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**REACHING THE RURAL POOR  
THROUGH PUBLIC EMPLOYMENT***Arguments, Evidence, and Lessons  
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*With the limited set of policy instruments typically available in the rural sectors of developing countries, imperfect coverage of the poor and leakage to the nonpoor must be expected from even the most well-intentioned poverty alleviation scheme. One way to reach the poor more effectively is to build incentives for self-selection into the scheme. Labor-intensive rural public works projects have the potential to reach and protect the poor, as well as to create and maintain rural infrastructure. The limited evidence for South Asia suggests that few nonpoor persons want to participate, and that both direct and indirect transfer and stabilization benefits to the poor can be sizable. These benefits can, however, be rapidly dissipated by a badly conceived and executed project; the details of how projects are selected, designed, and financed are crucial to success in both the short and the long run.*

**U**nder the right conditions, economic growth can be a powerful weapon against absolute poverty. But the initial conditions are often less than ideal, and the fruits of growth are often less than equitable. It may therefore take a long time to bring the poorest up to adequate consumption levels. Many governments will want to intervene directly to increase the pace at which poverty is reduced.

But direct interventions to alleviate poverty in the short run may well involve significant costs against other policy objectives: in particular, an unfortunate but real tradeoff between helping today's poor as opposed to tomorrow's poor

(World Bank 1990). The terms of the tradeoff are influenced by the efficiency of the interventions. Different policy options may have different effects on poverty for the same resource cost (or may achieve the same reduction in poverty at different costs).

This article surveys theory and evidence relevant to assessing the scope for reducing poverty through rural employment schemes, financed from public revenues. Such schemes have been used or advocated for centuries, and there is a large literature on them, particularly for South Asia. The aim here is not to survey that literature, but rather to illuminate the underlying analytical arguments and their relevance to policy.

## An Overview of the Policy Problem

This section discusses the objectives and constraints relevant to evaluating schemes for the alleviation of income poverty, giving emphasis to problems with incentives and information that routinely confound attempts to reach the rural poor directly.

### *Objectives*

The desire to alter the distribution of living standards is an important motive for policy intervention. One criterion by which we judge whether that distribution has improved is whether minimal needs of individuals for nutrition and other essential forms of consumption have been met. Our concern here is with a class of policies whose main aim is to raise incomes of the poor rapidly, for which a sacrifice of other social objectives is to be expected.<sup>1</sup> Resources are available to alleviate poverty; how should they be allocated?

In principle, any scheme to alleviate poverty has both *transfer benefits* and *stabilization benefits* for the poor. The transfer benefits can be both direct—the gross benefit to participants less any cost they incur in participating—and indirect—including the share of the poor in the extra income generated by the scheme's outputs, and any other second-round effects on income from other sources. The stabilization benefits arise mainly from the scheme's effect on the risk facing the poor of a decrease in consumption. Plainly, the benefits of any policy that lessens down-side risks of those near the edge of survival must be valued very highly. Both transfer and stabilization benefits should be considered in evaluating these schemes.

In defining objectives and evaluating outcomes we may need to be precise about the meaning, and measurement, of poverty. In some instances, a ranking of the distributions of income before and after a policy reform suffices. The subtleties of measuring poverty would then be irrelevant. But some difficult policy issues rest on assumptions (including ethical value judgments) embodied in various measures of poverty. There is an important distinction between the con-

cern about the prevalence of poverty, as measured by the number or proportion of poor, and about the depth or severity of poverty, which also considers how living standards are distributed below the poverty line. The judgments made about issues of measurement can have bearing on policy choices.

### *Constraints*

We should not underrate either the political or the economic constraints that confront attempts to raise the level or reduce the variability of consumption by the poor. Some of those constraints are obvious, but that does not mean they are easy to assess. The budget constraint is a case in point. The resources employed in a rural public works scheme should ideally be valued at their social opportunity cost—that is, their cost in terms of forgone benefits to society. Market prices need not be a good guide; indeed the impetus for a rural public works scheme is often the existence of involuntary underemployment in lean agricultural seasons, so that market wage rates do not reflect the opportunity cost of the labor employed on the scheme.

Given the potential importance of these schemes for income insurance, the relevant budget constraint should relate to the long-term level of expenditure rather than to current levels in any one year. Year-to-year fluctuations in outlays reflect the scheme's important function in stabilizing the incomes of the poor. In practice, however, even governments can face short-term liquidity constraints, which may inhibit the scheme's performance. Constraints on administrative capability may also arise in dealing with fluctuating outlays.

The constraints on instruments available to policymakers are no less important. The set of policy instruments available for the alleviation of poverty is often quite restricted in developing countries—particularly in rural areas, where the highest concentrations of absolute poverty are generally found (World Bank 1990). Such real world constraints have led some observers to argue that, by one means or another, the benefits of official development programs have gone mainly to the nonpoor, helped by government officials whose own interests are well served by that outcome. (Examples can be found in Hartmann and Boyce 1983, Hirway 1986, Hossain 1985, Drèze 1988, and Drèze and Sen 1989.)

With perfect information on individual earning ability, and a cooperative administrator, one can precisely identify the poor and target transfers accordingly. A means test can then be used to screen the poor from the nonpoor. In these circumstances, there would be no place for a rural public works scheme as part of a strategy to alleviate poverty; it would be more cost-effective simply to give money to the poor than to insist that they forgo other income to obtain relief. The effect on poverty is then constrained only by the available budget.

However, administering a means test is simply not feasible in the rural areas of most developing countries. The cost of obtaining information on individual incomes would be prohibitive; at best, one can hope to identify some

approximate indicators of poverty, such as landlessness or place of residence (Ravallion 1989; Datt and Ravallion 1990; for a survey of the evidence, see Ravallion 1990a). Moreover, the administrative agent's objectives—which need not coincide with those of the policymaker—and efforts at implementation—which may be hard to monitor—entail further constraints.

Thus policymakers must contend with imperfect information both on the true living standards of potential recipients and on the performance of intervening agents. In such circumstances the best course available for redistributive intervention may entail costs for would-be participants that, in a “first-best world” of perfect information and unrestricted policy instruments, would be deadweight losses (Nichols and Zeckhauser 1982, Roberts 1984, Blackorby and Donaldson 1988, Besley and Coate 1988). The following section reviews these arguments.

### *Incentives for Improved Targeting*

One way to improve targeting is to impose costs on would-be participants that vary implicitly as some increasing function of their (unobserved) incomes. A work requirement, for example, imposes the cost of forgone income on participants, and one would expect that cost to be lower for the poor. The level of the gross benefit to participants, however, is generally independent of income (since the policymaker cannot know incomes in this setting). Thus people with incomes above some critical level (which may vary with other personal characteristics) do not want to participate.

The monetary cost of participation should not be too high at low incomes, or the net gains to the poor become so low that it would be more cost-effective simply to make untargeted transfers. Once participation costs to the poor are considered, even a scheme that is very successful in screening the poor may be a less cost-effective way of alleviating poverty than poorly targeted alternatives.<sup>2</sup> That is an empirical question.

The performance of the scheme may also depend on the influence of intervening agents over participation. Discretion in the selection of beneficiaries by local administrators may improve targeting (by exploiting further information on characteristics of desired participants) or worsen it (by allowing agents to extract rents). The outcome is determined by the preferences and incentives facing the agent.

The cost imposed on recipients at any given income level and the discretion given to agents in selecting recipients among those who are willing to incur that cost are thus key variables influencing the scheme's performance. Both can be influenced by policy design.

Two incentives to avoid leakage that can be built into a scheme are (1) a penalty system to deter people from misrepresenting information and (2) work requirements to discourage participation by the nonpoor. Like means testing, effective penalty systems can be costly to administer in developing countries

and are therefore rare. The usefulness of work requirements in screening the poor, however, has long been recognized. The nineteenth-century Poor Law in England used this device, as did the famine relief codes in British India. The information needed from recipients is simply their willingness to work at the wage rate offered. Relief is thus allocated on the basis of the worker's "reservation wage rate"; only those with a reservation wage less than the offered wage will volunteer. For such a scheme to be effective, the correlation between the reservation wage rate and the standard of living of the worker's household must be high enough; if it is too low, it would again be more cost-effective simply to make untargeted transfers.

It is not obvious a priori that such schemes will perform well in reaching the poor. Social stigma might discourage or physical incapacity might debar some from doing the work. Furthermore, some of the nonpoor (with relatively high unearned incomes, for example) might well be willing to participate, and they will probably benefit in other ways, through extra income derived from the assets created, or through underpayment of workers by corrupt managers. Even if the poor are screened well, forgone incomes may be so large as to make alternative policies more cost-effective. Later sections will examine empirical evidence bearing on these issues.

### *Considerations of Political Economy*

Two distinct aspects of the political economy of schemes to alleviate poverty bear directly on policy constraints. First, from casual observation it appears that the generosity of those financing the scheme is influenced by its design and performance. Altruistic donors who know that their money is reaching the poor will probably be more forthcoming; if work requirements make this more likely, they will generate larger budgets. It is also thought that generosity is sometimes stimulated by the knowledge that beneficiaries will have to work for their money and that donors require reassurance that the recipients will not be made so much better off in utility terms that they are discouraged from taking actions that would help them escape poverty in the future (see Besley and Coate 1988).

A second argument applies to donors and supporters whose financial and political support is not altruistic but depends on the benefits they personally derive. Any scheme to alleviate poverty is likely to have benefits for the nonpoor, ranging from direct participation in an imperfectly targeted scheme to benefits from assets created. A public works project, for instance, creates assets whose benefits can be far more widely distributed than the wages of participants. This has been a factor in the political acceptance among the rural rich of Maharashtra's Employment Guarantee Scheme (EGS) (Herring and Edwards 1983). So better targeting can actually be a mixed blessing for the poor—schemes with wider coverage often permit the formation of coalitions that allow greater political support than the poor alone could muster for a targeted

program. Thus targeting may be more cost-effective but less sustainable politically (Besley and Kanbur 1990, Drèze and Sen 1989).

In risky environments, the terms of any tradeoff between cost-effectiveness and political feasibility are likely to favor self-targeting schemes that build in the right of universal coverage—anyone can participate, though not all will want to. For example, incomes can vary considerably over time in economies based on agriculture, and rarely do all move in the same direction, at least over a wide enough area. The set of potential participants in a rural public works scheme may then be far larger than that of actual participants at any one date—and this situation provides a wider base of political support for the scheme as insurance for an uncertain future. A case in point is the employment guarantee of the Maharashtra scheme, which appears to have encouraged effective political solidarity among the state's rural poor and near-poor (Echeverri-Gent 1988). This by no means guarantees political feasibility, but it undoubtedly helps.

### **Do Rural Public Works Schemes Reach the Poor?**

The disappointing performance of targeting that uses readily available indicators of poverty (such as region of residence and landholding class) has motivated interest in self-targeting schemes such as rural public employment.<sup>3</sup> There is, however, surprisingly little useful quantitative evidence on the performance of incentive schemes for self-targeting. Some attempts have been made to quantify the effect of rural public works schemes on poverty, but these have been based on ad hoc assumptions about their performance in screening the poor (see, for example, Narayana, Parikh, and Srinivasan 1988; Parikh and Srinivasan 1989). The following section surveys evidence on the targeting performance of two large schemes in South Asia.

#### *Targeting Performance*

The Maharashtra Employment Guarantee Scheme provides unskilled manual labor on small-scale rural public works projects, such as roads, irrigation facilities, and reforestation. The EGS was introduced during the severe drought of 1970–73 and expanded rapidly to reach average monthly participation of about 500,000 persons over the period 1975–89. In a typical year the scheme provides about 100 million person-days of employment in a state with a rural work force (including cultivators) of about 20 million persons, though we do not know the figure net of displaced employment. Bangladesh's Food for Work Programme (FFWP) was introduced soon after the 1974 famine, although a rural works program had existed since the 1960s. The FFWP has grown considerably since then, providing about 100 million days of labor in 1987–88. The scheme

organizes and pays (in kind) for construction and maintenance of irrigation, drainage, and embankment projects.

There has been much debate about how effectively Maharashtra's EGS has reached the rural landless. Dandekar and Sathe (1980) estimated that the scheme eliminated three-quarters of unemployment among landless or near landless households in 1977–78. Under more conservative assumptions Osmani (1988) argued that the scheme could not have eliminated more than one-third of this group's unemployment. The Planning Commission's report on the EGS (PEO 1980) was critical of the scheme's targeting performance, on the grounds that there was significant participation by small farmers, as well as the landless.

Much of this debate has missed the point. It is the *poor* whom we are trying to reach, not the landless per se. And, although the correlation between poverty and landlessness is high, it is far from perfect (Dandekar and Rath 1971, Sharma 1985, Ravallion 1989). A similar comment applies to the relation between poverty and unemployment (Visaria 1981) and to assessments of regional targeting (Datt and Ravallion 1990). More direct evidence on targeting is needed.

A better test is to compare the distribution of income among participants with that for the rural population as a whole. Despite well-known difficulties in assessing incomes in this context, four surveys that made the attempt can be used to throw light on how well the schemes have performed in reaching the poor. Three are for the EGS; the fourth is for Bangladesh's FFWP.

Dandekar and Sathe (1980) report that 90 percent of workers in their 1978–79 survey of 1,500 EGS participants spread over fifty-six projects were living below the poverty line. (Note that this calculation includes the EGS earnings of participants; the proportion of participants who were poor must have been even higher before the EGS.) There are problems of comparability, but this level of poverty is probably well above the average figure for rural Maharashtra; the same poverty line applied to the 1977–78 Indian National Sample Survey gives a headcount index of 49 percent for rural Maharashtra (Kakwani and Subbarao 1990).

A similar conclusion is suggested by a much smaller but more recent survey of 100 participating households in the EGS during 1985–86, reported in Acharya and Panwalkar (1988). The mean income of participating households was found to be about 20 percent below the poverty line. From this evidence, the EGS would appear to have performed well in reaching the poorest.

Walker and Ryan (1990) and Bhende and others (1990) have studied the targeting performance of the EGS using household-level data over five years, 1979–83, for two Maharashtra villages. Their results suggest that the scheme is well targeted; days of participation on EGS decrease rapidly with increases in wealth, and participation is higher in the poorer of the two villages. The program effectively screens the poor, particularly in the richer village, where the potential losses from leakage are larger.

The FFWP data come from a 1982 household survey in the neighborhood of various project sites by the Bangladesh Institute of Development Studies (BIDS) and the International Food Policy Research Institute (IFPRI), as part of an evaluation of the scheme (Ahmed and others 1985). The BIDS-IFPRI survey was comprehensive, covering thirty-one sites scattered over Bangladesh. When augmented with other recent data, this survey allows a more robust test of screening performance.

The test involves comparing the entire distribution of income among the BIDS-IFPRI sample of participants (before participation) with the distribution for rural areas as a whole, which can be estimated from independent sample surveys done by the Bangladesh Bureau of Statistics.<sup>4</sup>

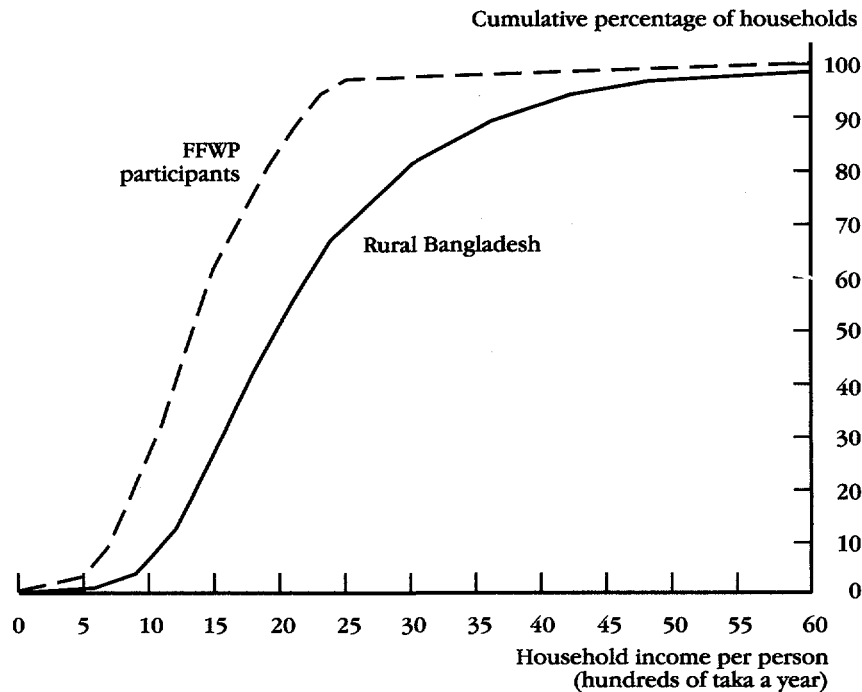
Figure 1 gives the cumulative distributions of income from both surveys. We find that the scheme is quite effectively targeted toward the rural poor. For example, whereas 25 percent of rural households had an annual income per capita less than 1,500 taka in 1981-82, this was true of 60 percent of the households with FFWP participants. Virtually all (96 percent) of FFWP participants in the sample had a household income per capita below 2,500 taka a year, for which 70 percent of the rural population would be deemed poor. But, no matter where one draws the poverty line, FFWP participants came from poorer households than the rural population as a whole. Furthermore, it can be shown that a wide range of measures of poverty would improve (Ravallion 1990a). Days of employment are even better targeted toward the poorest of the poor than is participation; 70 percent of FFWP employment went to the 25 percent of rural households with an income per capita less than 1,500 taka (Ravallion 1990a).

### *Forgone Income*

The surveys suggest that the schemes' performance in screening poor from nonpoor is good. The net income gains to participating households are more difficult to measure. Forgone income is the main cost involved (the monetary cost of transport to the site is probably negligible). This is likely to be highly seasonal and also to vary from year to year and across households. In a single-crop agricultural economy, the income forgone in the slack season is probably small. In casual discussions with a number of groups of EGS workers in the Pune district of Maharashtra during a slack agricultural season (May 1990), I raised the question, "If you did not have this EGS work, could you have obtained any other work?" Most answered that little or no work was available, but on further probing it became clear that many would have searched and, in time, found something. For example, some work was known to be available in digging and trucking sand for private contractors. The women were clearly more pessimistic about their prospects. Nonetheless, even in a slack season, it should not be assumed that forgone income is zero. What can we learn from the earlier surveys that might throw further light on the magnitude of forgone income?



**Figure 1. Income Distribution for FFWP Participants and Rural Population as a Whole, Bangladesh, 1981-82**



Note: FFWP is the Food for Work Programme.

Source: Osmani and Chowdhury 1983, BBS 1986.

Neither Dandekar and Sathe (1980) nor the further results in Dandekar (1983) reveal much about the extent of forgone income in their survey of EGS participants. The surveys by Acharya and Panwalkar (1988) give a better indication. They studied two samples of 100 households each, one of which comprised households with EGS participants spread over ten villages, whereas the other, although drawn from the same classes of landless and marginal farmers as the EGS households, covered ten villages where the scheme had not operated. Calculated from their reported results, the difference in mean income between the two samples represented 53 percent of the mean (gross) income from EGS participation. This suggests that average forgone income accounts for about half of the average wages received. However, this probably overestimates forgone income, to the extent that the participant sample was self-selected disproportionately from among the poor.

For the Bangladesh scheme, the BIDS-IFPRI survey indicates that the primary cost to participants arose from a shift from self-employment, both on and off the farm, rather than from wage labor. Still, the forgone income was not negligible. A comparison of the incomes of FFWP participants with those of a

control group, adjusted for differences in their pre-FFWP incomes, indicates that the net income gain to participants was 57 percent of their gross earnings from the scheme (see Ravallion 1990a).

### *Transfer Efficiency*

Cost-effectiveness in reaching the poor is also determined by the share of the wage bill in total costs. The wage bill for the EGS has typically represented 70 to 80 percent of the government's total outlays on the scheme, declining somewhat over recent years to its present level of about 60 percent. Similarly, for Bangladesh's FFWP about 70 percent of the food aid used to finance the scheme was disbursed to participating workers (Ahmed and others 1985).

From these various calculations on the two South Asian schemes, a crude assessment can be derived of the efficiency with which rural public works schemes transfer income directly to the poor. The available evidence on screening performance warrants the assumption that virtually all participants are poor. The gross transfer to the poor is then the wage share of the scheme's cost, which I shall assume is in the range of 60 to 70 percent. According to the calculation for the EGS and Bangladesh's FFWP, the direct gain to participants net of forgone earnings is about 50 to 60 percent of the wages received. Thus the direct income gain to the poor under these conditions is 30 to 40 percent of the government's disbursement on the scheme. This is only a rough indication, and there is probably a wide variation around this figure in practice. In slack agricultural seasons and bad years, when forgone income is smaller, it would not be unreasonable to assume that at least half of the government's disbursement went directly to the poor.

### **Other Benefits**

In assessing cost-effectiveness of the direct transfer benefit, one must also consider any indirect benefits (arising through the assets created or effects on markets) and risk benefits to the poor.

### *Second-Round Effects*

Assessments differ as to how valuable the assets created by these schemes have been to the poor. Investment in basic rural infrastructure is widely thought to have a high economic rate of return in developing economies, through increased agricultural output (Antle 1983; Hazell, Khandker, and Singh 1989; Binswanger 1989; Binswanger, Khandker, and Rosenzweig 1989). The key issues are, jointly, the extent to which that return is realized by the infrastructure actually created by rural public works schemes whose prime objective is to alleviate poverty and the extent to which the poor have shared in those benefits.

Material effects on output arising from the assets created by Bangladesh's FFWP have been observed (Ahmed and others 1985; Chowdhury and Asaduzzaman 1983; also see Ahmed and Hossain 1987), and sizable gains in output have been reported for the irrigation works created by the EGS (see PEO 1980). But other observers have been more pessimistic about the rate of return to food for work projects: see, for example, Reutlinger (1984) and World Bank (1986). The second-round effects on income arising from the assets created have clearly varied greatly. The principal problems for most projects appear to involve issues of policy design, particularly restrictions on nonlabor inputs. These issues are discussed later.

Our main interest here is in the share of project outputs that has gone to the poor. A common criticism of the rural "public" works schemes in India is that the assets created have often been "privatized," with benefits going to the rural nonpoor without charge (Dandekar and Sathe 1980, PEO 1980). The enforcement of any form of cost recovery is notoriously difficult in this setting.

The literature cited above and my recent discussions with EGS officials and benefiting farmers suggest that, provided care is taken in selecting and designing projects, it is feasible to generate economic benefits (by even distributionally neutral assessments) sufficient to cover short-run variable costs. Far less clear is how much the poor share in those benefits, either directly or through cost recovery. An optimistic view would be that benefits are uniformly distributed so that the share going to the poor is simply proportionate to the population that is poor.

Such a view would imply substantial indirect transfer benefits; for example, if 40 percent of the population deriving benefits from the scheme is poor, then the indirect transfer benefit would be as large as the direct transfer benefit roughly estimated in the preceding section.

The effect of rural public works schemes on agricultural labor markets and tenancy contracts is an important but relatively unexplored issue. There have been studies of the general equilibrium effects of poverty alleviation schemes in this setting, but the models used have not included a labor market (see, for example, Parikh and Srinivasan 1989). The transfer benefits from a rural public works project include any effects on wages and other earnings from alternative activities. Time series evidence for India suggests that increases in the real agricultural wage rate generally reduce poverty (van de Walle 1985). Some simple simulations for plausible assumptions on relevant parameters suggest that multiplier effects on incomes of the poor arising through labor market responses could easily double the direct transfer benefit (Ravallion 1987 and forthcoming).

There is a pervasive impression that the principal schemes discussed have pushed agricultural wages up. Osmani and Chowdhury (1983) report this effect for the Bangladesh scheme, and it is widely believed that the EGS wage rate has influenced the agricultural wage rate in Maharashtra. The guarantee makes the EGS wage a credible threat in bargaining over agricultural wages. Indeed, an effective guarantee can enable enforcement of a minimum wage rate in

agriculture. However, if the wage rate is set too high, and work has to be rationed, then there may be little impact on agricultural wages. There is evidence that this has been happening on the EGS in recent years (Ravallion, Datt, and Chaudhuri 1990).

It is sometimes argued that such schemes should not be allowed to compete with existing employment opportunities, because this distorts market allocations. The economics of this argument needs to be looked at carefully. Avoiding new distortions to existing labor markets is imperative only if those markets (and, indeed, all other markets) were functioning efficiently before the policy intervention and if better policy instruments were available for achieving distributional objectives. Neither condition is plausible in this setting. A well-functioning public works scheme can make a positive contribution to both efficiency and equity by reducing existing noncompetitive features in rural labor markets. Alternative income sources (such as public employment) can help break down the exploitative labor relations at the village level—discriminatory wage rate differentials, such as between men and women, between migrants and local workers, and across caste divisions—that arise from monopsonistic power of large landowners (PEO 1980, Dandekar 1983, Binswanger and others 1984, Subbarao 1989). Nor is the displacement of other employment sources necessarily a bad thing for the efficiency of transfers, since the transfer benefit to the poor depends on the gain in their earnings, not just their employment. The relevant economic comparison to make here is with the alternative forms of policy intervention, rather than the economy's first-best equilibrium. If labor market responses allow higher transfer benefits to the poor for the same social cost, this is a more efficient policy.

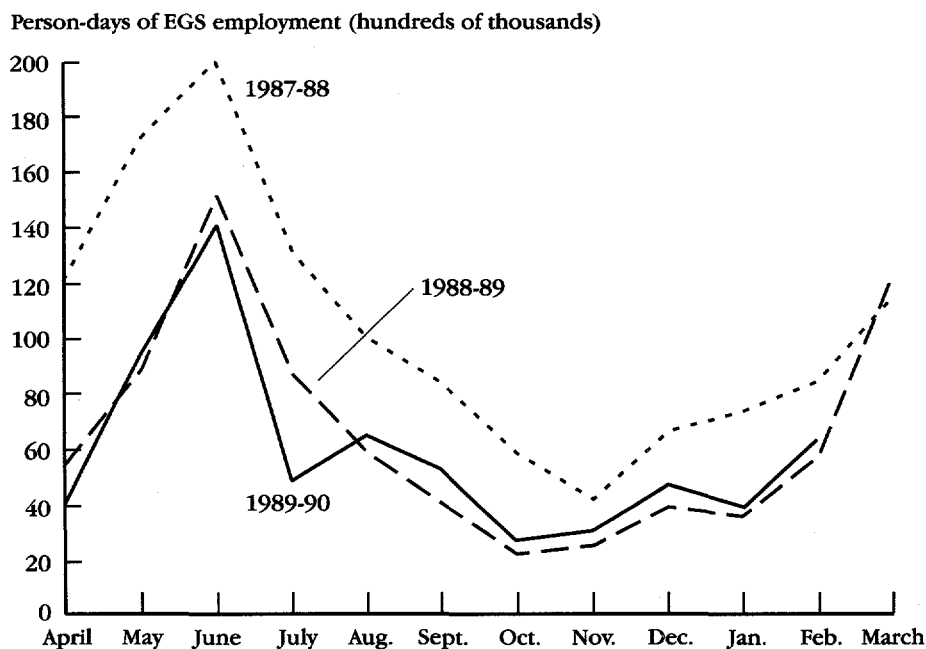
### *Stabilization Benefits*

A misgiving frequently expressed is that a public scheme may displace existing private and (nongovernmental) social insurance arrangements. The poor may find that family or community-based support at the village level declines after the introduction of rural public works providing employment in the lean season. To the extent that the existing risk-sharing arrangements work well, this would be worrying. But there are reasons to suspect that they do not. Casual observations suggest that savings by the poor are often insufficient to cope with even seemingly small deviations from normal seasonality or with more than one or two bad years in a row. The poor typically face restricted access to formal credit. Social insurance arrangements are thought to be important in the traditional rural societies of South Asia and elsewhere (Platteau 1988, Ravallion and Dearden 1988, Cox and Jimenez 1990). These institutions are plausible outcomes of repeated interaction among households in risky environments, but they can be expected to cope well only under certain circumstances (Coate and Ravallion 1989). For example, if those involved discount future gains from reciprocity at sufficiently high rates, they will defect.

Discount rates have been found to be high in dryland areas of rural India (Pender and Walker 1989), and they undoubtedly increase during hard times. Nor is there much scope for sharing risks that are highly correlated across households, as is common at the village level.

The stabilization benefits of public employment schemes can thus be very important in risky agricultural settings. Rural public works have had a long and generally successful history as an instrument of seasonal stabilization and famine relief in India (see, for example, Jodha 1978; Lieberman 1985; Walker, Singh, and Asokan 1986; Drèze 1988; Drèze and Sen 1989). Walker and others (1986), for example, estimate that income streams in landless agricultural households in two villages where the EGS operated were 50 percent less variable (as measured by the coefficient of variation) than in a third village in an agro-climatically similar region where no such scheme existed. EGS employment peaks each year in the dry summer period (March to June), when there is little other employment, and declines rapidly afterward. Participation also fluctuates from year to year, depending in large part on the vagaries of the preceding year's monsoon. Recent data on EGS employment by month, based on unpublished records generously supplied by the Planning Department of the govern-

**Figure 2. Monthly Employment on Maharashtra's EGS, 1987-90**



Note: EGS is the Employment Guarantee Scheme.

Source: Unpublished data supplied by the government of Maharashtra.

ment of Maharashtra, are given in figure 2. The higher participation of 1987 reflects the monsoon failure: as in the earlier drought of 1972–73 (Drèze forthcoming), the provision of public employment was crucial in the successful relief effort following the severe drought experienced in much of central and western India, including Maharashtra, in 1987 (Government of India 1989).

From what we now know about the famine in Bangladesh during 1974, it is evident that if an effective rural public works scheme had existed, a great many people could have been saved from starvation and impoverishment (Ravallion 1987). The FFWP helped Bangladesh avoid famine in 1988, when conditions were not unlike those of 1974. Even in “normal” years, demand for Bangladesh’s current works programs is quite seasonal, with probable stabilization benefits.

Income stabilization through relief work can also bring long-term gains. The poor must often save in the form of cash or other suitably liquid assets to insure against down-side risk. The cropping decisions of marginal farmers are undoubtedly also influenced by uninsurable risks. It can be argued that productive capital formation is constrained by the opportunities for insurance. If the poor know that extra employment will be available in lean seasons, or if misfortune strikes, they may be expected to save in more productive ways from their peak period incomes.

The costs to the poor of certain coping mechanisms, such as indebtedness and distress sales of land, are also of concern. Extra income at a crucial time may well save a household from a far more costly adjustment. For example, Cain and Lieberman (1983) find that, whereas the volume of land sales is highly correlated with the incidence of famines in a Bangladesh village, no such correlation exists in the Indian villages they studied. Access to relief work (including the EGS) appears to have allowed many of the poor in the Indian villages to avoid this very costly form of adjustment.

## Design and Financing

Within the long-term budget constraint, a number of details of the design and financing of projects influence the scheme’s cost-effectiveness in alleviating poverty.

### *Design*

**WAGE RATES AND COVERAGE.** For a given long-term budget, the choice is between a scheme that aims for wide coverage at potentially low wage rates and one that rations participation at a wage rate sufficient to allow more participants to escape poverty. The choice depends in part on value judgments made in measuring poverty (Basu 1981). Elsewhere I have derived conditions for ranking stylized policy alternatives in terms of a broad class of poverty mea-

tures (Ravallion 1990b). When the *severity* of aggregate poverty is the primary concern, wide coverage at low wage rates appears preferable. This can hold even when the administrative cost per worker is quite high (although if that cost is very high, limitations on coverage become desirable).

There are other arguments that support wide coverage. When eligibility for participation is universal—an aim of the EGS—the scheme provides effective insurance against income poverty for all of those able to work. Provided the wage rate is set appropriately, seasonal rationing of work should be unnecessary. Wide coverage probably also reduces corruption by limiting managerial discretion in selecting beneficiaries.

The case for wide coverage assumes that the policymaker can control the average wage rate on the scheme, so as to allow it to adjust to the long-term budget constraint. But in circumstances in which the wage rate is predetermined, employment cannot be guaranteed without losing control of the scheme's aggregate cost and so potentially violating budget constraints. The tradeoffs against poverty alleviation through economic growth may then become unfavorable. Such concerns have arisen about the substantially higher statutory minimum wage rates applied to Maharashtra's EGS since mid-1988 (World Bank 1989, Subbarao 1989). Good monsoons since then have helped keep participation and, hence, cost down. However, there are also signs that demand for work was unfulfilled after the wage increase; some of the poor gained but others lost (Ravallion, Datt, and Chaudhuri 1990).

**WAGE SCHEDULES.** A notable feature of Maharashtra's EGS has been its success in attaining a rate of women's participation roughly equal to that of men. Several things have contributed to this outcome: sites are generally within easy reach of the village, and child care is provided (typically employing an elderly woman from among the participants). But an important factor has been that wage schedules are nondiscriminatory—piece rates for any given job are independent of gender (although differences in the type of work done can still lead to wage differentials).

The choice between piece rates and time rates can also influence the scheme's performance. The use of piece rates can provide a powerful incentive for on-site efficiency. However, if time rates prevail elsewhere (and they are common in many lean-season agricultural operations) and are not sufficiently flexible, piece rates on rural public works may attract the more productive workers out of alternative activities, adding to the social opportunity cost of the scheme. And a piece rate system can yield very low wages to relatively unproductive but very needy persons. Some combination of time rates and piece rates may provide a better wage schedule.

**PROJECTS.** The accessibility of project sites as well as wage rates will influence the scheme's performance. If local administrative capabilities are adequate and population densities are not too low, it should be feasible to provide

employment within walking distance of home for most of those in need. This has generally been the case for EGS projects—overnight camping is uncommon. However, there will be circumstances when it is not cost-effective (from the point of view of alleviating poverty) to insist on satisfying the demand for employment close to home. Administrative costs and the propensity of the poor to migrate should also be considered.

The desire to help the poor directly has influenced other aspects of project selection and design. Projects and their production inputs have generally been chosen to maximize the employment of unskilled labor, often driving the quantities of other inputs (tools, raw materials, and so on) down to levels at which substitution possibilities with labor seem negligible. To ensure high labor intensity, policymakers have often restricted nonlabor inputs. For example, the EGS constraint that the cost of labor should account for at least 60 percent of the cost of variable inputs has often been binding in the selection of projects. Similar constraints (on the monetization of food aid) have been applied to Bangladesh's FFWP.

Are such restrictions consistent with the objective of alleviating poverty? As already noted, it is the income gain to the poor, rather than the gain in participants' employment, that directly determines the scheme's effect on poverty. Ignoring risk benefits, the objective of alleviating poverty is served by maximizing the transfer benefit to the poor, subject to the budget constraint; the transfer benefit comprises the increment to wage earnings of the poor plus the value of any benefits that the poor derive from the project's output, whereas the budget constraint equates net outlays on wages, materials, tools, and administration to the scheme's revenue plus the share of benefits from the output accruing to third parties that can be recouped by the government (through, for example, user charges).

Only under special conditions would the best combination of inputs for solving this policy problem coincide with a conventional cost-minimizing allocation. The distribution of benefits from the scheme would not matter to the latter, and so (under competitive conditions) inputs will be chosen in such a way that their marginal value product is equated with their prices. The optimal labor intensity for alleviating poverty will generally exceed the level that would obtain under conditions of perfect competition.

Yet the argument for driving labor input up to its technologically feasible maximum is questionable. Optimal labor intensity depends on the ability of the scheme to attract only the poor, the benefits the poor can obtain from the scheme's output, and the extent to which income gains of the nonpoor from the project can be recouped. The case for simply maximizing the scheme's employment, subject only to the technological constraint that at least something can be produced, rests heavily on an assumption that *all* benefits from the scheme's outputs accrue to the nonpoor, with the poor gaining nothing beyond the wages and the government being unable to capture any of the gains in output. Much of the direct wage benefit of these schemes does appear to go to the



poor and much of the nonwage benefit to the nonpoor, but it is hard to believe that this fully characterizes the possible outcomes, and that efforts cannot be made to increase nonwage benefits to the poor.

Social returns to the assets created can also be enhanced by ensuring that projects are well integrated into existing rural development plans. Projects designed largely for immediate alleviation of poverty can often be coordinated with local and regional development plans. An example is Maharashtra's new scheme, Rural Development through Labour Force, an offshoot of the EGS that encourages local, village-level participation in formulating labor-intensive development plans, including specific EGS projects. Again, administrative capabilities may be the binding constraint in other applications.

### *Financing*

Financing is necessary because much of the benefit to the nonpoor from rural public works—such as increased crop yields from irrigation projects, or insurance benefits—is difficult to recoup. In any case it is unreasonable to require a poverty alleviation scheme to cover its costs.

Rural public works, like other public programs, can be financed either through changes in current taxes or expenditures or by borrowing; the method selected influences the success of a scheme. The same problems that make other forms of direct targeting a fairly blunt instrument for alleviating poverty also make it difficult to avoid having the poor bear some of the cost of financing. The poor may pay some of the direct cost of financing if, for instance, the scheme is funded through a tax increase, or they may suffer in the longer term through effects of the method of financing on growth.

Cuts in other spending programs from which the poor benefit, or increases in relevant taxes, obviously diminish the gains to the poor. Nonetheless, the scheme can still be effective; for example, a public employment scheme that successfully reaches the poor can still reduce poverty even if partly financed by the poor, such as if other, less effective programs for alleviating poverty are cut (Ravallion forthcoming). Long-run effects on the poor of financing through borrowing are rightly of concern; excessive debt can have adverse effects on growth and (probably) the future alleviation of poverty. The creation of assets by these schemes ameliorates such effects: plainly, if the scheme can create assets with a rate of return similar to that obtainable elsewhere in the economy, the cost will be small (Parikh and Srinivasan 1989).

The methods used to finance the EGS and FFWP do not seem to have encountered the pitfalls just discussed. The \$100 million cost of Maharashtra's EGS in a typical year has been financed largely by special taxes (income taxes on urban professionals, sales taxes, and a surcharge on irrigated land) and partly by general revenue. The immediate incidence of the cost of financing has probably been heaviest on the urban nonpoor (Abraham 1980, Herring and Edwards 1983). There is little obvious sign of adverse incentive effects in Maharashtra's

booming urban sectors. Bangladesh's FFWP has been financed largely from food aid; the poor have almost certainly borne some of that cost, although less than one might expect given that the main alternative channels for disbursing food aid in Bangladesh—under various food rationing schemes—appear to have largely benefited urban areas and not even gone proportionately to the urban poor (Abdulla and Murshid 1986 and an internal World Bank report). Diverting food aid out of the existing food subsidy schemes into the FFWP is likely to help alleviate poverty in Bangladesh.

## Conclusions

The difficulty of designing cost-effective poverty alleviation policies when information is highly imperfect may well be as daunting as the political constraints on implementation. Means-tested transfers are rarely feasible in rural areas of developing countries. Experience with direct intervention suggests that corruption and other forms of leakage to the nonpoor can increase the cost of a given reduction in poverty now, thereby also diminishing the scope for alleviating poverty in the future through growth. Some of the poor will simply not be reached, and leakage of benefits to the nonpoor is unavoidable.

One way to reach the poor is to build incentives into the scheme that encourage their participation and discourage that of the nonpoor. Work requirements are an example. The wage rate that a worker will accept is likely to be positively correlated with income, so that a work requirement at an appropriate wage rate will screen the poor. Provided that forgone income, or other costs of participation, is not too high for the poor, self-selecting schemes based on work requirements are more cost-effective than alternatives. That is an empirical question.

Evidence on the targeting performance of rural public works can be obtained from surveys of participants, but unfortunately past surveys have often focused on imperfect correlates of targeting performance, such as the proportion of direct benefits going to the rural landless. A better method is to ask whether participants were initially poorer than the population as a whole. Surveys that do allow us to focus on this question suggest that far more of the participating workers in both Maharashtra's Employment Guarantee Scheme and Bangladesh's Food for Work Programme came from low-income households than one would expect in a random drawing from the rural population as a whole. For example, my estimate for the Bangladesh scheme is that 60 percent of participants come from the poorest quarter of rural households. Virtually all participants would be considered poor by conventional local norms.

The literature affords surprisingly little evidence from which to measure the forgone incomes of participants. My estimates from past income surveys suggest that the immediate net income gain is about half of the gross wage payment, although there are reasons to suspect that this may overstate forgone

income. The true figure is likely to vary substantially according to the season and the gender of the participant. Further research is needed to assess how much the seemingly excellent screening performance of such schemes is diluted by the costs of participation facing the poor.

The indirect benefits are also hard to quantify. Even ignoring any benefits that the poor may derive from the assets created, the total benefit to the poor is probably larger than the direct transfer, once second-round effects on agricultural labor markets and tenancy contracts are taken into account. Some displacement of alternative employment is probably unavoidable and may be a positive part of the economic adjustments generating indirect transfers to the poor.

Risk benefits can also be substantial in less developed agrarian settings. There is ample evidence from South Asia that relief work can save the rural poor from the potentially disastrous effects of a sudden contraction in real incomes from other sources. This can save lives and can also prevent costly forms of adjustment, such as the sale of assets. The extra insurance provided may also encourage more productive investment.

Rural public employment is not equally effective in alleviating poverty in all circumstances. Certain subgroups of the poor may be unwilling or unable to participate. Such subgroups, however, might often be identified by relatively nonmanipulable indicators, such as old age or physical disability, and so may be reached by other means (Drèze and Sen 1989). The combination of an employment scheme and direct transfers to the unemployable often provides a comprehensive safety net for the rural poor.

A relief work scheme should not be allowed to expand indefinitely. The scheme is likely to yield decreasing marginal benefits; the least poor tend to be the last to participate. And marginal costs to other objectives probably increase. An optimal size, then, will exist, and this could be reached well before income poverty is eliminated by the scheme.

We should be wary of some of the rules of thumb that have been suggested to guide the design of these schemes. For example, once the full range of potential benefits is considered, the most cost-effective scheme is unlikely to be the one that simply minimizes the forgone income of participants, such as by employing only the unemployed. Nor is it likely to be the scheme with the best targeting performance, narrowly defined as the proportion of direct participants who are poor. Maximizing employment of unskilled labor is also likely to provide a misleading guide to the selection of projects and their implementation, in that it is not generally consistent with the maximum reduction in poverty for a given resource cost.

One simple principle for policy design does seem to have a lot going for it: to aim for wide coverage at a wage rate consistent with the long-term budget. To target initial benefits to the poorest, to exploit the insurance benefits to all of the poor, and to undercut some of the possibilities for their exploitation on the project site and in labor markets, there should be as few restrictions

on eligibility as feasible, and wage schedules and the rights of participants should be well defined, well known, and nondiscriminatory. Ideally, all who want work at the going wage rate should be able to get it. The choice of that wage rate depends on the socially optimal budgetary allocation to the scheme, which should be determined by weighing the marginal benefits of alleviating present poverty against the marginal costs to other objectives of public policy, including the alleviation of expected future poverty.

## Notes

Martin Ravallion is a senior economist in the Population and Human Resources Department of the World Bank. This article was written while he was in the Bank's Agriculture and Rural Development Department. He is grateful to Harold Alderman, Jock Anderson, Steven Coate, Gaurav Datt, Jean Drèze, Monika Huppi, Ravi Kanbur, Kalanidhi Subbarao, Dominique van de Walle, and Tom Walker for their helpful comments on the article.

1. I assume throughout that the goal of such policies is to raise the consumption levels of the poor by raising their incomes. This assumption is common, but not uncontested. The assumption ignores the preferences of the poor about leisure or, more generally, the allocation of time. For example, a previously idle person who takes up employment on rural public works may be only slightly better off in terms of utility (allowing for the loss of leisure), but much better off in terms of income. Here I am concerned only with the latter.

2. The working version of this article gives a diagrammatic demonstration of how a perfectly targeted scheme can be less cost-effective than an untargeted one (Ravallion 1990a).

3. Space limitations prohibit detailed discussion of policies other than rural public employment. The working version of this paper surveys evidence on the main policy alternatives in South Asia (Ravallion 1990a).

4. See Osmani and Chowdhury (1983) and BBS (1986). There are problems of comparability, though they are likely to lead to underestimation of the scheme's targeting performance; see Ravallion (1990a) for a detailed discussion.

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