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Decentralized targeting of an antipoverty program

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Abstract

Developing country governments often delegate authority over the targeting of antipoverty programs to community organizations, while retaining control over how much goes to each community. We offer a theoretical characterization of the information structure in such programs and the interconnected behavior of the various players. Our model motivates an econometric specification for explaining distributional outcomes. Results for Bangladesh's Food-for-Education (FFE) Program indicate that within-village targeting improved with program size, lower land inequality, less remoteness, fewer shocks, and less private redistribution. There is no sign that the center took account of village attributes conducive to reaching the poor.

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1. Introduction

It is common for central governments in developing countries to delegate the task of choosing the beneficiaries of poverty reduction programs to local (governmental or nongovernmental) organizations. Proponents of such decentralized targeting have claimed that more information is available at local level about who is poor than at

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the center, and that local institutions tend to be more accountable to local people, and hence have an incentive to use the locally available information to improve program performance.

The claim that more information is available locally is plausible, and there is some supportive evidence (Alderman, 2002). However, it is more contentious that local institutions in developing countries are more accountable to the poor. The accountability argument is persuasive in settings in which there is little or no distributional conflict at local level; for example, Seabright (1996) develops the accountability argument for decentralization in the context of a model of locally homogeneous communities. This is often assumed to be the case in developed countries with seemingly low costs of inter-jurisdictional mobility.[1]

However, the assumptions of homogeneous local communities and free mobility are implausible in many settings in which decentralization has been popular, including underdeveloped rural economies in which the risk of capture by local elites must be taken seriously.[2] This will depend on the type of spending being decentralized. When it is public spending on a private (excludable) good targeted to the poor, and there is no self-targeting mechanism to assure that only the poor want to participate, there would appear to be ample scope for program capture. Thus one can posit a trade off between the informational advantage of community-based targeting and an accountability disadvantage, given local inequality. The theoretical case for decentralization will then depend critically on the extent of local program capture by the nonpoor (Bardhan and Mookherjee, 2000).

What does the evidence suggest? There is anecdotal evidence of local capture of development projects. An example is provided by Hartmann and Boyce (1983) in their description of how rich local farmers in Bangladesh were able to capture a publicly provided (World Bank funded) local irrigation facility intended for poor farmers. Also writing about rural Bangladesh, Un Nabi (1999) describes how the rich (the “matabbari”) tend to dominate the local power structure; they tend to be the first people consulted when a development program is undertaken in the community.

Concerns about local capture have sometimes influenced the design of antipoverty programs; for example, Tendler (1997) describes how drought-relief operations in the state of Ceará in Brazil included requirements for broad local participation in allocating relief efforts. Similarly, the relative success of decentralized government in the state of Karnataka in India has been attributed to the effective system of democratic accountability (Crook and Manor, 1998).

Such observations warn against assuming homogeneous local communities, and point to accountability concerns about decentralizing the power to decide who gets help from an antipoverty program. As a number of people have observed (Bardhan, 1996; Jimenez, 1999), the evidence on these issues is scant and anecdotal. The enthusiasm in policy

[1] Though distributional conflicts arising from local heterogeneity can be expected even in developed country settings with relatively free mobility between local jurisdictions (Ravallion, 1984).

[2] The existence of strong geographic effects in living standards in developing countries, controlling for observable household characteristics, warns against assuming free mobility. For evidence on this point in the same setting as the empirical work in this paper, see Ravallion and Wodon (1999).

circles for devolving decision-making responsibility to the community level has clearly run well ahead of the evidence.

This paper tries to understand the distributional outcomes for the poor of a decentralized antipoverty program. We take the existence of decentralization as given, and focus on the factors influencing outcomes. However, the fact that the program is decentralized is crucial to our method. By building the empirics on explicit, and a priori plausible, assumptions about information structures we are able to identify some key structural parameters.

We motivate the empirics by a theoretical model of the behavior of the local organizations involved in the micro-targeting of an antipoverty program and their relationship to a central government that funds the program, and decides on the budget allocation across local areas. There is heterogeneity and distributional conflict within communities. The allocations are assumed to be efficient, but not necessarily equitable. The influence of the poor on outcomes varies, as do other factors influencing preferences of both the poor and nonpoor and local budget constraints. The program can also influence the relative power of the poor versus nonpoor in community decision making. The model generates equilibrium allocations of the budget across areas and between poor and nonpoor within those areas.

We carry some key implications of this theoretical model to new data on a specific social program, namely Bangladesh's Food-for-Education (FFE) program. This is one of the many school-enrolment subsidy programs now found in both developing and developed countries. The official aim is to keep the children of poor rural families in school. On paper, the program distributes fixed food rations to selected poor households conditional on their school-aged children attending at least 85% of classes. There are two stages of targeting. The center assigns the program across local government areas, but relies on community groups to select beneficiaries. Over two million children participated in 1995–1996 (13% of total primary school enrolment). There is evidence of significant gains in terms of school attendance with only modest foregone income through displaced child labor (Ravallion and Wodon, 2000). Less is known about how well the program has reached the poor.

We study the targeting performance of this program using both household and community-level data. We address two sets of questions:

- How much of the program's performance in reaching poor families was due to the center's efforts at reaching poor villages versus the community's efforts to reach their own poor?
- What factors influenced performance in reaching poor villages and in reaching the poor within villages? What role was played by factors such as land inequality within the village, the level of economic development, and village institutions?

The next section outlines our theoretical model of the incidence of spending on a decentralized antipoverty program, while Section 3 outlines our econometric implementation of this model. Section 4 outlines properties of our measure of targeting performance. Section 5 describes the setting and our data while our results are discussed in Section 6. Section 7 concludes.

2. Theoretical model of a decentralized antipoverty program

A poverty reduction program exists with a fixed aggregate budget. The program is run by a Project Office (PO) within the central (federal or provincial) government. The PO decides how to allocate the budget across fixed local jurisdictions (hereafter "communities"). People in each community decide how to allocate the PO's budget within that community. We assume that the program does not generate spillover effects across communities, such as due to mobility between them. (Mobility-induced spillover effects can be ruled out by assuming that the community only makes allocations across long-standing members or that there are costs of moving.) The PO does not observe how much is going to the poor in each area, and has imperfect information on other relevant local characteristics.

2.1. The local collective action problem

It is assumed that, given the information and resources available, the community can achieve an efficient allocation of the program's resources, such that it is not possible to increase the welfare of the poor (nonpoor) in a given community through the program without making that community's nonpoor (poor) worse off. This is plausible in the classic village society where one finds cooperative behavior based on repeated interaction and shared knowledge accumulated over long periods of relatively stable cohabitation.[3] The actual institutional arrangement for the allocation decision could take many forms, and we leave this open—it might be a representative village leader or a community council, or other delegated nongovernmental organizations. However, while there may be relatively little inefficiency in the process (given the information constraints), the allocation need not be equitable.

As is well known, a Pareto efficient solution to such a problem implies that there exist weights on the utilities of the poor and nonpoor such that the outcome of the collective decision making can be represented by the maximum of the positively weighted sum of utilities. However, while the efficiency assumption implies that Pareto weights exist, it does not throw any light on how they are determined. A special case is the utilitarian, equal-weights, solution in which the allocation maximizes the sum of all utilities. Or the weights may reflect the bargaining power of the poor versus the nonpoor. For example, the weights can be interpreted as "capture coefficients" arising endogenously in a probabilistic voting model with differences in voter information between the poor and nonpoor (Grossman and Helpman, 1996; Bardhan and Mookherjee, 2000).[4] We postulate that the weights depend on characteristics of the poor and nonpoor (such as the extent to which the poor are literate) and the local political and economic environment, including variables

[3] There is support for this assumption in recent work suggesting that information on individual productivity differences is reasonably common knowledge within villages (Foster and Rosenzweig, 1993; Lanjouw, 1999). The assumption also accords with experimental evidence suggesting that people often achieve efficient cooperative outcomes without binding contracts (Dawes and Thaler, 1988).

[4] One can motivate a formally identical objective function by an "interest group model" of a local politician's vote maximization problem as in Plotnick (1986).

that influence the reservation utilities of each party, should no agreement be reached.[5] The program itself can also influence the weights; for example, greater program resources going to the poor might help empower them in local decision making.

The poor and nonpoor within the ith (i=1,...,n) community receive per-capita allocations G_i^{p} and G_i^{n} per capita, yielding per-capita welfare levels of W_i^{p} and W_i^{n}, respectively. A vector of community characteristics X_i account for the intercommunity differences in welfare levels attainable at given program allocations, so we can write the welfare functions as $W^{\mathrm{p}}(G_i^{\mathrm{p}}, X_i)$ and $W^{\mathrm{n}}(G_i^{\mathrm{n}}, X_i)$. These functions are assumed to be strictly increasing and at least weakly concave in the allocations received from the program. A proportion H_i of the population is poor (giving the "headcount index" of poverty).

The W functions are to be interpreted as aggregate (per capita) welfare functions for each subgroup. An illustrative special case is in which all program participants (whether poor or not) receive the same lump-sum amount, which we can normalize to unity. Then the mean allocation to the poor, G_i^{p}, is identical to the proportion of the poor who receive the program, and similarly for G_i^{n}. The aggregate welfare functions are then:

$$W^{\mathrm{p}}(G_i^{\mathrm{p}}, X_i) = G_i^{\mathrm{p}} U^{\mathrm{p}}(1, X_i) + (1 - G_i^{\mathrm{p}}) U^{\mathrm{p}}(0, X_i) \tag{1.1}$$

$$W^{\mathrm{n}}\left(G_i^{\mathrm{n}}, X_i\right) = G_i^{\mathrm{n}} U^{\mathrm{n}}\left(1, X_i\right) + \left(1 - G_i^{\mathrm{n}}\right) U^{\mathrm{n}}(0, X_i) \tag{1.2}$$

where average utility of program participants is $U^{\mathrm{p}}(1, X_i)$ and $U^{\mathrm{n}}(1, X_i)$, respectively (in obvious notation) while for nonparticipants it is $U^{\mathrm{p}}(0, X_i)$ and $U^{\mathrm{n}}(1, X_i)$. This is only one example, though it will be of relevance to our empirical work. For now, we return to the more general case.

The poor and nonpoor need not have equal weight in the community decision-making process. And we allow for the possibility that the weights in decision making are endogenous to the program allocations. Specifically, the more a given group gets from the program the more able it is to influence village decision making in its own favor. Other village characteristics also influence these weights. So we write the weights as $\lambda^{\mathrm{p}}(G_i^{\mathrm{p}}, X_i)>0$ and $\lambda^{\mathrm{n}}(G_i^{\mathrm{n}}, X_i)>0$, respectively in which the functions λ^k (k=p, n) are nondecreasing in G_i^k. To assure an interior solution we also assume that weighted aggregate welfare $\lambda^k(G_i^k, X_i)W^k(G_i^k, X_i)$ is strictly concave in G_i^k for k=p, n.

The community chooses G_i^{p} and G_i^{n} to solve the problem:

$$\max\ H_i \lambda^{\mathrm{p}}\left(G_i^{\mathrm{p}}, X_i\right) W^{\mathrm{p}}\left(G_i^{\mathrm{p}}, X_i\right) + \left(1 - H_i\right) \lambda^{\mathrm{n}}\left(G_i^{\mathrm{n}}, X_i\right) W^{\mathrm{n}}\left(G_i^{\mathrm{n}}, X_i\right) \tag{2.1}$$

$$\text{s.t.} H_i G_i^{\mathrm{p}} + \left(1 - H_i\right) G_i^{\mathrm{n}} = G_i \tag{2.2}$$

[5] In this respect, our model has a formal similarity to collective-action models of the household that postulate an exogenous "distribution function" that weighs the utilities of household members; see, for example, Bourguignon and Chiappori (1994) and Browning and Chiappori (1998).

In addition to satisfying Eq. (2.2), the solutions equate $\frac{\partial \lambda^{\mathrm{p}}}{\partial G_i} W^{\mathrm{p}} + \lambda^{\mathrm{p}} \frac{\partial W^{\mathrm{p}}}{\partial G_i}$ with $\frac{\partial \lambda^{\mathrm{n}}}{\partial G_i} W^{\mathrm{n}} + \lambda^{\mathrm{n}} \frac{\partial W^{\mathrm{n}}}{\partial G_i}$. We can write the solutions in the form:

$$G_i^{\mathrm{p}} = G^{\mathrm{p}}(G_i, H_i, X_i) \tag{3.1}$$

$$G_i^{\mathrm{n}} = G^{\mathrm{n}}(G_i, H_i, X_i) \tag{3.2}$$

The difference between spending on the poor and the nonpoor gives the "targeting differential":

$$T_i \equiv G_i^{\mathrm{p}} - G_i^{\mathrm{n}} = T(G_i, H_i, X_i) \tag{4}$$

A positive (negative) value of T indicates that the program is targeted to the poor (nonpoor).

This model generates some testable implications. Consider the incidence of an increase in G_i. It is readily verified that both G_i^{p} and G_i^{n} will be strictly increasing in G_i, though one cannot predict the direction of the effect on T_i. The effects on G_i^{p} and G_i^{n} of a change in H_i are also ambiguous. It is easily verified that the signs of both $\partial G^{\mathrm{p}}/\partial H_i$ and $\partial G^{\mathrm{n}}/\partial H_i$ are opposite to the sign of T_i; if the poor are receiving more (less) per capita than the nonpoor then the per-capita allocation to both the poor and the nonpoor will fall (rise) as the poverty rate rises. Again, the effect on T_i can go either way.

The effects of changes in X on the community's allocation are ambiguous in this model. Consider any element of X that increases the marginal net gain from making a higher allocation to the poor (i.e. it increases $\frac{\partial \lambda^{\mathrm{p}}}{\partial G_i} W^{\mathrm{p}} + \lambda^{\mathrm{p}} \frac{\partial W^{\mathrm{p}}}{\partial G_i} - \frac{\partial \lambda^{\mathrm{n}}}{\partial G_i} W^{\mathrm{n}} - \lambda^{\mathrm{n}} \frac{\partial W^{\mathrm{n}}}{\partial G_i}$ at given G_i^{p} and G_i^{n}). Then it is evident that G_i^{p} will be strictly increasing in that variable, while G_i^{n} will be decreasing. An element of X that jointly increases the marginal utility of a higher program allocation to both groups will naturally have an ambiguous effect on the incidence of program spending.

In this model, differences in the relative power of the poor in community decision making help explain differences in outcomes for the poor from program spending. Compare two villages in which the income of the poor is the same, but the nonpoor have higher income in village A than B, so that income inequality is higher in A. If the Pareto weight was unaffected by this difference then one would expect a partially compensating pro-poor reallocation of program spending, given diminishing marginal utility of income. The marginal utility of transfers to the nonpoor will be lower in village A, while the marginal utility of a transfer to the poor will be the same in A as B.[6] So the efficient level of transfers to the poor will tend to be higher in the high inequality village.

However, there is no reason to presume that the Pareto weights will be the same in the two villages. Higher inequality may disempower the poor in terms of their influence on collective decision making within the village. This is what one would expect if the poor have relatively worse fallback positions (reservation utilities) in the high-inequality

[6] The small body of empirical evidence on the role of local inequality has focused on local public goods and management of common property resources (Baland and Platteau, 1997 and Dayton-Johnson, 2000) or participation to groups (La Ferrara (2002)), but not directly on the effectiveness of antipoverty program.

village.[7] For example, the nonpoor in village A may have greater power to subvert any efforts by the poor going outside the village to appeal directly to the center for help. If the relative weight on the poor in collective decision making tends to be lower in high inequality villages then the overall effect on the incidence of program spending is ambiguous; the "power effect" may outweigh the effect arising from differences in the marginal utility of income.

2.2. The problem facing the center's Project Office

The PO sets the budget allocation between communities, taking account of their behavior. The center has its own weights on the poor and nonpoor, λ^{p*} and λ^{n*}. The PO does not, however, have the same information set as is available locally. The PO has data supplied by the Central Statistics Office (CSO), represented by the vector Z_i for $i=1,\ldots,n$ but it is impossible to infer (X_i, H_i) from Z_i. So the center does not know how the community organizations have agreed to allocate their disbursements between the poor and nonpoor. We can write $(X_i, H_i)=(Z_i, \eta_i)$ where η_i is a vector of random variables unobserved by the center but with known joint distribution.

The project office takes account of the behavior of local community organizations, as characterized by the problem in Eqs. (2.1) and (2.2). So the PO's allocations G_i (for $i=1,\ldots,n$) solve:

$$\max \sum_{i=1}^{n} E_\eta\left[H_i\lambda^{p*}W^p\left(G_i^p, X_i\right) + \left(1-H_i\right)\lambda^{n*}W^n\left(G_i^n, X_i\right)|Z_i\right]N_i \tag{5.1}$$

$$\text{s.t.} \sum_{i=1}^{n} G_i N_i = G \tag{5.2}$$

in which G_i^p and G_i^n solve Eqs. (2.1) and (2.2) and where N_i denotes the population of the ith community, which is known with certainty. The center's first-order conditions require that:

$$E\left[H_i\lambda^{p*}\frac{\partial W^p}{\partial G_i}\frac{\partial G^p}{\partial G_i} + (1-H_i)\lambda^{n*}\frac{\partial W^n}{\partial G_i}\frac{\partial G^n}{\partial G_i}|Z\right] = \mu \tag{6}$$

which is the multiplier on the center's overall budget constraint. Sufficient conditions for this to be the unique maximum are that:

$$E\left[H_i\lambda^{p*}\frac{\partial^2 W^p}{\partial G_i^2}\left(\frac{\partial G^p}{\partial G_i}\right)^2 + (1-H_i)\lambda^{n*}\frac{\partial^2 W^n}{\partial G_i^2}\left(\frac{\partial G^n}{\partial G_i}\right)^2 + H_i\frac{\partial W^p}{\partial G_i}\frac{\partial^2 G^p}{\partial G_i^2}\left(\frac{\lambda^{p*}}{\lambda^{n*}} - \frac{\lambda_i^p}{\lambda_i^n}\right)|Z\right] < 0 \tag{7}$$

[7] Another possibility is suggested by the model in Bardhan and Mookherjee (2001), who characterize the effect of inequality on the relative weight of the income groups in a model of electoral competition, where the nonpoor are organized in a lobby and can make campaign contributions. Higher inequality lowers the level of awareness of the poor, decreasing the level of their political participation.

for all i.[8] We can write the solutions in the form:

$$G_i = G(Z_i, \mu) \quad (i = 1,..., n) \tag{8}$$

This can be thought of as the center's "payment schedule", giving its optimal outlays as a function of the observed indicators at local level.

This model of the center's behavior is too general to deliver unambiguous predictions about the comparative static properties. For example, suppose that H is known by the center and that the center does not attach any weight to the welfare of the nonpoor ($\lambda^{n*}=0$), so that the center aims to maximize the total gain to the poor. Now compare the center's spending allocation between two communities with different values of H. There is nothing to guarantee that the community with the higher H should get more from the center. For a program that is initially targeted to the poor ($T>0$), a central government aiming to maximize the aggregate gains to the poor will take into account the fact that communities with higher poverty incidence will tend to make lower per-capita allocations to their poor (Ravallion, 1999a). Whether this effect is strong enough for the center to make lower transfers to poorer communities remains an open question; the answer cannot be predicted from the assumptions so far.

3. Econometric models of program allocations within and between villages

In modeling each community's optimal allocation between the poor and nonpoor, our empirical counterparts of Eqs. (3.1) and (3.2) for the ith participating village are:

$$G_i^{\mathrm{p}} = \alpha^{\mathrm{p}} G_i + X_i \Theta^{\mathrm{p}} + \xi_i^{\mathrm{p}} \tag{9.1}$$

$$G_i^{\mathrm{n}} = \alpha^{n} G_i + X_i \Theta^{\mathrm{n}} + \xi_i^{\mathrm{n}} \tag{9.2}$$

where X_i is a vector of characteristics for village i. Note that the regressions mirror the structural form solution of the local authorities' problem, in that they are both conditional on G_i, the share of the population of the ith village receiving the program. In keeping with our theoretical model, we assume that the center's allocation is exogenous (both ξ_i^{p} and ξ_i^{n} are uncorrelated with G_i). OLS estimation of the system (Eqs. (9.1) and (9.2)) then provides consistent estimates of the parameters. The village allocations to the poor/nonpoor G_i^{p}, G_i^{n} are estimated only for $G_i>0$, i.e. for the sample of villages participating in the program. Under the exogeneity assumption, there is no selectivity bias.

The exogeneity assumption can be questioned. Possibly local community organizations can exercise political influence on the center (due for example to the party affiliation of their representatives, which they use to increase their allocation). To test the exogeneity of the center's allocations at village level, we exploit the fact that our model implies that the

[8] Note that Eq. (7) implies that Eq. (5.1) is strictly quasi-concave in ($G_1,\ldots,G_n$). Note also that Eq. (7) is not implied by concavity of welfare functions, which implies that the first two terms in brackets are negative. However, the sign of the third term is ambiguous. A sufficient condition for the third term to be nonpositive is that the marginal allocation to the poor does not rise as spending increases ($\partial^2 G^{\mathrm{p}}/\partial G_i^2 \leq 0$) and that no community cares more about the poor than the center ($\lambda^{\mathrm{p}*}/\lambda^{\mathrm{n}*} \geq \lambda_i^{\mathrm{p}}/\lambda_i^{\mathrm{n}}$). In the empirical work later, we find that we cannot reject the null hypothesis that $\partial^2 G^{\mathrm{p}}/\partial G_i^2 = 0$, in which case Eq. (7) holds.

center's allocation to any one community is a function of that community's characteristics relative to the characteristics of other communities.

At the same time, our theoretical model has the feature that only the community's own characteristics matter to the distributional outcomes conditional on the allocation received from the center. This can be thought of as a theoretical restriction on the information structure, namely that a village knows its own characteristics but not those of its rivals for attracting program resources from the center. Thus the community's *relative* position in terms of the center's allocation criterion is a valid instrumental variable for testing the exogeneity of the center's allocation to local decision making. We use the regional averages of eligibility criteria to test exogeneity.

In our model of the center's allocation problem (Section 2.2), the CSO monitors a vector of exogenous indicators Z_i directly for all i and the PO bases its allocation on that data. The exogeneity assumption for Z can also be questioned. We can suggest three arguments. Firstly, one or more elements of Z may be influenced by the allocation of program spending between poor and nonpoor at local level. The center will then want to take account of this effect in making its allocation across communities. Secondly, Z might include data that the CSO asks each local authority to supply. This presumes that it is prohibitively costly for the CSO to obtain all its data directly; it has no choice but to rely on the information supplied locally. This creates scope for the data to be manipulated by the local authorities. The center will then want to influence local incentives for providing good data. Thirdly, the data available to the researcher might not be the same data that the center based its allocations on. For example, the researcher may be able to obtain more accurate data (not contaminated by the efforts of local authorities to manipulate the data).

In using the information structure of our theoretical model to inform identification, we exploit the fact that there are village characteristics that are unobserved by the center and influence the potentially endogenous elements of Z. To see this more clearly, let us partition Z_i as (Z_{1i}, Z_{2i}) where Z_{1i} are endogenous and Z_{2i} are exogenous. We may want to take H_i to be an element of Z_{1i}.[9] And we can assume that Z_{2i} is a subset of X_i, recalling that the latter includes other variables unobserved by the center, in η_i. We can think of Z_{1i} as some function of all village characteristics X_i (including of course the unobserved ones): $Z_{1i}=Z_1(X_i)$. This motivates our tests for endogeneity of the program's eligibility criteria. In particular, the variables in X_i that are unobserved by the center are valid instruments for testing the exogeneity of some of the determinants of the center's allocation choices. Table 1 summarizes how we use the assumed information structure of community-based targeting in our identification strategy.

The econometric model of the center's allocation is then:

$$G_i^* = Z_{1i}\beta_1 + Z_{2i}\beta_2 + u_i \tag{10.1}$$

$$Z_{1i} = X_i\Pi + v_i \tag{10.2}$$

This simultaneous equation system is estimated in a Limited Information Maximum Likelihood (LIML) framework for limited dependent variables, following Smith

[9] Notice that if H_i is an element of Z_{1i} then the objective function will not be additively separable between G_i^{p} and G_i^{n}. This would create the possibility of a higher value of G_i leading to a lower G_i^{p}.

Table 1
Information structure and identification

Observed by		Examples	Identifies exogenous variation in
Center	Community		
Yes	Yes	Commonly known data such as from the census	
Yes	No	Community's relative position on eligibility criteria	Center's allocation across communities when explaining targeting within communities
No	Yes	Inequality within the community; transfers within the community	Potentially endogenous data on eligibility criteria when explaining the center's allocation

and Blundell (1986). We compare the results to a Tobit in which endogeneity is ignored.

In testing the exogeneity of the center's allocation at village level, we check whether our estimated residuals from Eq. (10.1) are significant when we add them to our regressions based on Eqs. (9.1) and (9.2).

4. Measuring and decomposing targeting performance

For the descriptive purpose of measuring targeting performance and assessing the relative importance of within-village versus between village targeting, we need to say some more about the properties of the targeting differential defined by Eq. (4). Because of its relevance to our empirical work, we focus on the special case where each participant receives a fixed lump sum. (The per-capita allocation to the poor still varies, of course, as it does for the nonpoor.) Then spending per capita on the program is simply the product of the participation rate in the program and the fixed amount received by each participant. We can simply set the latter to unity, so that G is also the participation rate in the program. Our notation is given in Table 2, which is the 2×2 contingency table between poverty and program participation. A proportion G of the population gets the program while a proportion H of the population is poor. The proportions of the poor and nonpoor who receive FFE transfers are $G^{\mathrm{p}}=s_{11}/H$ and $G^{\mathrm{n}}=s_{12}/(1-H)$ (respectively). The targeting differential is then the difference between these two proportions:

$$-1 \le T \equiv G^{\mathrm{p}} - G^{\mathrm{n}} = \frac{s_{11}s_{22} - s_{12}s_{21}}{H(1-H)} \le 1 \tag{11}$$

(given that $s_{11}+s_{21}=H$ and $s_{12}+s_{22}=1-H$). If the program is perfectly targeted to the poor in the specific sense that none is leaked to the poor and all of the poor are covered

Table 2
Notation

		Poor?		
		Yes	No	
Program?	Yes	s_{11}	s_{12}	G
	No	s_{21}	s_{22}	$1-G$
		H	$1-H$	1

(s_{12}=s_{21}=0) then T=1; if the program is perfectly targeted to the nonpoor (s_{11}=s_{22}=0) then T=−1; a uniform ("untargeted") allocation (s_{11}/H=$s_{12}/(1-H)$) implies T=0. If the program is of insufficient size to cover all the poor, but there is no leakage to the nonpoor, then T=G/H<1. Analogously, if the program only reaches the nonpoor, and is insufficient to cover all of them, then T=$-G/(1-H)$>−1.

The targeting differential can be thought of as a measure of the strength and direction of the statistical association between program receipt G and the poverty rate H for the 2×2 contingency table in Table 2. It is related to the "phi coefficient", a common measure of the correlation between two variables in a contingency table:

$$\phi \equiv \frac{s_{11}s_{22} - s_{12}s_{21}}{\sqrt{H(1-H)G(1-G)}} = T\sqrt{\frac{H(1-H)}{G(1-G)}} \tag{12}$$

The phi coefficient is related to the standard chi-square test of independence as $N\phi^2 \sim \chi^2_{(1)}$. This provides a basis for statistical inference about targeting performance.

In a decentralized program, the targeting performance can be analyzed beyond the overall national level. Following Ravallion (2000), the targeting differential can be exactly decomposed into an "intervillage" component, reflecting the center's efforts at reaching poor communities, and an "intra-village" component, that describes the efforts of those communities to reach their own poor:[10]

$$\overline{T} = \underbrace{\frac{\sum\sum(G_{hi}-G_i)(H_{hi}-H_i)}{\sum\sum(H_{hi}-H)^2}}_{\text{(within villages)}} + \underbrace{\frac{\sum(G_i-G)(H_i-H)}{\sum\sum(H_{hi}-H)^2}}_{\text{(between villages)}} \tag{13}$$

where G_{hi} is received by household h in village i and H_{hi}=1 if h is poor and zero otherwise.

5. Setting and data

Bangladesh is divided into six divisions, and further into districts. These districts in turn are subdivided into "Thanas", of which there are about 490. These are further subdivided into local government areas called "Union Parishads" (UPs), of which there are about 4500 in rural Bangladesh. Within each UP all government, registered nongovernment and low cost primary schools (as well as one independent madrasha) are eligible for the FFE program. Initially one UP from each Thana was selected for the program.

The program is implemented in two stages. First, the participating UPs are chosen. 1200 UPs were chosen to participate, through a process that assured that all Thanas participated. The requirement that all Thanas participate appears to be a political-economy constraint, in that a broad geographic spread is deemed politically desirable. This is not uncommon in social programs.[11] Naturally it constrains the scope for pro-poor geographic targeting. We will see how much so later.

[10] The derivation of the following equation is given in an addendum available from the authors.

[11] See, for example, the discussion of the political economy of program placement for an Argentinean program in Ravallion (1999c).

In selecting UPs, the stated aim was to pick those that are "economically backward" and with a low literacy rate. The selection was done by the center in consultation with the Thana Education Committee and the minister in charge of coordination of development activities in that area. The center controls the UP selection process, though there is clearly scope for local lobbying to attract the program.

In the second stage, FFE households are identified within the selected UPs. Those officially eligible are widows, day laborers, low income professionals (fishermen, weavers, cobblers, potters, blacksmiths), landless or near landless farmers, and households with school-aged children not covered by other targeted programs are officially eligible to receive the program.[12] The program relies heavily on community involvement in the selection of the households. The selection is typically done by the School Management Committee (SMC); this is composed of teachers, local representatives, parents, education specialists and donors to the school. The food is distributed to households by the SMC (or sometimes by a local NGO). It is typically course-medium quality unprocessed rice or wheat. This is unlikely to entail self-targeting since both are normal goods in Bangladesh. (Even rich households have positive demand for coarse quality food grains which can be sued as payment for servants/workers.) The distribution at the school premises is supervised by designated officials.[13] Each participating household is entitled to receive 15 kg per month for a child enrolled in school and 20 kg for more than one child. The differences in amounts actually received appear to be negligible and so we ignore them, treating this as a program with a fixed allocation to all participants.

The empirical analysis is based on the Household Expenditure Survey (HES) collected in 1995–1996 by the Bangladesh Bureau of Statistics, following well-established and credible survey practices, with support from international agencies including the World Bank. The household questionnaire contains extensive information on household expenditures, and has specific questions on household participation in FFE. A comprehensive consumption aggregate can be formed from the data, including imputed values of consumption in kind, valued at local market prices. We deduct the imputed monthly value of the FFE transfer from the consumption aggregate. (In doing so we ignore any effects of the program on intertemporal consumption behavior or labor supply.) We defined the poor as those in the poorest half of the national distribution of per-capita consumption expenditure for rural areas (net of the FFE transfers). This accords well with both official and independent estimates of the poverty rate in rural Bangladesh (World Bank, 1998).

In the design of the HES, a simple random sample of households was drawn from each primary sampling unit (PSU) and a detailed community survey was administered for rural

[12] The Vulnerable Group Development and Rural Maintenance Program also distribute food to the poor. The household questionnaire accounts only for participation in FFE. The community questionnaire contains information on the presence of the Vulnerable Group Development (reported positive for 4% of the villages) and on other programs: there are almost no villages in which the two sets of programs overlap, so that the extent of potential omitted bias when analyzing the intra-village targeting performance is small.

[13] The situation changed from 1999 onwards, when the responsibility for the food distribution was shifted from school teachers to private dealers. The new distribution system is fraught with allegations of corruption and malpractices by the dealers. Moreover, in the new system, the beneficiaries had to travel to the distribution centers to receive the food, with obvious transactions costs (Akhter and del Ninno, 2001).

areas. The PSU is the "mauza", which is a compact area of around 250 households, forming a single natural village in about 80% of the cases; in the other cases, it will contain two or possibly three natural villages. We will refer to it as a "village". Our sample includes 3625 households with children in the primary school age range (5–16), i.e. the population of children of primary school age that are the prospective FFE recipients. We find that the program reached 25% of the sampled villages. The percentage of households participating was 9.8% for the whole sample, and 40% for the participating villages.

In explaining the program's realized allocations within and between villages, we drew from the HES data a set of variables that can be grouped under the following headings.

Eligibility variables were chosen to match those on which the allocation was supposed to be made officially. These include the proportion of households in the village that are landless or near landless (land holdings below 2.5 acres), female headed and widows or in low occupational professions/daily agricultural workers.

Structural variables aim to measure the level of "economic backwardness" of the village, which overlap with the official eligibility criteria. They include indicators for agricultural development and the extent of diversification into nonfarm activities, the illiteracy rate of the adult population and the number of schools in the community. Access to credit is measured by the presence of the Grameen Bank (a well-known group-based credit program providing production credit to the poor) and of the Krishi Bank (a state-owned agricultural bank). An indicator for whether the village was hit by a shock in the previous year is also included. Shocks encompass natural disasters (floods, droughts, river erosion, cyclones), epidemic diseases, pest attacks and poultry plagues.

Openness variables try to measure attributes of the village with implications for the bargaining power of the poor in community decision making: these variables comprise electrification, presence of a telephone, road quality, and distance to the Thana headquarters.

Inequality measures focus on inequality in the main productive asset, land, in the presumption that this would better reflect the balance of power within the village. We use the coefficient of variation in land landholdings, though we explore the robustness of our results to alternative measures.

Institutions are characterized by data from the community questionnaire, which offers information on various socioeconomic groups or organizations found in the village. Two distinct types of organizations can be identified. The first are clubs that are used mostly for recreational purposes; they are typically accessible only through user fees and tend to rely on financial assistance from patrons (mostly local businessmen) and voluntary contributions. The second are cooperatives for the poor, including the Farmers Cooperative Society and the B.S.S. (Assetless Cooperative Association). Moreover, we have information on whether anyone in the village is a member of the UP council. This may influence the ability of the village to attract a larger budget from the center.

We also use a measure of existing informal transfers to the poor within the village. Again, two arguments can be made as to why this might matter. On the one hand, the pressure to target the poor using FFE transfers will be less if the poor are already being helped. However, on the other hand, a high level of transfers to the poor might reflect their power within the village. In view of the potential endogeneity concern here, rather than the

Table 3
Descriptive statistics

	Mean	Standard deviation
Fraction landless/near landless	0.491	0.187
Illiteracy rate adults	0.597	0.175
Fraction low profession	0.268	0.156
Fraction female/widow heads	0.037	0.053
Number of primary schools	3.466	1.178
Main activity females in the village: nonagricultural	0.249	0.433
Cropping intensity >1 crop/year	0.707	0.274
Grameen Bank in the village	0.050	0.218
Krishi Bank in the village	0.053	0.225
Road to the village paved	0.421	0.495
Telephone in the village	0.073	0.261
Village is electrified	0.480	0.501
Distance to Thana (in miles)	8.110	5.056
Any UP member from the village	0.657	0.476
Farmers/poor Cooperative Society in village	0.498	0.501
Club/recreation in village	0.434	0.497
Shock (natural disaster/epidemics)	0.850	0.358
Poverty rate	0.504	0.244
CV land holdings	1.483	0.496
Average net transfers received by the poor >0	0.373	0.485

Unit of analysis is the village. Means across 252 randomly sampled villages ("mauza") in 1995–1996.

level of transfers we shall use a dummy variable taking the value one if net transfers to the poor are positive on average.

Table 3 gives the sample means on the variables we shall use for explaining program allocations.

6. Results

Table 4 gives our estimate of the overall targeting differential and its decomposition. The targeting differential is positive indicating that per-capita allocations from the FFE program are higher for the poor than the nonpoor. Amongst all villages, 12% of the poor

Table 4
The targeting performance of the FFE program and decomposition

	$G^{p}=\frac{s_{11}}{H}$	$G^{n}=\frac{s_{12}}{1-H}$	$\bar{T}$	Intra-village	Intervillage	ϕ	Probability value
50% poverty line							
All villages	0.118	0.079	0.039	0.036	0.003	0.004	0.000
Participating villages only	0.462	0.315	0.134	0.146	−0.012	0.018	0.000
25% poverty line							
All villages	0.136	0.086	0.050	0.037	0.013	0.005	0.000
Participating villages only	0.521	0.354	0.167	0.144	0.023	0.023	0.000

Table 5
Program participation by decile

Decile	1 (poorest)	2	3	4	5	6	7	8	9	10
All villages	0.150	0.113	0.109	0.108	0.104	0.108	0.082	0.089	0.064	0.042
Participating villages only	0.581	0.450	0.444	0.430	0.400	0.463	0.338	0.356	0.282	0.163

Each cell represents a fraction of household participants in each decile, ranked by expenditure per person.

receive the program, as compared to 8% of the nonpoor, while in participating villages, the proportions are 46% and 32%. We are able to convincingly reject the null of independence between poverty incidence and program coverage (Table 4). Recalling that G=9.8% and H=50%, the maximum targeting differential is 20%. So the actual targeting differential of 4% achieves one fifth of the maximum, given that the scale of the program is insufficient to cover the poor even without leakage. Looking across the whole distribution, we find that the probability of program participation decreases with consumption per person (Table 5).

Virtually all the aggregate targeting differential is due to the intra-village component. Indeed, the intervillage component slightly worsens the overall targeting differential in participating villages. We repeated these calculations for a lower poverty line, at a poverty rate of 25%. The same basic pattern was found, with slightly better targeting.

Performance is heterogeneous across communities. Indeed, the targeting differential was negative in 24% of the villages. A preliminary description of the variation across communities can be obtained by looking at how incidence varies (unconditionally) according to observed structural parameters. As can be seen from the nonparametric regressions in Fig. 1,[14] both the poor and the nonpoor benefit from an increase in the budget; but there are sizable deviations around the regression functions. Fig. 2 tests whether those deviations reflect differences in the poverty rate. Recall that our theoretical model predicts that the per-capita allocations to both the poor and nonpoor will decline with H_i controlling for G_i given that T_i>0. This is confirmed by Fig. 2. (The effect is not as strong for the poor, but note that there is an outlier, with unusually low allocation to the poor, and low poverty rate; dropping this outlier, the effect is as strong as for the nonpoor.)

The regressions in Table 6 (corresponding to Eqs. (9.1) and (9.2)) confirm the bivariate associations in Fig. 1, indicating that allocations to the poor and nonpoor increase significantly with an increase in the amount transferred from the center G_i, consistent with the theoretical predictions of our model of efficient intra-village allocation. When we add the residuals from the first stage Tobits for G_i to the regressions in Table 6, the t-tests do not reject the null that the center's budget allocation is exogenous at village level. Other coefficients and their standard errors change little by treating G_i as endogenous.

The first three columns of Table 6 look at the intra-community targeting as a function of budget from the center (the village participation rate after normalizing) and the village poverty rate. (We found no sign of either nonlinear or interaction effects.) The results suggest that targeting improves as the program expands, suggesting that the program shifts

[14] We use the Locally Weighted Scatter Plot Smoothing (LOWESS) regression method (see, for example, Härdle, 1990, p. 192).

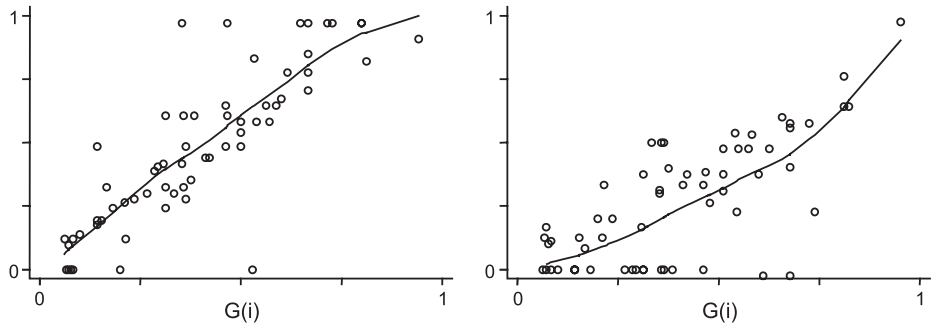

Fig. 1. G_i^p (left) and G_i^n (right) on G_i. Note: LOWESS estimates, bandwidth 0.8.

the balance of power in favor of the poor. The marginal gains as the program expands tend to favor the poor.[15] The results are also consistent with our theoretical predictions and with the preliminary nonparametric analysis in that, once controlling for G_i, the share of the program accruing to the nonpoor is decreasing with the poverty rate H_i.

The last three columns of Table 6 give results augmented for the village socioeconomic characteristics discussed above. (The coefficients on G and H change only slightly.)

It is striking how little of the variance in outcomes for the poor can be explained by the program's eligibility criteria for selecting participating areas; indeed, the eligibility variables are jointly insignificant for both the targeting differential and the allocation to the poor (Table 6). The official criteria for allocating the program do not appear to be of any relevance to assuring higher gains to the poor from that allocation.

However, the structural variables are significant predictors for the proportion of the poor participating and for the targeting differential. There are significant effects of a number of the individual structural characteristics. Villages with more schools have worse targeting performance, but those with higher cropping intensity perform better at reaching the poor. Better targeting is associated with lower incidence of shocks; this suggests that the program was used to help compensate nonpoor households adversely affected by the shock.

There is an indication that more isolated villages are less effective at targeting the poor. The poor are significantly less likely to reap the benefits of the program in villages that do not have a telephone or are more distant from the Thana.

Higher land inequality within the village results in worse targeting performance, by reducing the allocation to the poor. This too suggests adverse effects on relative power of the poor, since without such an effect one would expect more pro-poor targeting in high inequality villages. We checked robustness to the choice of inequality measures that are sensitive to different parts of the distribution; statistical significance varied but other measures pointed in the same direction. Detailed results are given in Table 7.

The indicators of existing institutions in the village are jointly significant predictors of the distribution of resources within the village. The presence of informal safety nets

[15] This is consistent with evidence for other settings; Ravallion (1999a,b) and Lanjouw and Ravallion (1999) find evidence of early capture by the nonpoor for Argentina and India, respectively.

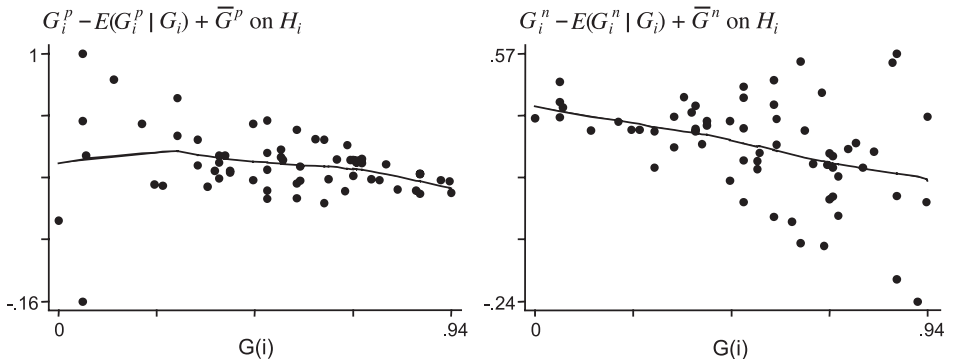

Fig. 2. G_i^{p} and G_i^{n} on H_i conditional on G_i. Note: LOWESS estimates, bandwidth 0.8. The conditional mean is first estimated from Fig. 1 with a symmetric nearest neighbor smoother estimator. The variable on the y-axis is given by the deviations from the fitted line $G_i^{\mathrm{p,n}} - E(G_i^{\mathrm{p,n}} | G_i)$ normalized by $\bar{G}_i^{\mathrm{p,n}}$ for comparability.

targeted to the poor is a substitute for public expenditures. The role of the civil society in collective decision making is indirectly captured by the presence of recreational clubs (more likely to foster cooperation amongst the nonpoor) and cooperatives (more likely to help the poor cooperate) in the village. However, these variables are not significant.

We turn now to the results in modeling the center's allocation across villages (Eqs. (10.1) and (10.2)). Recall that the information structure at the heart of a decentralized setting provides us with the exclusion restrictions necessary to identify the system in Eqs. (10.1) and (10.2). Variables such as the degree of inequality within a village and the presence of informal transfers to the poor are presumably common knowledge in the village, but are unlikely to be part of the information set used by the center when deciding how to allocate the budget across communities. The set of variables deemed to be idiosyncratic to the local community provides the instruments for the eligibility criteria.

The results from the Tobit regression of the allocation across communities are in Table 8. We also give a probit for village selection.

The eligibility criteria do not emerge as strong predictors of program placement, though there is some sign of higher allocations to villages with a high proportion of agricultural laborers/heads in low professions. We also tried using the village poverty rate (H) as an additional variable in the Tobit regression. This had a coefficient of 0.029 but was not significantly different from zero (t=0.12). When we dropped all other regressors, the coefficient on H rose to 0.131, but was still not significant (t=0.62). This regression coefficient can be interpreted as the center's targeting differential (Ravallion, 2000). There is little sign here that the center is targeting poor villages.

Some other village indicators do appear to be relevant to the center's placement choices. Villages hit by a shock received more from the program. There is a suggestion that the center chooses villages where the Grameen Bank is operative. The village is also able to attract (weakly) more resources from the center if anyone in the village is a member of the UP council.

We are unable to reject the null hypothesis of exogenous information; the residuals from the first stage predicted 'eligibility' criteria are not significant. The measure of

Table 6
Intra-community targeting performance

	T_i	G_i^p	G_i^n	T_i	G_i^p	G_i^n
Budget allocation G_i	0.324**	1.177**	0.853**	0.156	1.013**	0.857**
	(2.30)	(16.30)	(9.63)	(0.71)	(8.04)	(6.03)
Poverty rate H_i	0.081	−0.145	−0.226**	0.314*	0.055	−0.258**
	(0.43)	(−0.99)	(−2.51)	(1.92)	(0.49)	(−2.32)
Eligibility						
Fraction landless/near-landless households				−0.016	0.126	0.142
				(−0.07)	(0.85)	(0.91)
Heads in low profession/agricultural workers				0.16	0.097	−0.063
				(0.62)	(0.77)	(−0.37)
Fraction of heads who are female/widows				−0.897	0.031	0.928*
				(−1.27)	(0.09)	(1.83)
Structural						
Number of schools in village				−0.093**	−0.021	0.072**
				(−2.37)	(−1.05)	(2.23)
Main activity women: NAG				−0.029	0.022	0.051
				(−0.23)	(0.29)	(0.68)
Cropping intensity greater than 1 crop/year				0.404**	0.196**	−0.207**
				(2.51)	(2.01)	(−2.29)
Grameen Bank in the village				0.087	0.087*	0
				(1.01)	(1.73)	(0.00)
Krishi Bank in the village				−0.118	−0.084	0.033
				(−1.03)	(−0.99)	(0.44)
Shock in past 12 months				−0.316**	−0.170**	0.146
				(−2.27)	(−2.28)	(1.45)
Illiteracy rate for adults				−0.468*	−0.108	0.36*
				(−1.90)	(−0.98)	(1.81)
Modernization/openness						
Road to the village paved				−0.121	−0.095	0.026
				(−1.39)	(−1.62)	(0.50)
Telephone in the village				0.198*	0.103**	−0.095
				(1.78)	(2.21)	(−1.04)
Village electrified				−0.118	−0.076	0.042
				(−1.41)	(−1.42)	(0.69)
Distance to Thana				−0.012*	−0.004	0.007
				(−1.72)	(−1.15)	(1.41)
Inequality						
Coefficient of variation landholdings				−0.123*	−0.093**	0.031
				(−1.76)	(−2.10)	(0.73)
Institutions						
Average net transfers to the poor >0				−0.173**	−0.124**	0.049
				(−2.42)	(−3.04)	(0.90)
Poor Cooperative Society				0.13	0.036	−0.093
				(1.41)	(0.78)	(−1.54)

Table 6 (*continued*)

	T_i	G_i^p	G_i^n	T_i	G_i^p	G_i^n
Club/recreation in village				−0.018	0.032	0.05
				(−0.21)	(0.53)	(1.02)
R^2	0.07	0.73	0.66	0.57	0.87	0.81
Number of observations	62	62	62	52	52	52
F-test joint significance: (p-value)						
Eligibility				0.436	0.664	0.261
Structural				0.052*	0.059*	0.228
Modernization				0.101	0.178	0.240
Institutions				0.087*	0.028**	0.400

Robust *t*-statistics in parentheses. *Denotes significance at 10% level; **at 5% level. The *t*-tests of the residuals from the first stage LIML (testing for endogeneity of G_i) are 0.06, 0.30, 0.23 for T, G^p, G^n, respectively. The variables identifying the center's decision (region averages of eligibility criteria and whether any of UP council is from the village) are insignificant in the intra-village regressions.

average eligibility criteria by region are jointly significant, justifying our use of this as the instrument for testing exogeneity of G_i in the regressions for the intra-village allocations.

7. Conclusions

The informational advantage of decentralized targeting is clear enough. More contentious is the accountability case. Those in power within local communities need not share the center's objectives for the program, and may well be less accountable to the poor. We have tested that conjecture for a large antipoverty program in Bangladesh.

In characterizing community-based targeting, we assumed that a less well-informed central government retains power over the intercommunity allocation of spending, but has no ability to directly control outcomes within communities. The local decision-making process is assumed to be efficient—in that greater capture by the nonpoor comes at the expense of the poor—but potentially inequitable, due to the power of local elites.

Informed by this model, we have studied the targeting performance of Bangladesh's Food-for-Education Program. To measure performance, we have used a "targeting differential" that lies between minus one (when the program is perfectly targeted to the nonpoor) and plus one (when it is perfectly targeted to the poor); a value of zero indicates that the poor and nonpoor are equally likely to get the program.

We find that the program's transfers are targeted to the poor, in that a higher proportion of the poor receive help than the nonpoor. The targeting differential is only 0.04 overall (0.13 in participating villages) suggesting that the program is mildly pro-poor. The program achieves one fifth of the maximum targeting differential, allowing for the fact that the scale of the program is insufficient to cover the poor even without leakage. The association between program placement and poverty is statistically significant.

Targeting performance varies greatly between villages, and we have tried to explain why. We cannot reject the null hypothesis that the center's allocation across villages is exogenous to the intra-village decision making on who gets the program. Comparing

Table 7
Sensitivity to alternative measures of land inequality

	T_i	G_i^p	G_i^n
Skewness (third moment)	−0.100** (−2.20)	−0.048* (−1.82)	0.051* (1.85)
Gini	−0.567 (−1.42)	−0.503** (−2.14)	0.064 (0.24)
Relative mean deviation	−0.504 (−1.29)	−0.534** (−2.14)	−0.029 (−0.12)
Mean log deviation $E(0)$	−0.123* (−1.76)	−0.093** (−2.10)	0.031 (0.73)
Theil entropy $E(1)$	−0.172 (−1.57)	−0.145** (−2.14)	0.026 (0.38)
Theil entropy $E(2)$	−0.723** (−1.94)	−0.518** (−2.03)	0.020 (0.97)

Rows refer to different regressions with the same specification as in Table 6, with measures of land inequality alternative to the coefficient of variation in landholdings. Robust t-statistics in parentheses. *Denotes significance at 10% level; **at 5% level.

villages with different allocations from the program, we find that participation of both the poor and nonpoor increases as the program expands, and that targeting performance improves. While there is pro-poor targeting within villages, the program's official eligibility criteria at village level turn out to be weak indicators of revealed differences in performance. Controlling for the center's allocation, there is a tendency for the per-capita allocation to the nonpoor to be lower in poorer villages, consistently with our theoretical model. The poorer the village the higher the share of given program resources going to the poor (s_{11}/G), though the proportion of the poor receiving the program (s_{11}/H) is no higher or lower in poor villages.

Our results suggest that inequality within villages matters to the relative power of the poor in local decision making. We find that more unequal villages in terms of the distribution of land are worse at targeting the poor through the program. If relative power was unaffected by inequality then it should be easier to redistribute in more unequal villages. Instead, our results are more consistent with the view that greater land inequality comes with lower power for the poor in village decision making.

So we find no sign of a self-correcting mechanism whereby community-based targeting allows the program to reach the poor better in more unequal villages. Indeed, we find evidence of a mechanism whereby inequality is perpetuated through the local political economy; the more unequal the initial distribution of assets, the better positioned the nonpoor will be to capture the benefits of external efforts to help the poor.

A number of other factors emerge as influences on program performance in reaching the poor. We find evidence that isolation (geographic or poor communications with the outside world) worsens performance. And we find evidence of substitution between private and public transfers; villages in which there are already transfers to the poor tend to be ones in which the program's resources go relatively more to the nonpoor.

Despite the official aims of the program, we find little sign that that the center is targeting poor villages. Most of the program's pro-poor targeting performance is attributable to targeting *within* villages; the center's targeting of villages contributes far less to overall performance than does intra-village targeting. Indeed, we cannot reject the null hypothesis that there are no observable differences between the villages that got the program and those that did not. We do find some significant predictors of how much was received from the center. However, it is notable how little explanatory power for the

Table 8
Intercommunity incidence of program spending

	Community selection Probit	Budget allocation Tobit
Eligibility		
Fraction landless/near-landless	−0.04 (−0.06)	0.001 (0.00)
Average landless/near-landless by region	3.247** (1.93)	1.409* (1.82)
Adult illiteracy	−0.421 (−0.51)	−0.033 (−0.08)
Average illiteracy by region	−0.904 (−0.60)	−0.754 (−1.11)
Fraction heads—low professions/agricultural workers	1.879** (2.36)	0.940** (2.60)
Average low professions/agricultural workers by region	−1.888 (−0.80)	−0.948 (−0.80)
Fraction heads—female widows	0.321 (0.16)	0.396 (0.40)
Structural		
Number of schools	0.073 (0.72)	0.024 (0.50)
Main economic activity females: NAG	−0.402 (−1.52)	−0.122 (−0.93)
Cropping intensity: >1 crop/year	−0.302 (−0.79)	−0.131 (−0.73)
Grameen Bank in the village	0.895* (1.80)	0.355** (2.03)
Krishi Bank in the village	−0.059 (−0.13)	−0.107 (−0.65)
Shock in the past 12 months	0.830** (2.16)	0.366* (1.91)
Modernization/openness		
Road to the village paved	−0.061 (−0.23)	−0.105 (−0.82)
Village electrified	−0.067 (−0.26)	−0.008 (−0.06)
Telephone in the village	−0.427 (−0.92)	−0.140 (−0.64)
Distance to Thana	−0.005 (−0.20)	−0.002 (−0.17)
Institutions		
Poor Cooperative Society	−0.082 (−0.36)	−0.006 (−0.06)
Club/recreation in village	−0.018 (−0.08)	−0.002 (−0.02)
Any UP council member from the village	0.301 (1.18)	0.192 (1.59)
Constant	−2.298* (−1.80)	−0.950* (−1.73)
Number of observations	203	203
Wald χ^2 (p-value)	26.91 (0.138)	36.35 (0.014)
F-test joint significance: (p-value)		
Average eligibility measures by region	0.125	0.079*
Eligibility within the village	0.213	0.098*
Structural	0.104	0.120
Modernization	0.871	0.812
Institutions	0.684	0.468
Test for endogenous eligibility criteria		
Landless[(1)]		−0.603 (0.442)
Adult illiteracy[(1)]		−0.507 (0.111)
Low profession[(1)]		−0.276 (0.156)

Figures in parentheses are asymptotic t-ratios; *denotes significance at 10% level; **at 5% level. Tobit estimates are based on Huber/White standard errors. [(1)]Reported coefficient (t-statistics) from separate LIML regressions of G_i. The first stage regressions of landholdings, adult illiteracy and low profession include, in addition to the regressors above, the CV of landholdings and an indicator of net transfers to the poor in the community as instruments. The F-test ($F(2,197)$ and p-values) for the joint significance of the instruments in the first stage are 0.83 (0.44), 2.96 (0.05) and 7.04 (0.002), respectively.

center's allocation across villages can be found amongst either the poverty indicators or the (distinct) variables that enhanced village performance at reaching the poor. There are few exceptions. The Grameen Bank's presence in a village appears to attract program resources from the center and to be associated with better village-level performance in reaching the poor with those resources. On the other hand, villages that are hit by a shock are better targeted by the center, but are less able to target their own poor.

Taken as a whole, our results offer little support for the view that the center is more accountable to the poor than local communities. Roughly speaking, the center appears to be neutral to poverty at village level, while the majority of villages achieve a degree of pro-poor targeting at household level.

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