeting methods, i.e., selecting commodities consumed disproportionately by the poor (i.e., inferior goods or those with low income elasticities).<sup>14</sup>

However, even when the right commodity is selected, universal food subsidies are rarely progressive and are often slightly regressive. This partly reflects the fact that it is difficult to identify commodities that are inferior and whose price can also be easily manipulated by government controls. In addition, the amount of the transfer is limited by the commodity’s budget share (Pinstrup-Andersen 1988; Alderman and Lindert 1998), and the associated inefficiencies tend to increase with the size of the subsidy. Expanding the set of commodities that are subsidized in order to facilitate larger transfers will usually involve a large trade-off in terms of lower progressivity. Keeping the transfer budget constant, spreading subsidies across a number of commodities should help to lower the efficiency cost of price distortions. But including more commodities may also substantially increase administrative costs.

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<sup>13</sup> Schiff and Valdes (1992) provided an in-depth analysis of the economic effects of agricultural price manipulations in 18 developing countries for the period 1960–85. Their analysis highlighted the large transfer of resources out of agriculture, with indirect taxes on agriculture standing at around 22 percent, and the fact that “the modernization of agriculture was being sacrificed at the alter of industrialization” (foreword by T.W. Schultz). The importance of political economy in shaping the form this extractive approach took, and in determining the possibilities for reform, was discussed in Krueger (1992).

<sup>14</sup> See Grosh (1994) and Coady, Grosh, and Hoddinott (2002) for a discussion of alternative targeting methods and a review of targeting practice.

According to the review by Coady, Grosh, and Hoddinott (2002 [henceforth CGH]), which focuses on the share of transfers going to the poor (i.e.,  $\theta_i^p$ ), universal food subsidies are rarely progressive. Only 3 of 15 programs for which they had evidence on targeting performance were progressive. The median targeting performance was regressive, with the poorest 30 percent of the population receiving only 29 percent of total transfers. In other words, for every \$1.00 transferred to the poor through universal subsidies (i.e., the inverse of  $\theta_i^p$ ), the government spent \$3.40. Incorporating administrative or economic efficiency costs would obviously increase this cost even further. For these reasons, universal subsidies are typically seen as short-term solutions until better targeting mechanisms are developed.

Alternatively, one can use finer administrative targeting methods, which are potentially more distributionally powerful and more efficient. The welfare impact of these was derived above as

$$\lambda_i = \theta_p^p \theta_i,$$

i.e., the share of the rationed food going to poor households multiplied by the share of subsidies in the total program cost. There are many examples of attempts to target subsidized food to poor households. First is universal access to subsidized food sold through a public distribution center (or designated private outlet) on a first-come, first-served basis. Outlets are often located in poorer areas, open at inconvenient times, and can require lengthy queuing times, with individuals often queuing well before opening time. The sum of cash plus time costs effectively clears the market. Although access is, in principle, universal, it is argued that the fact that nonpoor households have higher opportunity costs of time, and there may be some social stigma costs, leads them to have lower take-up rates. As with universal subsidies sold through private markets, this is a form of targeting through self-selection. Second is universal access to a fixed quantity ration of food sold at subsidized prices through public ration shops, which may also be located in poor areas, only open at inconvenient times, and often requiring lengthy

queuing times. Third are ration cards targeted to poor households using means tests or other forms of administrative targeting. Targeted households receive a ration card that entitles them to a certain amount of food at a subsidized price. The progressiveness of transfers depends on how well they are targeted, as well as on the time and stigma costs as above. Fourth are rationed food stamps—a variation of ration cards, the difference being that they usually entitle the holder to a fixed amount of food denominated in money (as opposed to quantity) units free of charge and can be redeemed at private outlets or even sold to others. Private traders can then redeem them at face value at a bank. Again, the progressiveness of such transfers depends on how well they are targeted. A number of countries switched from universal to targeted food subsidies during the 1980s and 1990s, including Bangladesh, Honduras, Jamaica, Jordan, Mexico, Tunisia, and Sri Lanka.

Providing universal access to unrestricted consumption of subsidized food has both income and substitution effects. However, if ration transfers are fixed below existing household consumption levels, or if resale is possible at low transaction costs, then these subsidized rations are approximately equivalent to cash transfers and thus only have income effects. Thus, from the perspective of income poverty, (equivalent) cash transfers are always superior to food subsidies, since the latter typically have an additional inefficiency (i.e., a deadweight loss) associated with their substitution effects. In addition, if the transaction costs of distributing food (including theft, etc.) are higher than for the distribution cash, i.e., if food has a relatively high  $\theta$ , above, then cash transfers may be preferred. There is some evidence, especially in South Asia, that this may be the case (Ahmed et al. 2001; Ahmed and del Ninno 2001).

There are many examples of targeted ration systems in developing countries. For example, the public distribution system in India has a long history (Ahluwalia 1993; Radhakrishna and Subbarao 1997). However, the performance of these systems has not always been great, typically because of a combination of a lack of political will, corruption, and the high costs associated with distributing food. The potential impact on

poverty has often been affected by a combination of poor targeting and program design. For example, liquidity-constrained poor households have often not been able to take up their full ration entitlements (Alderman and von Braun 1984; Rao 2000). The CGH review found that the targeting performance across 19 programs varied widely. The median targeting performance was consistent with the poorest 30 percent of the population receiving only 37 percent of total transfers. In other words, the government spent around \$2.67 for every \$1.00 transferred to the poor. This is also, of course, a lower bound, since we are ignoring other costs, such as administrative costs and theft. But targeting performance also varied both spatially and by commodity. For example, in rural programs in the Indian states of Andhra Pradesh and Maharashtra, the poor received 49 and 41 percent of total transfers, respectively. The equivalent percentages for their urban programs were 33 and 31 percent, respectively (Dutta and Ramaswami 2001). Over all of India, the poorest 30 percent received 47 percent of the total jowar subsidies, but only 30 percent of the total wheat subsidies (Jha 1992). This variation helps highlight the fact that detailed design and implementation issues are extremely important in determining targeting performance.

Many of the practical difficulties associated with reforming ration systems were discussed in Pinstруп-Andersen (1988).<sup>15</sup> The above evidence suggests that better targeting of rationed food subsidies and better implementation and monitoring so as to avoid losses due to distribution losses and corruption can substantially improve the cost-effectiveness of such ration schemes. To the extent that such inefficiencies are inherently linked to the use of food as a benefit, there may be a strong argument for switching to cash transfers.<sup>16</sup> But there is a real need for more rigorous empirical evidence on this issue. It is also widely agreed that the targeting method chosen must be appropriate within the existing social, political, and administrative context of the country. The

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<sup>15</sup> See, also, Ahmed et al. (2001) for details on how an operational proxy means targeting approach was developed in Egypt and the political factors determining its design.

<sup>16</sup> See Alderman (2002, Annex 1) for a summary of studies on the extent of leakage from food subsidy programs.

existence or reform of food subsidy systems affects a number of competing groups in society, and their relative power often determines outcomes (Bienen and Gersowitz 1986; Alderman 1988; Tuck and Lindert 1998; Adams 1988, 2000). However, informing the public of the costs and benefits of these programs seems to play a crucial role in determining their acceptance of these reforms and in neutralizing small but vocal power groups. Similarly, it is usually easier to reform subsidy systems when market food prices are low or when vocal groups are otherwise distracted.

#### **4. Public Works**

One of the common criticisms of food subsidies and other cash or in-kind transfers is that their effectiveness persists only as long as the transfers themselves persist.<sup>17</sup> Such a strategy is typically seen as undesirable, both in terms of the dependency culture it creates but also the pressure it puts on public finances. Longer-term measures that address persistent poverty require policies that help poor households build up their asset base to promote their participation in the development process, i.e., a more “developmental” approach. Public works provide one such alternative, since they can have both features, with wage transfers addressing short-term poverty and the output from these projects potentially enhancing the poor’s asset base and thus helping alleviate poverty in the medium to long run.<sup>18</sup> Public works are also often perceived as an effective policy instrument for addressing vulnerability to poverty, especially when they allow households to self-select into existing programs in times of hardship or where programs are activated in areas subject to economic shocks. But some shocks (e.g., illness or disability) may preclude some households from participating in such programs so that other interventions are also required.

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<sup>17</sup> This obviously ignores the potential for dynamic effects in the presence of credit and insurance market failures (see Ravallion 2003).

<sup>18</sup> See Subbarao (2003) for more detailed information on and discussion of many of the programs and issues discussed below.

Public works programs have been around for decades. They constituted an important component of India’s famine relief during the nineteenth century, and they have existed in South Africa and Bangladesh since the nineteenth century and the 1960s, respectively. But they became more widespread and more focused in the late 1980s and early 1990s, especially in Asia and Africa. Such programs have often accounted for a substantial proportion of employment generated nationally, e.g., 21 percent of the labor force in Botswana in 1985–86, and 13 percent in Chile in 1983. The recent emphasis on “social funds” is part of this trend, but these programs differ from the traditional approach by putting greater emphasis on the output side and typically are demand driven, since they require communities to identify and propose programs as well as provide matching funds (Rawlings, Sherburne-Benz, and van Domelen 2002).

The immediate welfare impact on poor households comes from higher wage earnings. The welfare impact of public works (ignoring output benefits) is given by equation (7) above as

$$\lambda_p = (1 - \alpha)\theta_w\theta_p,$$

where  $\theta_w$  is the share of wage payments in total program costs (i.e., wage plus non-wage costs) and  $\theta_p$  is the share of total wage payments received by poor households. The welfare gains per unit expenditure are therefore greater the higher the proportion of the labor employed comes from poor households, the greater the gap between project and market wages (or, more generally, forgone earnings), and the greater the share of wages in total program costs.

However, there is typically a trade-off between the first two components: the higher the project wage, the more attractive employment on public works for the nonpoor. This effectively puts a practical limit on the resources that can be efficiently transferred to the poor under such schemes. One way around this is to combine higher wages with, for example, an administrative targeting method to ration employment. Timing projects during periods of slack (e.g., during the rainy season) or placing them in

the poorest areas may also enhance the welfare impact. Of course, such a strategy may also have important implications for the type of output that can be sensibly produced by the project. Higher wages may also have beneficial second-round welfare effects if they help reduce employer power in monopolistic labor markets.<sup>19</sup> Even in competitive labor markets, higher wages may be desirable from an equity perspective, although this comes at an efficiency cost if the output produced by the project, net of non-wage costs, is less valuable than forgone output.

A useful starting point in the literature is the paper by Ravallion (1990b, 1991b).<sup>20</sup> There he argues that, as of the late 1980s, there was surprisingly little quantitative evidence on the gains from targeting and the performance of incentive schemes for self-targeting, with most attempts at doing so involving simulations using ad hoc assumptions. The paper refers to evidence on the targeting performance of two specific programs. The first is the Employment Guarantee Scheme (EGS) in Maharashtra State, India, which was the single largest poverty alleviation scheme of any state in India in the late 1980s. This scheme provided work on small-scale rural public works projects—such as roads, irrigation facilities, and reforestation—at wage rates on a par with prevailing agricultural wages. Second is the Food for Work (FFW) program in Bangladesh, which provided employment for construction and maintenance of irrigation, drainage, and embankment projects.

The evidence available from CGH indicates that the targeting performance of public works schemes is very variable. Over the six programs for which they had evidence, the median performance was consistent with the poorest 30 percent receiving 44 percent of wage transfers, with a range of 32–80 percent over the worst- and best-targeted programs. The best-targeted program was the Trabajar program in Argentina, which put special emphasis on geographic targeting using an explicit formula for

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<sup>19</sup> There is some evidence that large landowners may have monopsony power, manifested as discriminatory wage rate differentials (e.g., between men and women, migrants and local workers, or across castes). For discussion see, for example, PEO 1980, Dandekar 1983, Binswanger et al. 1984, Hirway et al. 1990, and Subbarao 1989.

<sup>20</sup> See, also, Ravallion (1990a, 1991a, 1999) for further discussion.

allocating resources based on the number of poor unemployed workers in each province and also on the extent of poverty.<sup>21</sup> In addition, low wages were paid to ensure that only the poorest households participated, and there was a specific objective of employing otherwise unemployed workers from poor families.

However, what little evidence exists suggests that forgone earnings can constitute from 25 percent (for the EGS in India) to 50 percent (for Trabajar in Argentina) of the program wage, so that this substantially reduces the efficiency of the program in transferring income to the poor.<sup>22</sup> Adopting piecework schemes may be a way of addressing these problems if it enables participants to undertake other work. Such flexibility is often thought to be more conducive to female participation because of the demand that housework puts on their time. In addition, the non-wage costs accounted for around 30 percent of total government outlays on EGS and absorbed about 30 percent of the food aid used to finance FFW. In fact, both programs have a rule that non-wage costs should account for at most 40 percent of variable costs.

Based on the above numbers we can calculate the cost of transferring income to the poor under these schemes as the inverse of  $\lambda_p$ . For every 100 rupees transferred to beneficiaries, the beneficiaries have a net gain, on average, of about 75 (i.e., net of forgone earnings) and nontransfer program costs are around 43 rupees (i.e., three-sevenths of 100 rupees). So, if only 80 percent of wage benefits accrue to the poor, these figures for forgone earnings and nontransfer costs suggest that it costs 143 rupees to get 60 rupees to the poor (i.e., a ratio of nearly 2.4!). Therefore, in the absence of substantial output benefits, these programs appear to be very expensive ways to transfer income to the poor.

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<sup>21</sup> The evaluation of the Trabajar program is probably one of the most thorough available. For details, see Ravallion (2000), Jalan and Ravallion (2003), Galasso, Ravallion, and Salvia (2001), and Ravallion et al. (2001).

<sup>22</sup> See Ravallion and Datt (1995) for a modeling approach applied to the EGS, and Jalan and Ravallion (2003) for estimations for Trabajar, using matching techniques.

Many of the issues discussed above are also addressed in von Braun (1995). This volume summarizes the various outputs from research undertaken since the early 1980s, including FFW and EGS programs discussed above, but also public works for relief and development in Africa.<sup>23</sup> While emphasizing the important contribution of such programs to poverty alleviation, this work made clear that the effectiveness of such an approach depended on how well they were targeted and managed. But since targeting effectiveness depended on setting low wages, this limited the potential impact on poverty. With higher wages, demand for employment exceeds jobs available so that it is important to incorporate additional screening based on characteristics that are highly correlated with poverty (e.g., geographic targeting). Targeting on a work requirement also rules out transfers to those unable to work and demand-led projects tend to exclude the poorest communities that lack capacity.

A more recent evaluation of 101 public works projects in the Western Cape Province of South Africa, which were introduced in the early 1990s to combat large-scale unemployment, reinforces the above insights (Haddad and Adato 2002). Using a combination of actual data and simulations, they find large variability in performance as measured by the cost of transferring income to the poor, which is again consistent with performance depending sensitively on the detailed design and management issues. Much of the bad targeting performance was due to bad geographic targeting. Choosing labor-intensive projects, preferably in poor areas, was also found to be crucial to performance when the output is not of major benefit to the poor. In their qualitative evaluation, they also point out the difficulty of imposing low wage rates without community backing, since once the project has been set up, the threat of withdrawing labor is a powerful weapon (Adato and Haddad 2002). This is especially the case when similar work gets higher wages in the private sector.

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<sup>23</sup> For details, see, also, Chowdhury (1983) on FFW, Dev (1992) on EGS, and Hossain and Akash (1993) on Africa.

There is also some evidence that in-kind transfers (e.g., food-for-work) may involve relatively high transaction costs (including illegal pilferage) and thus be less cost-effective than cash transfers. In the context of famine relief, Drèze and Sen (1989, 1991) argue that greater use of cash support (rather than the direct provision of food) should be considered, since the difficult logistics of transporting food (especially through public distribution systems) often appears to cause delays that can be very costly in terms of lost lives. They also argue that previous experience during famine or near-famine situations has shown that, where the demand exists, private markets can be more efficient at transporting food to famine areas. They also argue that “a plethora of recent studies has shown that the acquisition of cash (for subsequent conversion into food through the market) is now one of the most important survival strategies of vulnerable populations in famine prone countries” (Drèze and Sen 1991, 19). It is often argued that cash injections in the absence of a food injection will just lead to higher prices, thus benefiting private suppliers at the expense of famine-stricken households. This is likely to be the case only when substantially large areas of a country are famine stricken, but past experience suggests that potential famine conditions often exist side by side with areas of large food market surpluses. But the main point to be taken from this discussion is that if cash support can work more effectively in famine conditions, then such a strategy is even more likely to be more effective during normal conditions.

A more comprehensive analysis would also need to adjust for any general equilibrium wage effects, which may be substantial. The little evidence that exists suggests that these general equilibrium wage effects may be substantial, e.g., as much as a doubling of the direct transfer benefit (Ravallion 1990a). But additional research is needed on the nature and magnitude of these general equilibrium effects, including the possibly adverse effect of the displacement of private transfers.

Providing a guarantee of employment at a fixed wage has additional welfare impacts when it helps to stabilize the incomes and consumption of households that are unable to smooth consumption optimally over time—the gains essentially come from providing income in periods when income is otherwise very low and thus the social value

of income ( $\beta$ ) very high. Such a safety-net feature requires the program to expand and contract in response to anticipated and unanticipated income shocks experienced by households. Experience with both EGS and FFW shows that employment does seem to increase substantially during the dry summer season and periods of widespread drought.

The additional opportunity for smoothing provided by public works may prevent households engaging in distress land sales or in running down their asset base in bad times, e.g., by slaughtering cattle or pulling children out of school (Cain and Lieberman 1983). Since such benefits may be substantial, they should not be overlooked. It has been argued that substantial improvements along these lines can be made in Bangladesh's FFW program, e.g., by choosing outputs that are sensible in periods of drought and generally increasing program flexibility (Hossain 1985; Hossain 1987). The outputs (such as more effective irrigation or soil conservation systems) can also generate additional gains in terms of reducing fluctuations in incomes—in addition to their impact in terms of higher average incomes. Therefore, it may be that the comparative advantage of such programs lies in dealing with vulnerability and crisis situations rather than as approaches to dealing with structural poverty.

On the output side, the potential for generating valuable output depends on good management and the selection of appropriate investments. Avoiding the types of corruption often witnessed in these schemes requires providing management with appropriate incentives and capacity.<sup>24</sup> For relatively capital-intensive projects, efficient provision requires good management skills and sufficient demand for output, which suggests that location in remote rural areas is often inappropriate. Therefore, for these programs, there tends to be an important trade-off between targeting and productive efficiency, although this tradeoff may be relaxed with greater intercommunity labor mobility. When short-term famine relief is the objective, targeting performance is viewed as being relatively more important than long-term asset creation, although the

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<sup>24</sup> Dandekar (1983) and Echeverri-Gent (1988) discuss such problems and possible solution in the case of the EGS, while Ahmed et al. (1985) and Bandyopadhyay (1988) do so in the context of the FFW.

presence of productive inefficiency implies that such programs are not likely to be cost-effective in transferring income to the poor. All of the above suggest that public works programs appropriate for alleviating poverty are likely to be those that use unskilled, labor-intensive technologies for producing outputs that are undersupplied by the market and located in poor areas (or made active during off-peak seasons or slumps).

The choice (and location) of output may also be influenced by political considerations (von Braun 1995). For example, it has been argued that the fact that they benefited from the project output played an important role in generating support from rich farmers for the Employment Guarantee scheme in Maharashtra state in India during the 1980s (Herring and Edwards 1983; Echeverri-Gent 1988). In contrast, if high project wages put upward pressure on market wages for hired labor, this may reduce their support for such schemes. This reinforces the need for better targeting both by choice of a lower project wage and the appropriate timing of projects so that they do not compete for labor in times of high demand. As pointed out above, the desire for effective targeting and flexibility also has important implications for choice of output and mode of delivery. For example, if there is a requirement to put contracts out to tender or to allow private-sector participation, implementation may be delayed.

There is also evidence that local involvement in the selection and delivery of projects improves outcomes. In Trabajar, where the emphasis is on creating assets valued by these poor communities, projects are proposed by local governments and NGOs, and these must cover the non-wage program costs. The evaluation of the South Africa programs also supports this view. Hoddinott et al. (2001) find that community participation is generally associated with improved project cost-effectiveness and better targeting. Adato and Haddad (2002) suggest that enhancing the sense of community ownership may help counteract local forces for higher wages, as may additional design features, such as fixing the wage budget so that there is a visible trade-off between higher wages and employment levels. The authors also highlight the importance for targeting outcomes of active information and coordination efforts when participation is demand-driven, given the lower capacity of poorer communities in these areas. Transparency and

community participation are often strong forces working to achieve poverty alleviation objectives.

Social funds have become a very popular vehicle for channeling development assistance to developing countries (Rawlings and Schady 2002). These programs are typically characterized by substantial involvement of communities in the selection, design, and implementation of community-based development projects. The first such program was implemented in Bolivia in 1987, and today almost all countries in Latin America, and many countries in Africa, Asia, and the Middle East, have implemented similar programs. The main differences with traditional public works programs are that social funds put stronger emphasis on the community asset produced by the program, are demand-driven, and sometimes require communities to provide matching funds. The funds also tend to have more autonomy over resource allocation than other budget allocations in national governments, and their budgets are often substantial. For example, the Nicaraguan social fund is the primary financier of health and education infrastructure in Nicaragua, with a budget more than 1 percent of the country's GDP. Between 1991 and 1998, it carried out 40 percent of all public investments in social infrastructure (Pradhan and Rawlings 2002).

The programs typically involve investments in community infrastructure such as schools, health facilities, sewage, waste, and water. In order to improve access by poor communities, these funds will often provide institutional support to develop the capacity to design and implement such programs. In addition, communities must usually select from a menu of projects constructed by the fund. The World Bank has recently undertaken impact analyses of a number of social fund programs (Rawlings, Sherburne-Benz, and van Domelen 2002).<sup>25</sup> The evaluations indicate that these programs have improved the quality of infrastructure in participating communities and increased

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<sup>25</sup> See, also, the special issue of *World Bank Economic Review* 16, 2002, for impact evaluations of social fund programs in Armenia, Bolivia, Nicaragua, and Peru.

utilization of the services provided. They also found that the programs have sometimes had a measurable impact on human capital outcomes.

The evidence on targeting performance is more mixed. Of the eight such programs included in CGH, the median targeting performance was consistent with the poorest 30 percent of households receiving approximately 36 percent of the budget. This suggests that the emphasis on producing quality investments may have a trade-off in terms of the funds' ability to reach the poorest communities, which may possess much lower capacity to coordinate their resources to design, bid for, and implement such programs. In other words, there may be an important trade-off between equity and efficiency (or redistribution and cost-effectiveness).

One expects such trade-offs to depend on the complexity of the project. For example, in their evaluation of the Nicaraguan social fund, Pradhan and Rawlings (2002) found that whereas investments in latrines, schools, and health posts had progressive benefit incidence, investments in water systems had neutral incidence, and those in sewerage had regressive benefit incidence. The evidence also indicates that with education and health investments, the fund was substantially better at targeting the poor (48 percent of the population) as opposed to the extremely poor (17 percent of the population). Also, in both Nicaragua and Peru (Paxson and Schady 2002), even though the fund was relatively successful at targeting extremely poor municipalities through first-stage geographic targeting of the budget, it was much less effective at reaching the poorest households within these communities. Therefore, social funds appear to be a good approach to building the community asset base for poor (but not extremely poor) households. Their emphasis on generating quality investments also suggests that they are relatively less attractive as an approach to addressing short-term fluctuations in incomes.

It is widely accepted that there is an urgent need for governments and the development community to invest in well-designed evaluations of development projects. However, a recent study by Subbarao et al. (1999) found that only 5.4 percent of all World Bank projects in fiscal year 1998 included elements necessary for a solid impact evaluation (e.g., outcome indicators, baseline data, and a comparison group). The

evaluations of these funds also shows what can be achieved with a structured approach to program evaluation; the results provide important information for policymakers and donors with regard to the effectiveness of development assistance. Similar evaluations need to be applied more widely in developing countries.<sup>26</sup>

## 5. Human Capital Subsidies

In a large part due to the shortcomings identified regarding existing approaches to social safety nets, developing countries and donors have recently experimented with a relatively new approach to social safety nets, which (like public works above) combines their traditional “preventive” roles with a “promotional” role. These programs give cash transfers to households conditional on households investing in human capital through regular attendance at nutrition and hygiene sessions, health clinics for preventive health care, and school.<sup>27</sup> Investing in the nutritional, health, and education status of children is seen as playing a key role in breaking the intergenerational transmission of poverty and destitution. In this sense, such programs are particularly focused on the “structurally poor” (as opposed to just vulnerable), whose poverty persists over time.

While these programs exist in various forms in a number of countries, they have recently become increasingly popular in Latin America. Programs exist or are in the planning stages in Bangladesh, Brazil, Chile, Columbia, Honduras, Jamaica, Mexico, Nicaragua, and Turkey. The growing interest in such programs reflects the fact that an unusually rigorous evaluation of Mexico’s program (*Programa Nacional de Educación, Salud y Alimentación*) (PROGRESA) has shown it to be very effective (Skoufias 2001). But it is also the case that the Inter-American Development Bank has played a key role in promoting such an evaluation culture in support of these programs. Undoubtedly,

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<sup>26</sup> It is widely accepted that there is an urgent need for governments and the development community to invest in well-designed evaluations of development projects. However, a recent study by Subbarao et al. (1999) found that only 5.4 percent of all World Bank projects in fiscal year 1998 included elements necessary for a solid impact evaluation (e.g., outcome indicators, baseline data, and a comparison group).

<sup>27</sup> For detailed reviews of these types of programs, see Patrinos (2002); Coady (2002b); Coady, Grosh, and Hoddinott (2002); Rawlings and Rubio (2003); Morley and Coady (2003); and Coady and Ferreira (2003).

development institutes and donors in other regions of the developing world can play a similar role.

These programs have a number of features that are crucial to achieving their objectives. First, these programs are designed, coordinated, and often implemented by dedicated central government program teams, this being partly motivated by a desire to avoid unnecessary administrative and bureaucratic costs as well as the potential for corruption. Cash transfers are sent directly to participating households from the central budget.

Second, the program designs include the explicit use of a combination of targeting mechanisms, including geographic, categorical, and proxy means targeting methods. Although it is sometimes argued that fine targeting can result in loss of political support from the excluded middle classes, the fact that the benefits go only to those who are needy is often used to generate domestic political support as well as support from the international development community.

Third, the fact that transfers are conditioned on households investing in their own future has been used to argue that the programs are a hand up rather than a handout, and they signal a transition from a pure social assistance approach to safety nets to one of social development. This approach thus combines a recognition of the “rights” of the poor with them having “responsibilities” for achieving these rights.

Fourth, the programs help integrate a number of previous duplicative and uncoordinated programs under one umbrella. In this sense, many of the programs are not entirely new interventions but rather a more coordinated approach to existing programs. Fifth, most of the programs involve “community promoters,” beneficiaries who play a key role in providing information to beneficiaries regarding their rights and responsibilities and providing feedback to program officials on issues arising among beneficiaries and service providers.

Finally, these programs have typically included an evaluation component built in from the early stages of the program cycle. This has been used both domestically and internationally to generate political support.

The evaluations have shown that these programs have had substantial impacts among the poorest populations. For example, on the whole, the targeting performance for these programs has been very impressive, with most of them appearing in the top third of programs reviewed by CGH, with the poorest 40 percent of the population receiving over 70 percent of program transfers. Similarly, the available evidence also points to substantial human capital impacts. For example, PROGRESA in Mexico increased enrollments in secondary school from 67 percent to 75 percent for girls and from 73 percent to 78 percent for boys (Schultz 2000). The results for the *Red de Protección Social* (RPS) program in Nicaragua are even more impressive, with enrollment rates in primary school increasing from 69 to 91 percent for both boys and girls (Maluccio 2003). In Bangladesh, Food for Education (FFE) increased primary school enrollment rates by 9–17 percentage points (Ravallion and Wodon 2000; Ahmed and del Ninno 2001). These programs have also had substantial impacts in other dimensions, such as income poverty, child labor, nutrition, and health.<sup>28</sup>

Are these programs transferable to other countries? The fact that the programs have been implemented successfully in countries like Bangladesh and Nicaragua suggest that they, at least, have potential. These programs are definitely easier to implement in circumstances where there is already widespread access. Empirical evidence has consistently shown that in spite of improved access to education and health services, poor households often have substantially lower utilization rates reflecting the high opportunity costs of access (e.g., forgone earnings, travel costs, and the cost of uniforms and education materials). Therefore, supply-side interventions in isolation are often found not to be very effective at enticing poor households to access these services. Conditioning targeted cash transfers on accessing these facilities, which effectively transforms pure transfers into human capital subsidies, is an attractive policy response to this problem in these circumstances.

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<sup>28</sup> See Skoufias (2001), IFPRI (2002), Maluccio (2003), and Coady (2003) for reviews of the evidence.

For example, evidence for Mexico, where initial supply-side conditions are relatively favorable, suggests that demand-side subsidies were around 10 times more cost-effective at increasing access compared to the school-building program that simultaneously took place (Coady and Parker 2002). In terms of transfers to households, it also cost less than 10 pesos in administrative costs for every peso transferred to households. This compares very favorably to other Mexican programs, such as the LICONSA (subsidized milk) and TORTIVALES (subsidized tortilla) programs, which cost 40 and 14 pesos per 100 pesos transferred to beneficiaries (Grosh 1994), respectively.

The evaluation of the RPS finds that administrative costs have accounted for about 30 percent for the pilot program. However, this large share partly reflects the fact that the program is still not mature, and fixed costs are thus spread over a smaller transfer base. For example, administrative costs account for only 20 percent of total costs in the final year of the program. Based on this number, it costs the government less than 1.2 cordobas for every cordoba transferred to households and service providers. In addition, unlike in PROGRESA, the RPS includes a supply side, and setting up this component has absorbed a substantial amount of resources and, as we saw above, the resulting human capital impacts have been immense.

However, where there are important supply-side bottlenecks (i.e., where access to a basic quality of service is not widely available), these programs are more complex and resource-intensive to implement. Access, although a necessary condition for capital accumulation, is itself insufficient. Human capital accumulation requires that such access be complemented with quality services. For this reason, many of the programs include a supply-side component to reinforce the impact of demand-side subsidies. While such a program was very successfully implemented in Nicaragua, the operational experience with a similar program in Honduras (*Programa de Asignación Familiar*) (PRAF) suggests that the complexity of combined demand- and supply-side initiatives may be too much for many poor countries with limited implementation capacity. One approach would be to stagger the two dimensions, focusing first on getting the supply side into

operation before introducing household transfers. No doubt the ongoing evaluations of these experiences will continue to add to our knowledge regarding the appropriate design for these programs in different socioeconomic circumstances.

## **6. Lessons for Policy**

This paper has reviewed evidence on the relative performance of various program components of social safety nets commonly found in developing countries, with a view to identifying factors that influence their performance and associated lessons for policy. Empirical evidence clearly shows that universal food subsidies are not very effective ways of transferring resources to the poor. This reflects the fact that they are very rarely progressive and are often associated with large consumption and production efficiency costs. For this reason, universal food subsidies are often viewed as stopgap policies until more cost-effective transfer instruments can be developed.

Although targeted subsidized food subsidies (e.g., through ration shops) can greatly increase their benefit incidence and reduce the associated inefficiencies, in practice their performance has not always been great, reflecting both high leakages to the nonpoor, high costs associated with distributing food, and corruption. Empirical evidence highlights the high costs often associated with such transfers. Achieving good performance requires that adequate resources need to be devoted to the separate administrative tasks of screening, delivery, and monitoring. In addition, if the transport costs associated with distributing food cannot be reduced substantially, then it may be that use of cash is a more attractive option. But it is also widely accepted that cost-effective targeted schemes are available and can work. However, social and political factors need to be taken into account when managing the reform process.

Although well-designed and well-implemented public works programs appear to have great potential for targeting poor households, they also appear to be a relatively costly way of dealing with current poverty. The existence of high non-wage costs and forgone earnings means that the cost per unit (net) income transferred to poor households

is relatively high. But certain design features can ensure that such costs are substantially reduced, including the use of low wages, good geographic targeting, and selection of labor-intensive projects.

On the asset creation side, since there is likely to be a trade-off with the objective of reducing current poverty, it is important that when asset creation is seen as a crucial objective that these assets actually get created and benefit poor communities. In this respect, there is some evidence that promoting community involvement in selecting, designing, and implementing projects can lead to substantial improvements in these areas. However, there is also some evidence consistent with community involvement only working well when there are good governance structures and active participation of civil society in these structures. The design of social funds seems attractive from these perspectives.

Public works are particularly effective at addressing the issue of vulnerability to poverty (as opposed to structural poverty) and in crisis situations. This, of course, requires that such programs be flexible at expanding and contracting in response to economic conditions and this, in turn, may have important implications for the outputs that can be sensibly produced. Thus, the choice of labor-intensive projects requiring low management skills and paying relatively low wages would appear to be a precondition for public works to be effective at addressing both current poverty and vulnerability. Their combined emphasis on short- and long-term poverty alleviation, through wages and infrastructure development, may also make such programs particularly appealing in post-conflict situations. But experience with social funds suggests that the greater the emphasis on generating quality investments, the larger the trade-off in terms of reaching the extreme poor.

However, rigorous evaluations are only available for India and Argentina. Thus, there is an obvious need for further evaluations similar to those recently carried out for social funds, especially of programs designed to avoid some of the shortcomings of existing programs. Important research issues for public works programs are the nature and magnitude of any general equilibrium effects, the potential for substantially

decreasing forgone incomes, the role of good management and project selection in decreasing non-wage costs, and the trade-offs between the longer-term output and shorter-term income objectives.

A recent program innovation in developing countries, particularly Latin America, is targeted human capital subsidies (i.e., transfers conditioned on households investing in their children's nutrition, health, and education status). These are a promising approach to addressing structural poverty and the conditioning of transfers on households accumulating human capital adds a "promotional" dimension to the traditional "prevention" role of social safety nets. Invariably, household-level data in many developing countries show that the poorest households are not only poor in terms of income and consumption levels, but also in terms of human capital (i.e., nutrition, health, and education) as well. These new human capital programs are attractive because they can help address many of the shortcomings of existing social safety nets: they use a combination of targeting methods to ensure the benefits reach the poor; they are often centrally designed and implemented, thus avoiding unnecessary bureaucracy and opportunities for corruption; they integrate many duplicative programs under one umbrella program; and they can help to break the intergenerational transmission of poverty through improved human capital status of children in poor households.

The fact that these human capital programs have been successful in some poor countries suggests that they have potential for being successful elsewhere. However, to be successful, the design of these programs will need to reflect local conditions including, the quality of education and health care, the existing level of access to these services by poor households, the capacity to implement and monitor such programs, and the potential role for community actors. Other economic policies must also be conducive to generating broad-based growth capable of absorbing this more skilled labor force productively. Although by themselves these programs are not a panacea for all development problems, their proven performance justifies serious consideration of such programs as an important component of an overall poverty alleviation system.

Appendix Table—The design and effectiveness of social safety net programs

Intervention type	Description	What do they do?	How do they perform?
<i>Cash transfers</i>	<p>Typically take the form of transfers to households based on number of children or of transfers to elderly.</p> <p>Targeting is usually a combination of means or proxy/means testing plus categorical targeting (e.g., based on age).</p>	<p>In the presence of market failures (e.g., liquidity constraints), cash transfers can generate multiplier effects from increased investments. But this requires not only that households lack access to credit but also that they have investment opportunities they are capable of exploiting.</p> <p>To the extent that food consumption increases, the resulting improvement of nutritional and health status helps maintain human capital and future incomes. This effect is thus more likely for very poor households vulnerable to malnutrition.</p> <p>For beneficiaries, transfers provide a stable source of income and can prevent costly depletion of human and physical assets in the event of adverse shock. The more stable source of income may encourage participation in more risky but higher-income activities.</p>	<p>Transfers need to be targeted to maximize the impact from constrained budget. Evidence of good targeting on average, with median performance index of 1.4, implying cost-benefit ratio of \$2.2. But lot of variability with median cost ratios of top and bottom five ranging from \$3.40 to \$1.20. Nearly all these programs are in Latin America and Eastern-Central Europe.</p> <p>The design of the targeting system needs to avoid disincentive effects (e.g., reduced labor supply and income in order to meet eligibility conditions). These can be minimized by avoiding finely graduated transfers, capping transfer levels, and by linking transfers to household characteristics that are hard to manipulate.</p> <p>Effectiveness at addressing vulnerability depends on how flexible eligibility rules are and how targeting criteria can be adjusted to identify “new poor” precisely.</p>
<i>Universal food subsidies</i>	<p>Subsidy of a commodity that is, in principle, available to all households in unlimited amounts.</p> <p>Targeting usually self-selection of households based on decision to consume and how much to consume, and so should subsidize commodities with very high or negative income elasticities.</p>	<p>As with cash transfers, income effects can lead to multiplier effects through asset accumulation when households are liquidity constrained.</p> <p>To the extent that food consumption helps improve nutritional status, future labor productivities and income are enhanced.</p> <p>Households can switch to subsidized commodities when income decreases. And subsidies can be increased in response to national economic shocks.</p>	<p>Subsidies introduce inefficiencies and these increase exponentially with subsidy levels. So universal subsidies can be a very costly and inefficient way of transferring income to the poor, even when targeting right commodities. When financed through low producer prices, they can lead to large production inefficiencies especially in agriculture.</p> <p>On the whole, universal food subsidies are rarely progressive. Median targeting performance is 0.93, ranging from medians 0.6 to 1.0 for top and bottom five, implying cost ratios of \$3.30 and \$5.00 to \$3.00, respectively. So usually seen as stopgap measures until more efficient transfer mechanisms developed.</p>
<i>Ration food subsidies</i>	<p>Subsidy of a commodity available to households but in limited amounts.</p> <p>Can be universally available as above, but typically are targeted using combination of means or proxy-means tests or categorical (e.g., geographic, household size) methods.</p>	<p>As with cash transfers, income effects can lead to multiplier effects through asset accumulation when households are liquidity constrained.</p> <p>To the extent that food consumption helps improve nutritional status, future labor productivities and income are enhanced.</p> <p>Households can switch to subsidized commodities when income decreases. Subsidies and ration levels can be increased in response to national economic shocks.</p>	<p>Rationing at low levels avoids inefficiencies arising from substitution effects. Focusing only on leakage to nonpoor, median targeting performance is 1.3, with medians for top and bottom five of 1.0 and 1.6, implying cost ratios of \$2.40, ranging from \$2.90 to \$1.90, respectively.</p> <p>When rations administratively targeted, ability to address vulnerability efficiently depends on how flexible eligibility rules are and how targeting criteria can be adjusted to identify “new poor” precisely. But administrative targeting is usually not flexible enough to adapt easily to crisis situations. However, greater reliance on self-selection and geographic targeting may help.</p>

Intervention type	Description	What do they do?	How do they perform?
<i>Public works</i>	<p>Employment at low-wage on programs that enhance community assets. (Public works tend to emphasize the former.)</p> <p>The requirement to work is also often seen as something being individually and socially desirable.</p> <p>Targeting based on self-selection (by willingness to accept low wage) and geographic targeting through program placement in poor areas.</p> <p>In the absence of low wage, rationing of jobs often based on categorical methods (gender, age, etc.).</p>	<p>Future income streams from community assets can help address issue of persistent poverty.</p> <p>Higher current income from wages helps to protect nutritional and health status and thus future incomes.</p> <p>Seen as effective way of addressing vulnerability. Households can self-select in when hit with adverse income shock (except in case of disability and poor health). Programs can expand in times of local, regional, or national crises. Assets themselves can help to stabilize incomes (e.g., irrigation and road programs).</p>	<p>To be cost-effective at increasing current income of poor, programs should be very labor-intensive, use low wages, be located in poor areas, and be flexible in terms of employment rules. This restricts outputs that can be sensibly produced.</p> <p>Can be a strong trade-off between asset creation and cost-effectiveness at decreasing current poverty. Perform better when communities participate in selecting assets and managing program.</p> <p>Focusing on wages, median targeting performance is 1.85, ranging from 1.5 to 4 for best and worst. These imply cost ratios of \$1.60, ranging from \$1.25 to \$2.00. Forgone earnings found to account for between 25 and 50 percent of wage transfers; using lower bound, this increases median cost ratio to \$2.18. Similarly for non-wage costs, if these are (a low) 20 percent of total project costs, then these increase cost ratio to \$3.2. So it is important to create assets valued by community. Community involvement is important to increasing overall effectiveness.</p> <p>To be effective at addressing vulnerability, programs need to be able to expand to meet demand during local or regional downturns, again suggesting labor-intensive programs.</p> <p>Most effective in crisis situations (e.g., natural or man-made disasters) where there is a need to build-up community assets and very low current demand for labor.</p> <p>Evidence needed on valuing benefits due to increased consumption smoothing opportunities and potential for increasing unskilled wages.</p>
<i>Social funds</i>	<p>Funds distributed to communities subject to project approval. (Projects involve construction or maintenance of community assets, with emphasis on gains from asset creation rather than from employment). Often involves communities providing matching funds.</p> <p>Demand-driven in sense that communities must submit proposal.</p> <p>Geographic targeting and actively encouraging proposals from poor communities often used.</p>	<p>Focus on creating valuable community assets (e.g., construction and maintenance of health clinics, schools, and community infrastructure) helps build up asset base of poor.</p> <p>Where emphasis is on asset, then unlikely to be suitable for addressing vulnerability, although some assets themselves can help to stabilize incomes (e.g., irrigation and road programs).</p> <p>Need to develop projects and bid for funds means that project access or expansion usually not flexible enough to expand to include new poor during crisis.</p>	<p>For large poverty impact, projects need to be located in poor areas. Median targeting performance of 1.2, ranging from 1.07 to 1.05 (medians of top and bottom three). Imply cost ratios of \$2.75, ranging from \$2.40 to \$2.80. But relatively high non-wage costs will increase cost ratio substantially (to \$3.6 for non-wage costs of 30 percent).</p> <p>Effective geographic targeting of poor areas requires resources to be devoted to aiding the poorest communities to develop projects, bid for funds, and develop management capabilities.</p>

Intervention type	Description	What do they do?	How do they perform?
<i>Human capital subsidies</i>	<p>Transfers to households conditioned on investment in human capital of children (i.e., through school enrollment and preventive health checks).</p> <p>Combination of individual and categorical targeting methods.</p>	<p>Improved nutrition, health, and education status helps break the intra- and intergenerational transmission of poverty and facilitates future participation in development process.</p> <p>Improved human capital can result in more stable income flows.</p>	<p>Attraction is that they can simultaneously address current poverty and structural poverty in medium to long run.</p> <p>But approach to targeting needs to address the issue of entry and exit. Effectiveness at addressing vulnerability depends on how flexible eligibility rules are and how targeting criteria can be adjusted to identify “new poor” precisely.</p> <p>Overall design of programs needs to reflect local context (e.g., quality of supply side, education/health profiles, capacity to implement and monitor, potential role for community actors).</p>

Note: Targeting performance is measured as the ratio of the proportion of transfer going to the poor to what they would receive without targeting. Cost ratios are the budget cost of getting \$1 into the hands of the poor. These numbers are taken from Coady, Grosh, and Hoddinott (2002).

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