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Local Inequality and Project Choice in a Social Investment Fund

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Abstract: In the context of Social Funds, which form a large part of the World Bank's community-driven development (CDD) approach, the main decisions for a community are whether to apply for a project and what type of project to apply for. Despite numerous recent evaluations of Social Investment Funds in various countries around the world, quantitative evidence on the local determinants of project choice remains scant. In this paper, using data on Ecuador's Social Investment Funds (FISE), we examine the relationship between the type of project chosen by the community and its characteristics, with a particular interest in the local distribution of income. Consistent with the predictions of our model, we find that communities with higher levels of inequality are less likely to choose projects that provide excludable goods for the poor, such as latrines. The measure of income inequality used matters greatly in the empirical analysis. Furthermore, we find that the poverty headcount, population size, and the level of political support for the incumbent party at the local level are also important determinants of project choice.

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1. Introduction

One of the important innovations in development policy during the past few decades is commonly referred to as Community Driven Development (CDD). This approach takes as central the participation of local communities in the identification, design and implementation of local projects and seeks to shift the role of such communities away from being passive recipients of development assistance to active participants in the development process. Social Funds are an early articulation of this approach and have been initiated in many countries starting back in the 1980s and early 1990s. These "Funds" are (usually autonomous administrative) agencies that finance small sub-projects in several sectors, such as education, health, water, and sanitation in response to demands articulated by local groups and screened against a set of eligibility criteria. They operate as second tier agencies in that they appraise, finance, and supervise implementation of social investments identified and executed by a wide range of actors, including local governments, NGOs, local offices of line ministries and community groups (White, 2002).

Community Driven Development initiatives have not only engaged policy debates, but they also represent very large resource flows. Social Funds were often originally put into place as a temporary measure to mitigate the social costs of structural adjustment programs, but have subsequently come to assume a more permanent place among many countries' safety net policies. Van Domelen (2002) notes that social funds have expanded rapidly to over 60 countries since their beginning in the late 1980s. Mansuri and Rao (2004) report that, more generally, CDD projects have become a major form of development assistance, with the World Bank's portfolio alone approximating $7 billion.

Central to CDD initiatives, including Social Funds, is the idea that projects are demand driven rather than identified and located by central authorities. One of the key issues that arise with such approaches concerns the nature of the demand-driven process. As White (2002) asks: 'How representative are intermediaries, or how well do community groups represent the interest of diffuse communities'? Even after more than a decade of experience with Social Funds, still relatively little is known about how decisions are made at the local level, and who the principal beneficiaries from Social Funds projects are. In their careful survey of the literature, Mansuri and Rao (2004) examine the emerging experience on the impact of CDD projects – including Social Funds. They illustrate that the experience of such projects is far from uniform across countries. They note that assessments which focus on poverty impact tend on balance to come out less positive than assessments which restrict their attention to the question of whether or not projects resulted in improved delivery of specific services.[2]

It is clear that rigorous evaluation of CDD and Social Funds projects should be given high priority. As has been forcefully argued by Platteau, 2004, there are grounds for concern that in the past evaluations have not always approached their task with the appropriate degree of impartiality: "..when evaluations take place, they are often biased in a direction favorable to CDD projects" (Platteau, 2004, page 224). Yet, as has been stressed by many contributors both theory and case-study evidence point to the possibility of local demand-driven projects being captured by elites within communities, with the

[2] The literature evaluating Social Funds has grown rapidly in recent years. Important contributions examining specific countries' Social Funds include, Chase (2002) on Armenai, Chase and Sherbourne Benz (2000) on Zambia, Newman et al (2002) on Bolivia, Paxson and Schady, 2002, and Schady, 2000, on Peru, Pradhan and Rawlings (2002) on Nicaragua, Rao and Ibanez (2005), on Jamaica. World Bank (2003) provides a multi-country analysis.

result that projects do not necessarily benefit the poor, and that genuine community-level participation does not actually get promoted.

Observing and characterizing the phenomenon of elite capture precisely is not a simple matter – and it clearly extends well beyond economic considerations to questions of power and influence. However, while the definition and measurement of elite-capture remains an area of active research, there does exist a perception in the literature that it may be at least loosely associated with measures of economic inequality. One of the objectives of this paper is to explore further the notion that economic inequality may act as a proxy for elite capture, and to focus attention also on the need to better clarify what is meant by economic inequality in this context.

The notion that elite capture could be an important, widespread, problem is lent a certain surface plausibility in light of growing evidence that incomes are far from equally distributed even in small, poor, communities For example, Elbers et al (2004) demonstrate, on the basis of recently completed "poverty maps" in Ecuador, Madagascar and Cambodia, that there is wide variation across villages in the degree of village-level consumption inequality. They show that in many communities, levels of inequality can be as high as at the level of the country as a whole. Importantly, they find no evidence that inequality is somehow less pronounced in poor communities than in rich ones.[3]

The question of how elite capture influences the operation of Social Funds projects, and CDD initiatives more broadly is also far from settled. It might be argued

[3] The observation of high levels of income or wealth inequality within even small communities does not derive only from poverty maps. High levels of inequality have also often been noted in detailed village studies. Jayaraman and Lanjouw (2000) survey a number of longitudinal village studies undertaken in India during the second half of the 20th century. In many of these studies, inequality is the explicit focus of attention, and many authors argue that such economic heterogeneity impinges in many ways on village life – in social, political and economic terms.

that elite capture acts to prevent communities from reaching a consensus around desired projects, from organizing themselves in a cooperative manner and from mobilizing voluntary contributions in kind or cash from community members. On the other hand, as has been pointed out in a World Bank evaluation of Social Funds performance, project applications do require that some kind of initiative be taken, and this is usually most easily done by community members with "..sufficient social standing to mobilize the community" (Carvalho and White, 1996). White (2002) points out that since the 'prime mover' is very often a headmaster/teacher or a health worker there is a disproportionate number of schools and clinics amongst projects.

From this perspective, the presence of some kind of "elite" might actually be needed for an application to actually become formulated.[4] In light of these considerations one might expect to see some kind of association between articulated demands for Social Funds projects and a proxy for elite capture within communities (positive or negative depending on which of the arguments outlined above are appropriate). In this paper we are unable to analyze in great depth the relationship between economic inequality (our proxy for elite capture) and the likelihood that a community will *apply* for a Social Funds project. This is because we lack data on project applications, as opposed to projects *granted*. We are able, however, to offer some insights by looking at the relationship between inequality and the likelihood that a community obtains at least one Social Funds project.

The more central focus of this paper is on an additional aspect of the relationship between elite capture (proxied by inequality in the distribution of consumption

[4] Bardhan & Mukherjee (2000), Khwaja (2002), and Dayton-Johnson & Bardhan (2002) suggest the possibility of a non-linear effect of the presence of elites – while some differentiation across community members might be helpful, too much differentiation may act to reduce the scope for cooperation.

expenditures) and the operation of Social Funds projects.[5] The literature on Social Funds has tended not to concentrate too much on the determinants of communities' specific choice of projects. One possible reason is that there is an, often implicit, impression that Social Funds finance local public goods such as schools, health posts, roads, irrigation, and so on. The benefits of such projects accrue to all members of the community, and the choice of project might therefore be thought to be driven largely by the specific circumstances, and state, of public goods provisioning in the village. It is not obvious, under such circumstances, how within-community inequalities would have much of a bearing on project choice. Empirical evidence provides some support to this perspective - many Social Funds projects do indeed produce local public goods. However, the project-level data that we review in this paper suggest public goods are not inevitable. We suggest that a non-negligible proportion of projects in fact comprise the delivery, in kind, of excludable goods that accrue to particular beneficiaries within the community and not to others. For example, we point to a sizeable number of FISE projects providing private latrines. Given this observation, we ask how the choice between public and excludable, private, goods provisioning might be influenced by a community's level of poverty and the degree of inequality.[6]

We develop in the next section a theoretical framework that analyses within-community political decision-making process in the presence of inequality of income and an assumption that political power or influence at the level of the individual is a function

[5] Bardhan and Mookherjee (2000) argue that the net effect of various local factors in a decentralized setting, such as superior local information and greater capture by the local elites, on outcomes is theoretically ambiguous and call for more empirical assessments of projects, such as the one examined here.

[6] See also Kanbur (2001, 2003) for analysis of the relationship between within-community inequality and local public goods provisioning.

of income level. This model demonstrates how poorer communities, conditional on inequality level, might be expected to prefer to opt for Social Funds projects that are of an excludable, rather than public good, nature. The model also suggests that, conditional on poverty rate, more unequal communities might be expected to prefer to choose public goods projects.

In our empirical analysis we examine detailed information on the operation of Ecuador's Social Fund program (called the Emergency Social Investment Fund, or FISE) in rural areas of the country during the first two years of the program starting in 1993. We take Ecuador's rural *parroquia* as our principle unit of observation. A parroquia is the smallest unit in the Ecuadorean government's administrative system – comprising on average about 1000 households - and corresponds roughly to the notion of a "village" or "community". In FISE's project database, it is the parroquia that is identified as the "community" demanding a particular project. We link our data on the number and type of FISE project in each of Ecuador's parroquias with a variety of additional parroquia-level variables. These include parroquia level estimates of poverty and inequality for the year 1990, census-based demographic variables and indicators of parroquia-level infrastructure need, geographic data proxying parroquia's remoteness and administrative functions, and variables indicating how parroquias voted during presidential elections immediately preceding the introduction of the FISE project. The latter variables are intended to capture the extent to which the FISE expenditures might have been implemented as an instrument of central government patronage.[7]

[7] Schady (2000) illustrates in the case of Peru's FONCODES Social Fund that these expenditures were not immune from political influence in terms of timing and geographic distribution.

We employ two empirical strategies to test for the impact of local poverty and inequality on a parroquia's choice of FISE project. These two approaches are intended to span two possible ways in which the FISE program was implemented in Ecuador. Official documents and other studies of the FISE (and of other Social Funds projects) are not always completely clear on the manner in which funding is granted. It is commonly implied by the literature that Social Funds projects are implemented in a sequential manner – whereby central government allocations are first made at a geographic level on the basis of some kind of spatial poverty profile (often at a district or provincial level), and subsequently communities within these localities that receive allocations are invited to apply for funding of the projects that they choose. Close reading of FISE's project documents, however, suggest that it is not necessarily valid to disassociate entirely a parroquia's choice of specific project from the question of whether there are funds available to apply for. For example, it appears that in Ecuador, the government takes an interest in the community's choice of project and may not simply rubber-stamp any proposal that meets the technical requirements for eligibility. Accordingly, in our empirical analysis, we estimate the relationship between poverty, inequality and project choice, allowing for both a sequential and a single-shot process.

The main conclusion from our analysis is that poorer communities (controlling for inequality and other characteristics) are indeed more likely to implement FISE projects that produce excludable goods. In particular, we find that such communities are more likely to opt for projects that produce private latrines for households not connected to a sewage network. At the same time, given a particular level of poverty, communities that are more unequal are more likely to implement FISE projects the produce public goods.

We suggest that these findings are consistent with the notion that in unequal communities, where political power is more concentrated amongst the rich, Social Funds projects that generate private goods – particularly those that are preferred by the poor – are less likely to be chosen.

An important corollary from our analysis is that the way in which inequality is measured matters crucially for the analysis. From both a theoretical perspective and in the empirical analysis we suggest that inequality is most usefully proxied by an indicator measuring the share of total income that accrues to the richest segments of the community. Such an indicator is readily interpretable from a theoretical perspective, and is also statistically significant in the empirical analysis. Conventional measures of inequality, such as the Gini coefficient, on the other hand, are found to have little explanatory power in our analysis.

2. A Simple Model

This section presents a simple model of project choice in communities where there is wealth inequality, and where local power is related to wealth. It focuses on the case where communities can choose between a public good project, and a private good project, but where the private good project is a basic necessity.

Consider an economy, the rural sector of which consists of J communities (or villages), indexed by $j = 1,\ldots, J$. Agents that live in these communities are indexed by $i \mid i \in j = 1,\ldots,I$. Agents are ex-ante identical in every respect, except for their initial wealth level, w_i. Each village is therefore characterized by its own wealth distribution function, $F_j(w)$.

There are three goods in this economy. The first is a perfectly divisible private consumption good *c*, which is taken as the numeraire, and on which there is a subsistence constraint: agents need to consume at least $\bar{c}$ in order to survive.[8] We think of this composite good as including the basic necessities of life in a developing country setting, such as food and clothing.

The second good, *x*, is a lumpy private good. It is consumed in discrete units, at price *p*. We think of it as an excludable good that may require considerable investment to purchase or produce, such as a latrine, a house, or a refrigerator. Finally, there is a (local) public good *g*, such as a village school, a health clinic, or a road. Even if *g* is technically excludable and rivalrous in consumption (such as a classroom), we assume local institutions are such that the good is treated as a local public good.

Agents are endowed with a unit of labor supply ($l = 1$), which they supply inelastically, and with their initial wealth level w_i. This is a simple rural economy, in which all production (of the numeraire good *c*) takes place through a common-knowledge production function:

$$y_i = f(l_i, w_i), f_l, f_w > 0, f_{ww} < 0 \qquad (1)$$

The production function is assumed to be atomistic: no production pooling is possible across agents. We also assume an extreme form of credit market failure: no credit markets exist at all. For simplicity, we assume that *x* and *g* are produced in a separate sector of the economy (possibly the "urban" sector) and traded, but the results

[8] This assumption is not necessary for any or our key results. It is included only because of the plausibility of a subsistence constraint in a poor rural setting.

would carry through if x were produced using an individual's own labor and wealth, provided its lumpy character were preserved. The rural sector is a small player in the market for x, so its price is taken as given. Because of its local public good nature, we assume that g can only be produced by the government, and some amount g_j is exogenously provided to village j prior to the launch of the Social Fund.

Agents maximize an objective function given by:

$$U(c_i, x_i, g_j) \tag{2}$$

subject to $c_i + px_i \leq y_i$ and $c_i \geq \bar{c}$.

The utility function in (2) is weakly increasing and concave in all arguments, but $U_x(c,0,g) \geq p$ and $U_x(c,1,g) = 0$, $\forall c, g$. *(Assumption 1).* Assumption 1 implies that there is a unit individual demand for x. Individuals who do not own a unit of x want to purchase it, but additional units after the first one have no value. We argue that, in a poor rural setting, this is broadly consistent with its chosen depiction of a house, latrine or refrigerator.

Pre-Social Fund Partial Equilibrium

Under these assumptions, an equilibrium of this rural economy is fully described by its income distribution and consumption profile. Let $G_j(y)$ denote the unique village income distribution function that arises from the application of individual endowments to production function (1).

The consumption profile is as follows:

$c_i = y_i \quad ; \quad x_i = 0$ and $g_{ij} = g_j$ if $y_i < \tilde{y}$

$c_i = y_i - p \; ; \; x_i = 1$ and $g_{ij} = g_j$ if $y_i \geq \tilde{y}$

where $\tilde{y} = \inf\{y | x(y) = 1\}$ denotes the lowest level of income at which agents start demanding one unit of good *x*. Without making additional assumptions about the utility function, we do not know the exact value of $\tilde{y}$, but we do know that $\tilde{y} \geq \bar{c} + p > 0$, for any utility function satisfying the properties of (2).

The implication is that the poorest section of the population – a proportion $G_j(\tilde{y})$ in village j – does not consume good *x* (the latrine, or refrigerator). *x* is only consumed by people richer than $\tilde{y}$. Everyone in village j has access to the exogenously given level of local public good g_j.

The Social Fund

Now suppose that a social fund is created with the explicit objective of reducing poverty in this rural economy, by making in-kind transfers of goods *x* and *g* (which are produced elsewhere) to specific communities. In keeping with the participatory design of Ecuador's FISE – which is common to most social funds created across Latin America during the 1990s – suppose the communities themselves must decide on what project they prefer to receive.

Specifically, suppose each community *j* must choose one of two possible projects:

$\pi_1 : \forall i \in j$ receives one unit of *x*

$\pi_2 : j$ receives an increment of public good of Δg_j.

Although "community participation" and "decentralized decision-making" were buzzwords frequently found in the documents that launched FISE in Ecuador in 1993 - and indeed in many other social funds launched across the developing world in the 1990s - it is harder to find a description of the exact decision-making mechanism that communities were supposed to adopt in making an application for a project. Local NGOs were often involved, and village or town assemblies are known to have taken place. In all cases, a full proposal had to be written and submitted to a *Comite de Aprobaciones* (Selection Committee). It is not clear whether an explicit vote was taken on a number of proposals within each village, or what alternative mechanism existed to make these choices.

Bearing this in mind, we model the political process at the village level in a simple reduced-form manner. Let each agent *i* be endowed with an *influence function* $v_j(y_i)+\varepsilon_i$, which we allow to be village-specific. ε_i is a zero-mean random variable, distributed according to $H(\varepsilon)$ in $[\underline{\varepsilon}, \bar{\varepsilon}]$, independently from income, which is meant to capture idiosyncratic determinants of influence, such as personality. Only three conditions are imposed on influence functions: (i) $v_j(y_i) \geq 0, \forall i, j$; (ii) $v_j'(y_i) \geq 0, \forall i, j$; and (iii) $\int_0^{\infty} \left[\int_{\underline{\varepsilon}}^{\bar{\varepsilon}} \left[v_j(y) + \varepsilon_i \right] dH(\varepsilon) \right] dG_j(y) = 1$.

In such a political system, if preferences over the vote vary monotonically with incomes *y*, a variant of the median voter theorem (Roberts, 1977) can be applied. The result of the vote is then the choice of the pivotal voter $p^* = G(y^*)$, where y* is implicitly determined by $\int_0^{y^*} \left[\int_{\underline{\varepsilon}}^{\bar{\varepsilon}} \left[v_j(y) + \varepsilon_i \right] dH(\varepsilon) \right] dG_j(y) = \frac{1}{2}$.

Partial Equilibrium after the introduction of the Social Fund.

Given the political process outlined above, village decisions on whether to apply for project π_1 or π_2 hinge on three factors: how individual preferences vary with income levels; the distribution of income $G_j(y)$; and the relationship between political influence and income $v_j(y_i)$.

It is impossible to make any predictions on the first of these factors without imposing a little more structure on the utility function $U(c_i, x_i, g_j)$. Since the essence of the model does not depend on whether the arguments of the utility function are complements or substitutes, we assume that $U_{cx} = U_{cg} = U_{xg} = 0, \forall c$.

Proposition 1: Under this assumption, there are two possible equilibrium cases:

(I): If $U(c,1,g_j) - U(c,0,g_j) \leq U(c,0,g_j + \Delta g_j) - U(c,0,g_j), \forall c \leq \tilde{y}$, then π_2 is chosen unanimously in village *j*.

(II): If $U(c,1,g_j) - U(c,0,g_j) > U(c,0,g_j + \Delta g_j) - U(c,0,g_j), \forall c \leq \tilde{y}$, then policy preferences differ on 'class' lines, with the poorest agents in *j* supporting project π_1, and the richest agents supporting π_2. *Proof*: see Appendix.

It is natural to interpret case (I) as one in which village need for public good g_j is very high. Perhaps there is no school at all, or no roads through which to transport produce to nearby markets. If need for g_j is so great that even those without latrines (or refrigerators) prefer an increment in the level of the local public good than to get access to a unit of *x*, then there is unanimous support for the local public good project.

Case (II) corresponds to situations in which the endowment of the local public good g_j is not so low, and those without lumpy private goods (latrines) gain a greater

welfare improvement from a unit of the latter than from the proposed expansion in schools, health clinics or roads.

In case (I), it is clear that the community will apply for project π_2. In case (II), however, the victorious project depends on the distribution of incomes $G_j(y)$, and on the nature of the local politics, as determined by the influence function $v_j(y_i)$. If we are prepared to consider a poverty line no higher than the threshold income $\tilde{y}$, it turns out that this simple model generates two testable predictions about the relationships between project choice and two aspects of village income distribution, namely the incidence of poverty and local inequality.[9]

Proposition 2: In case (II), for a given influence function, a greater incidence of poverty leads to a greater probability that project π_1 is chosen. *Proof*: see Appendix.

Proposition 3: In case (II), for a given influence function, an increase in income concentration at the top leads to a lower probability that project π_1 is chosen, provided it is not financed exclusively by the non-poor. *Proof*: see Appendix.

The intuition for these results is straight-forward. Proposition 2 states that, since people with incomes lower than the threshold level $\tilde{y}$ prefer project π_1 (e.g. latrines), the probability that this project type is selected, everything else constant, rises in $G(\tilde{y})$, which is the poverty incidence.

The result in proposition 3 follows from the fact that political power rises with income. As a distribution changes so that income is more highly concentrated at the top

[9] In this economy, it seems natural to treat $\tilde{y}$ itself as the poverty line. Economists from Adam Smith to Amartya Sen have defended a view of poverty as the inability to consume goods (or enjoy functionings) widely regarded as basic necessities in their community. In this model, $\tilde{y}$ is exactly such a threshold. In what follows, we treat it as the poverty line, although all results would hold for any $z \leq \tilde{y}$.

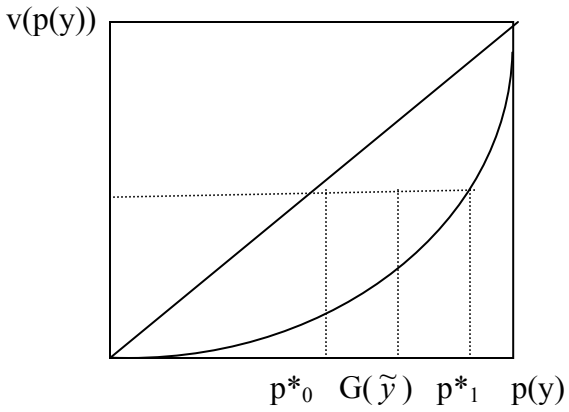
(above some high income level $\hat{y}$), the income share – and thus the political influence - of everyone below that threshold must fall. Provided that the additional share at the top comes at least in part at the expense of the poor (those with incomes $y \le \tilde{y}$), then the income and influence share of the poor (who prefer project π_1) must fall. So must the probability that such projects are selected.

For a concrete example, let $v(y) = \frac{y}{\mu_y}$, where $\mu_y \equiv \int_0^\infty y dG(y)$. In this special case, the cumulative influence function is given by the income Lorenz curve:

$$\int_0^y \left[\int_{-\infty}^{\infty} \left[v_j(z) + \varepsilon_i \right] dH(\varepsilon) \right] dG(z) = \int_0^y \frac{z}{\mu_y} dG(z) \equiv L(y).$$

Figure 1 shows that greater income inequality, denoted by the lower Lorenz curve, is associated with a choice of π_2 (since $p_1^* > G(\tilde{y})$) while lower inequality, denoted by the upper Lorenz curve, is associated with a choice of π_1 (since $p_0^* < G(\tilde{y})$)

Figure 1: Inequality and Project Choice



The figure illustrates the general point that, if local political influence is correlated with socio-economic status, increases in local income inequality are naturally also associated with increases in political inequality and local elite capture. Other things equal, this leads to the prediction that more unequal communities should be less likely to choose pro-poor projects. In this particular set-up, those projects happen to be private-good projects, such as latrine construction.[10]

Extensions: Multiple Proposals and Counterpart Funding

In many social funds, including Ecuador's FISE, communities were permitted to make more than one proposal. In our framework, since both μ_1 and μ_2 projects generate benefits – at no cost – to the communities, proposals would be made for both project types in both Case I and Case II villages.

Assuming (reasonably) that the Social Fund budget is finite, central administrators must select proposals for funding. Our basic results from the previous subsection will carry through to the case of multiple proposals if we are prepared to

[10] The particular functional form used for the influence function in Figure 1 would lead to this prediction for any measure of income inequality that satisfies the Pigou-Dalton transfer principle. It is possible, however, to think of influence functions that are particularly top-sensitive, and that may therefore respond to measures of income concentration at the top, but not to other measures, such as the Gini coefficient.

assume that a minimum amount of collective influence (v_c) is required for the success of any proposal. This assumption may reflect the need for a minimum quorum of support for a proposal to be made within community j, such as the minimum size of a group needed to write and sign the proposal, and to coordinate with local FISE representatives. It may also reflect the likelihood that proposals with very limited local support are less likely to be selected for funding at the central level.[11]

Under this assumption, any communities where $\int_0^{\tilde{y}} \left[\int_{\underline{\varepsilon}}^{\bar{\varepsilon}} \left[v_j(y) + \varepsilon_i \right] dH(\varepsilon) \right] dG_j(y) < v_c$ would propose only π_2. Only those villages with a larger mass of political influence below the threshold income $\tilde{y}$ would also propose π_1. Therefore, the greater the incidence of poverty (the higher $G(\tilde{y})$), the likelier a π_1 proposal. (as in Proposition 2). And the greater the income concentration at the top, the less likely a π_1 proposal. (as in Proposition 3).

Another way in which rationing may be implemented by the center when multiple proposals are accepted is to require counterpart funding from beneficiary communities. Indeed, for some – but not all – projects in Ecuador's Social Fund, counterpart funding was prevalent. Empirically, this was hardly ever the case for private good projects (π_1), which is consistent with the model's implication that all agents wealthier than $\tilde{y}$ - exactly those who wield greater influence – would not be prepared to contribute. If there are any beneficiary contributions for private good projects, those are also private in nature, such as land where a latrine may be built.

[11] FISE representatives often attended community meetings where projects were proposed. See World Bank (1994).

It is possible, however, that different types of public good projects are more suited to beneficiary contributions than others. In the Ecuadorian case, it seems that projects that involved construction work in the village often required contributions, in cash or in labor. Conversely, the provision of materials "imported" from elsewhere – such as school equipment – required counterpart financing much more seldom.

In our framework, the simplest way to allow for counterpart contributions from beneficiary communities is to distinguish between two types of public good projects: π_2^a, which produces good g^a without requiring any counterpart funding, and π_2^b, which produces good g^b provided that some minimum per capita contribution C is made by the recipient community. For simplicity, let us return to our original assumption that a community must choose a single project, but now from a menu that includes three types: π_1, π_2^a and π_2^b.

Proposition 4: For a given distribution of relative incomes and for a given influence function, poorer villages are less likely to select public good projects that require counterpart funding. *Proof*: see Appendix.

The intuition is that poorer villages, which were already likelier to select private good (latrine) projects are even less likely to select public good projects if they have to pay for them. To the extent that we observe poorer villages selecting public good projects, they are therefore more likely to be of the "free" (π_2^a) kind. One should therefore observe public good projects with counterpart funding in richer villages, or in those which are sufficiently unequal to be able to impose this preference through a greater concentration of political influence at the top.

We are now in a position to take the predictions of this simple model to the data, which refers to Ecuador's Social Fund in the period from 1993 to 1996.

3. Ecuador's Fondo de Inversión Social de Emergencia and the Data Set.

The Ecuador Social Fund

Ecuador's Fondo Inversión Social de Emergencia (FISE) was created in March 1993. It was a new type of instrument in the social policy toolbox and the government presented it as a program that would be targeted to compensate the poor for some of the costs of the macroeconomic program that had been implemented to cut inflation. FISE was created with resources from international organizations (USAID, IDB, the Andean Finance Corporation, and the WB), matched with local funds. It was administered by an agency under the direct supervision of the President and had a board of managers with representatives of various Ministries (Social Welfare, Education, Health, Labor, Finance, Agriculture, and Information).

FISE financed small projects that were managed and implemented by local governments and local organizations. The resources could be used in five types of projects: social infrastructure, socio-economic infrastructure, social services, institutional development and productive community[12] investments. However, they could not cover operational budgets of an organization. Over its first year, the fund executed 608 projects nationally for a total of 9.3 million dollars. Indirectly, when the projects involved construction, it created employment for local contractors as well as for unskilled labor.

[12] The term community is used here as a synonym of *parroquia*, parish, the smaller administrative unit in Ecuador.

Before approaching the communities, FISE established central targets as to what share of the budget could be spent in the different types of projects. In addition, it incorporated criteria of geographic targeting by allocating proportionally more resources to communities with higher poverty rankings.

FISE employed a participatory approach. Regional offices gathered community organizations and local governments to promote the program as well as the guidelines for project presentation. In these sessions, FISE indicated what their priorities were in terms of the types of projects for which resources were available. In addition, attendees were provided with reference costs for different types of projects that they could use in preparing their application.

Once FISE approved a project, an executing agency or contractor was chosen and a representative from the community was appointed to ensure that the contract was honored during project execution. While there are no records of what the communities' processes of project selection were, the community representative was granted a power of attorney by the community for whom he was acting as an agent. In addition to these monitoring efforts, technical supervision was provided by FISE.

Project-Level Data

The Ecuador FISE project included the introduction of a computer-based management information system (MIS) that was intended to assist with monitoring of the project cycle and the overall performance of the project. The MIS provides information on the choice, number and location of projects, key dates (of application, approval and completion), size of FISE transfer and amount of community-level counterpart funding,

and on the name of implementing agency (contractor, NGO, the community itself, etc.). MIS data covering all projects that were applied for between May 1993 and January 1996 - and that were granted - serve as our source of project-level information. Information is available on a total of 2,876 projects. The MIS data reveal that many parroquias applied for and were granted more than a single FISE project.

For the purposes of this study, the key variables of interest are the type of project and the name and location of community (known as the 'parroquia') which has requested the project. Table 1 documents the percentage breakdown of projects across types. Just over a third of projects (34%) comprise the acquisition of school equipment and material. FISE project documents indicate that equipment included such items as blackboards and desks, but the project explicitly did not allow for the acquisition of school books. Another 32% of projects involved new construction of school rooms or school buildings. While projects supplying school equipment involved the delivery of goods in kind, construction projects involved transfers of funds which were used to finance contractors for the construction work. Another difference between projects involving the acquisition of equipment and projects that involved construction is that the latter generally involved significant counterpart funding by the community requesting the project. Projects involving the acquisition of equipment did not require communities to provide counterpart funding.

A third, sizeable, category of projects comprises construction of latrines (13% of all projects). These projects are of central importance to the analysis in this paper for two main reasons. First, latrines are used largely by the poor in rural Ecuador (see Table 2). Evidence from household surveys indicates that non-poor households are far more likely

to use other forms of sanitation infrastructure – such as toilets with connections to a networked water supply, or septic tanks. Second, the latrines constructed by the FISE are best seen as private goods that accrue to households previously with no sanitation infrastructure. Project documents indicate that beneficiary households obtaining such latrines had to provide the land on which the latrine was constructed. Each beneficiary household received a latrine, and these were intended for the household's exclusive use.[13] The donation of land constituted the main form of counterpart provisioning by the beneficiaries for these projects (counterpart funding in financial terms – while not zero – was generally a small percentage of the overall project value).

The empirical analysis below takes as unit of observation all parroquias in rural Ecuador. For each parroquia an indicator is created as to whether or not it received a FISE project. A separate indicator is produced indicating whether a parroquia received *at least* one latrine project.[14] These parroquia-level project variables serve as the principal variables of interest. We seek to assess to what extent the values taken by these indicators are affected by parroquia-level characteristics, such as poverty and inequality.

Poverty and Inequality Estimates at the Parroquia Level

[13] A separate category of FISE projects – designated "public toilets" – are more readily seen as public goods, and are kept separate from the latrines category in Table 1. These represent around 4% of all FISE projects.

[14] We also have information on how many projects of each type were received by the community and how much funding (both FISE and local counterpart) was provided for each project. However, these data seem unreliable for use in our empirical analysis. For example, for projects with in-kind transfers, such as equipment and materials, the funding is usually entered as 'zero' in the MIS database. Furthermore, sometimes, the total amount of funding the community or the applicant received seems to have been entered under one project line and the rest of the projects again register 'zeros'. For this reason, we refrain from checking the robustness of our results to the manner in which the dependent variable is defined, by using these data.

Poverty and inequality rates have been estimated at the level of each parroquia on the basis of a methodology that has been described in detail in Elbers, Lanjouw and Lanjouw (2002, 2003). We estimate poverty based on a household per-capita measure of consumption expenditure, y_h. A model of y_h is estimated using 1994 household survey data (INEC's Encuesta Sobre Las Condiciones de Vida), restricting explanatory variables to those that are also found in, and strictly comparable to, the population census of 1990. The regression models consumption on a set of household-level demographic, occupational and educational variables as well as census variables calculated at the level of the census-tract or other level of aggregation above the household level.

Letting W represent an indicator of poverty or inequality, we estimate the expected level of W given the observable characteristics in the population census and parameter estimates from model estimated on the household survey data.

We model the observed log per-capita expenditure for household h as:

$$\ln y_h = \mathbf{x}_h\boldsymbol{\beta} + u_h, \tag{1}$$

where $\mathbf{x}_h\boldsymbol{\beta}$ is a vector of k parameters and u_h is a disturbance term satisfying $E[u_h|x_h] = 0$. The model in (1) is estimated using the survey data. We use these estimates to calculate the welfare of an area or group in the population census. We refer to our target population as a 'village'.

Because the disturbances for households in the target population are always unknown, we consider estimating the expected value of the indicator given the census

households' observable characteristics and the model of expenditure in (1). We denote this expectation as:

$$\mu_v = \mathrm{E}[W \mid \mathbf{X}_v, \boldsymbol{\xi}], \tag{2}$$

where $\mathbf{X}_v$ is a matrix of observable characteristics and $\boldsymbol{\xi}$ is the vector of model parameters, including those that describe the distribution of the disturbances.

In constructing an estimator of μ_v we replace the unknown vector $\boldsymbol{\xi}$ with consistent estimators, $\hat{\boldsymbol{\xi}}$, from the survey-based consumption regression. This yields $\hat{\mu}_v$. This expectation is generally analytically intractable so we use simulation to obtain our estimator, $\tilde{\mu}_v$.

The first-stage estimation is carried out using the ECV 1994 household survey. This survey is stratified at the region as well as for rural and urban areas. Within each region there are further levels of stratification, and also clustering. At the final level, a small number of households (a cluster) are randomly selected from a census enumeration area.

Our empirical model of household consumption allows for an intra-cluster correlation in the disturbances (see Elbers, Lanjouw and Lanjouw, 2002, 2003 for more details). Failing to take account of spatial correlation in the disturbances would result in underestimated standard errors. We estimate different models for each region and we include in our specification census mean variables and other aggregate level variables in order to capture latent cluster-level effects. All regressions are estimated with household weights. We also model heteroskedasticity in the household-specific part of the residual,

limiting the number of explanatory variables to be cautious about overfitting. We approximate both the cluster and household-level disturbances as either normal or *t* distributions with varying degrees of freedom.[15] Before proceeding to simulation, the estimated variance-covariance matrix is used to obtain GLS estimates of the first-stage parameters and their variance.

The estimates of poverty and inequality produced for Ecuador based on the above methodology have been described in greater detail in Dembombynes et al (2004) and Elbers et al (2004).[16] These studies document that in Ecuador there exists a considerable amount of heterogeneity across parroquias in terms of both poverty and inequality. At the aggregate level, rural poverty rates are generally highest in the eastern, Amazon, region. However, at the local level pockets of very high poverty are also discernable in the central, mountainous, Sierra region and along the Coast. Elbers et al (2004) note that inequality levels vary markedly across parroquias, and emphasize that there should be no presumption that inequality levels are somehow lower in poorer communities.

Additional Control Variables

In addition to the poverty and inequality estimates that are of primary interest in our investigation of the determinants of project choice, we include a number of control variables intended to capture the influence of other factors determining project choice.

[15] Rather than drawing from parametric distributions in our simulations, we can also employ a semi-parametric approach by drawing from observed residuals in the first stage model. Our results have generally been found to be quite robust to the choice of parametric or semi-parametric draws.

[16] A question of some importance to this study is whether the poverty map estimates should be seen to correspond the year 1990 (the year of the census) or 1994 (the year of the household survey). Hentschel et al (1999) argue that because the period between 1990 and 1994 was essentially one of economic stagnation it is not unreasonable to assume that the relationship observed between consumption in 1994 and household characteristics in that year was essentially unchanged from the relationship that held in 1990. As a result, one can view the poverty map as a reasonable snapshot of the spatial distribution of poverty in both years. For further discussion of these issues see also Elbers et al (2005).

From the 1990 census data we calculate population figures at both the province and the parroquia level. This data source also allows us to calculate the percentage of the population in each parroquia that is of indigenous ethnic origin (our criterion of ethnic origin is based on language spoken). These demographic characteristics could be thought to influence project choice in a variety of ways, and in the case of population are also important to the assessment of whether the FISE program is well targeted at poor communities. Project documents note explicitly that the targeting of FISE funding was to be based on a combination of measured poverty and population of provinces (although the targeting was based on an ad-hoc map entirely unrelated to the map outlined above). A simple correlation between presence of a FISE project and incidence of poverty at the parroquia level finds no significant association between FISE project and poverty – suggesting very poor targeting. However, once the parroquia population is controlled for, the association positive and strongly significant. As was found by Schady and Paxson (2002) in the case of the FONCODES Social Fund in Peru, geographic targeting of Ecuador's FISE project appears to have been rather good in the sense of targeting those regions with large populations of poor people.

Census data are also exploited to construct proxies for different types of infrastructure "need" at the level of each parroquia. From the census we calculate the percentage of households in each parroquia that are connected to a piped sewage network, the percentage of households that use modern toilet facilities (flush toilets or toilets connected to septic tanks), the percentage of households with access to piped water supply, and the percentage of children (5-12 year olds) enrolled at school.

Further control variables included in our analysis capture geographic differences. The first is the distance of each parroquia from Quito, the capital of Ecuador and seat of the central government. This variable was computed as a linear distance, using the geographic coordinates of the parroquias. It is an imperfect estimate of proximity, as it does not measure actual travel time between two locations. For ease of interpretation, distance is expressed in kilometers. Data on geographic coordinates was obtained from the Sistema Integrado de Indicadores Sociales del Ecuador, SIISE and it did not include all of the parroquias of Ecuador. For locations for which no geographic coordinates were available, we imputed those of the closest parroquia. These imputations were done based on a visual inspection of a map. A second geographic variable takes the value of 1 if the parroquia is the administrative capital of the canton it is in. Such parroquias are plausibly more closely connected to the government than others.

Following Schady (2000) we acknowledge the possible role of political influences on the distribution of FISE expenditures. As with Social Funds in many countries, the FISE was an independent agency set up in parallel to established ministries of the government, and in Ecuador was essentially run out of the President's office. It certainly is conceivable that a project such as FISE might be used by the Presidency for purposes other than the official objectives of the project. We examine provincial level results from the second round of the 1992 presidential elections, as published by the Tribunal Supremo Electoral Ecuatoriano, the agency overseeing the electoral process in Ecuador. This election was the last national election prior to the creation of FISE and in fact, FISE started during the administration of PUR (Partido Unidad Republicana), the winning party of the election. We first calculate the share of votes obtained by the PUR, over the

total number of votes in the province. The higher this percentage, the more inclined the central government might be to "reward" a particular province with FISE funding. A second indicator aims to capture the "non-marginality" of a particular province from a political point of view. This measure takes the absolute deviation of the presidential vote in a particular province from 50%. As has been argued in Schady (2000) building on arguments by Dixit and Londregan, (1996) the central government might wish to influence voting behavior in "swing" provinces – provinces in which either its majority is precarious, or it is not far from gaining a majority – on the basis of strategic allocations of FISE resources. The more "non-marginal" a province, on the basis of this argument, the less likely the province would receive a FISE allocation.

4. The Empirical Strategy

As was mentioned in Section 1, we employ two alternative empirical strategies in our attempt to gauge the effect of poverty and inequality on a parroquia's choice of FISE project. Despite the availability of detailed project documents and also a large literature on the implementation of Social Funds projects in other countries, there remain certain aspects of the FISE application, review and granting process that are not entirely transparent. In particular, it is not clear to what extent FISE's decision regarding the amount of funding that was made available to a community was divorced from the parroquia's choice of a specific type of project in its application document.

In a stylized description of how Social Funds projects are implemented, there are usually two distinct steps that need to be followed. First, the Social Fund agency decides, on the basis of some notion of the spatial distribution of poverty or "need", the level of

resources that are to be made available to different communities. In a second stage, the Social Fund then invites applications from communities for specific projects. From this perspective one might think of a community first being informed that a certain amount of funding is available and then subsequently deciding which particular project it would like to finance with these resources.

There is some evidence that in Ecuador the actual process followed by FISE bore some resemblance to this stylized description. For example, the data show that FISE granted virtually no project to the richest 40% of parroquias (defined in terms of the ad-hoc poverty map used by FISE). However, as was mentioned in Section 3 above, there were also many ways in which FISE was implicated in the choice by communities of their project. In particular, FISE provided clear indications to communities what its priorities were in terms of the types of projects for which resources were available. It is therefore likely that when communities expressed their choice of project they were thereby also simultaneously defining the level of resources that would be made available.

Given the ambiguity surrounding the precise process of project selection and the allocation of funding, we employ two econometric approaches that aim to span the possible extremes of either a clear two-step sequential process, or a one-shot simultaneous process. Our first approach is to apply a probit model with selection in which two sequential probit models are estimated.[17] In the first stage, a dummy variable is defined to indicate whether a parroquia received at least one FISE project. In the second stage the model a second dummy variable is defined to indicate whether or not the community chose the pro-poor excludable-good (latrine) or a non-excludable public-good

[17] All estimations are performed with STATA Release 9. Further details on the specific econometric methods can be found in Greene (2003).

project (such as school construction or road building). The second stage probit involves a selected sample of only those communities that received a project. In order for this model to be well identified, the first stage selection model should include at least one variable that does not belong in the second stage model. We have chosen the two political patronage variables defined in Section 3 as variables that could plausibly influence whether or not a parroquia would receive a FISE allocation (depending on whether the parroquia was to be "rewarded" for voting for the governing party in the preceding elections, or whether it was a "swing" parroquia that the central government might wish to court with an eye toward future elections). Within a two-stage process these political patronage variables could clearly influence the first stage question of whether or not a parroquia was to receive funding. But it is not clear why such variables should influence the *parroquia's* choice of project, given availability of funding.

In our second approach we estimate a multinomial probit model to explore the parroquia and province-level characteristics that are associated with the probability of choosing a latrine project, some other project, or no-project at all. A multinomial probit is an appropriate model in those cases where we have a discrete dependent variable with more than two outcomes that do not have a natural ordering. We now explicitly assume that there is no sequencing between the decision to allocate funding and choice of project, and so the three outcomes described above are not ordered in any way. Note that in the case of no-project outcome we are in fact observing those eligible communities that *chose* not to apply for a project as well as those communities that may have wished to apply for a project but were deemed ineligible. This latter outcome thus combines two different sets of decisions that, with our data, are indistinguishable from each other. The

multinomial probit model requires that one of the outcomes be set as the base outcome and in the models estimated below we set the no-project outcome to serve in this capacity.

The specifications estimated in the probit model with selection and the multinomial probit models are largely the same. As discussed above, the Heckman model includes the political patronage variables as regressors only in the selection equation. These variables also feature in the multinomial probit model. We use the headcount rate (FGT0) at the parroquia-level as a proxy for poverty, and the share of total parroquia expenditure of the richest 1% of the population as our proxy for local inequality. This latter variable is a somewhat unusual measure of community level inequality, but it is a fairly natural choice in the context of the theoretical model presented in Section 2. We note that while the results are robust to alternative selection of cut-off points (the richest 10%, 5%, etc.), they are not robust to the inclusion of a conventional measure of inequality, such as the Gini coefficient.

5. Results

Tables 3-6 present the main results. The probit model with selection is presented in Table 3 and it shows that both political variables are significant in the selection stage consistent with the notion that these funds may have been used partly as political patronage purposes by the government. In this two-stage setup (which we know is not entirely realistic), the community-level poverty and inequality manifest themselves in the selection stage, affecting the community's chances of receiving any Social Funds project, but not the likelihood of at least one of those projects being a latrine one. Larger, poorer

provinces with lower inequality are more likely to receive a project than others, while the probability of receiving at least one latrine project seems to only depend significantly on the proportion of households that are connected to a piped sewage network.

Table 4 presents the results from the multinomial probit regression, which treats the determination of a community receiving no project, a latrine project, or another type of project to be simultaneous. In this model, both poverty and inequality affect the probability that a community will receive at least one latrine project in a manner that is consistent with the predictions of our theoretical model, although the headcount index is only significant at the 16% level. Interestingly, poverty, but not inequality, is also significant in predicting the receipt of other project types.(the base outcome that these are being compared with is the receipt of no projects whatsoever). As before larger communities with higher proportions of indigenous populations are more likely to receive latrine projects. Furthermore, while latrine projects go to communities in swing provinces, while other projects seem to be rewards for the incumbent's core support.

The reader will remember that our theory requires the type of project that is preferred by the poor to be excludable and only of use to the poor. Latrines are the only type of projects in the FISE menu that satisfy both of these criteria. However, it is possible that there are other projects that poorer communities might prefer over others, even though these projects have a more public good nature. If there are such projects contained among "other" projects then the coefficient on our poverty variable may be biased (consistent with the results in Table 4). A closer examination of the FISE rules and other project types reveals that while all projects require significant counterpart funding from the receiving communities, school equipment and materials projects (desks,

furniture, etc.) are exempted from this rule. In our data, counterpart funding for these types of projects is zero for all but six projects out of the 977 school equipment and material projects. All other projects, including latrine projects, require significant contributions from the community receiving them.

Tables 5 & 6 present results when the dependent variable in our analysis is defined to be 1 if the community received at least one latrine or school equipment project and 0 otherwise. In effect, our left-hand-side variable is now for pro-poor **or** excudable projects instead of pro-poor **and** excludable ones. As can be seen in Table 5, poverty and inequality are both significant (at the 5% level) in determining weather the community receives a latrine or school equipment project. As before, larger communities with higher proportions of indigenous populations are more likely to receive these projects than others. Selection into the FISE program is still influence by the share of the population that voted for the incumbent, as well as poverty and inequality.

Table 6 presents the results of the multinomial probit. The results are clear: compared with the outcome of receiving no FISE projects, communities that are poorer and less unequal are more likely to receive latrine or school equipment projects. This is not the case for communities that received only other types of projects. As before communities in swing provinces are more likely to receive latrine and school equipment projects while the other projects (more expensive and grandiose) see to be directed towards communities with higher vote shares for the incumbent.

As mentioned before, our results are robust to changes in the definitions of the variables that proxy poverty and inequality in the community.[18] However, if the income

[18] We used poverty gap and poverty gap squared in the above-mentioned models as well as the income share of the richest 5% and 10%. The results are qualitatively identical.

share of top 1% is replaced with the very commonly used Gini index, we get no negative effect of inequality on the community's likelihood of receiving a latrine project. This makes intuitive sense: the real variable of interest here is the inequality of influence and the income share of the richest is likely a better proxy for it than the Gini index.

6. Conclusions

In this paper, we focus on community choice of projects out of a Social Funds menu in Ecuador. This focus is different than that of most papers in the relevant literature, where the attention seems to be more concentrated on the basic question of whether or not a community receives a Social Funds project. Our main interest lies in understanding the role played by elites in community-level decision-making.

To this end, we present a fairly general framework through which predictions are derived on the types of projects communities will demand. Community decisions on whether to apply for a public-good or a private-good project hinge on three factors: how individual preferences vary with income levels; the distribution of income; and the relationship between political influence and income. Our model suggests that poorer communities with lower levels of inequality should be more likely to choose private-good projects, such as latrines, over public-good projects, such as school construction or provision of road infrastructure.

Analyzing detailed project-level information from Ecuador's FISE (1993-1995), and a rich set of controls that include demographic, geographic, distributional, and political variables, we indeed find empirical support for our model's predictions. Our results are stronger when we allow for the possibility of counterpart funding requirements

also entering into the community's decision-making equation. We find that, given two otherwise identical communities, the one with higher inequality (measured by the income share of the richest 1%) is less likely to receive a latrine project. The probability that the community will receive any other type of Social Funds project relative to receiving no project is not affected by the level of inequality in the community.

While the elites in local communities can act benevolently and play a positive leadership role (see, for example, World Bank, 2005 or Rao and Ibáñez, 2005, among others), our results suggest that given enough influence, the elites may also prevent the community from accessing projects which, by and large, exclusively benefit the poor. The fact that the projects chosen still tend to be at least mildly pro-poor may be more of a function of the menu-driven nature of the Social Fund projects and not necessarily the benevolence of the local leadership.

In this paper, we have been rather quick to treat a measure of economic inequality (albeit a carefully chosen one instead of the commonly used Gini index) as a proxy for elite capture. More work is needed to establish the validity of such an assumption.

Finally, our findings here are rather specific to the circumstances of Social Funds projects, notably the dominance of public goods in the menu of possible projects and the greater demand for the private goods (latrines) by the poor. However, it is important to recognize that there are many other programs that are also decentralized in nature. It is quite likely in these settings too that inequality can influence the distribution of benefits of such projects within the community – see, for example, Galasso and Ravallion (2005) on the effect of local land inequality on the targeting efficiency of Bangladesh's Food for Education program. As eloquently stated in Bardhan and Mookherjee (2000), however,

the mechanisms through which these can happen would require further elaboration in each specific context.[19]

[19] Bardhan and Mookherjee (2000) states that: "The contrasting roles of these diverse factors suggest that the extent of relative capture at the local level may well turn out to be context- and system-specific. This creates the need for empirical research to identify the nature of relative capture in any given setting, in order to appraise the potential pitfalls of decentralization." Our paper is one such example.

Appendix: Proofs for Propositions in Section 2

Proof of Proposition 1:

Let $V(y, p; \pi)$ denote the indirect utility function corresponding to *U (c, x, g),* under project choice π.

Case I: Since $c_i = y_i - p$; $x_i = 1$ and $g_{ij} = g_j$ if $y_i \geq \tilde{y}$, (from sub-section 2.1) and $U_x(c,1,g) = 0$, from Assumption 1, it follows that $Arg\max_{\pi}\left(V(y, p; \pi) \middle| y \geq \tilde{y}\right) = \pi_2$.

Since $c_i = y_i$; $x_i = 0$ and $g_{ij} = g_j$ if $y_i < \tilde{y}$ (from sub-section 2.1), then $U(c,1,g_j) - U(c,0,g_j) \leq U(c,0,g_j + \Delta g_j) - U(c,0,g_j), \forall c \leq \tilde{y}$ implies that $Arg\max_{\pi}\left(V(y, p; \pi) \middle| y < \tilde{y}\right) = \pi_2$ as well. Therefore π_2 is chosen unanimously, as claimed.

Case II: As before, $c_i = y_i - p$; $x_i = 1$ and $g_{ij} = g_j$ if $y_i \geq \tilde{y}$, (from sub-section 2.1) and $U_x(c,1,g) = 0$, from Assumption 1. It therefore continues to be the case that: $Arg\max_{\pi}\left(V(y, p; \pi) \middle| y \geq \tilde{y}\right) = \pi_2$.

For those with $y_i < \tilde{y}$, the pre-SF equilibrium implied that $c_i = y_i$; $x_i = 0$ and $g_{ij} = g_j$. But now $U(c,1,g_j) - U(c,0,g_j) > U(c,0,g_j + \Delta g_j) - U(c,0,g_j), \forall c \leq \tilde{y}$ implies that $Arg\max_{\pi}\left(V(y, p; \pi) \middle| y < \tilde{y}\right) = \pi_1$.

Proof of Proposition 2:

Project preferences in case (II) are given by: $Arg\max_{\pi}\left(V(y, p; \pi) \middle| y < \tilde{y}\right) = \pi_1$ and $Arg\max_{\pi}\left(V(y, p; \pi) \middle| y \geq \tilde{y}\right) = \pi_2$. So π_1 is chosen if $y^* \leq \tilde{y}$, and π_2 is chosen otherwise.

Given that y* is determined by $\int_0^{y^*}\left[\int_{\underline{\varepsilon}}^{\bar{\varepsilon}}\left[v_j(y)+\varepsilon_i\right]dH(\varepsilon)\right]dG_j(y)=\frac{1}{2}$, the higher G($\tilde{y}$), the higher the probability that $y^* \le \tilde{y}$.

Proof of Proposition 3:

In expectation (over ε), π_I is chosen if $y^* \le \tilde{y}$. Define $\hat{y}$ as a high level of income, so that incomes above it constitute the top of the distribution for the purposes of this proposition. An increase in the income share of this group causes $\int_{\hat{y}}^{\infty}\left[\int_{\underline{\varepsilon}}^{\bar{\varepsilon}}\left[v_j(y)+\varepsilon_i\right]dH(\varepsilon)\right]dG_j(y)$, its share of political influence to rise. Since total political influence in the population must add up to one, this must imply a decline in $\int_0^{\hat{y}}\left[\int_{\underline{\varepsilon}}^{\bar{\varepsilon}}\left[v_j(y)+\varepsilon_i\right]dH(\varepsilon)\right]dG_j(y)$, such that:

$$\left|\Delta\int_{\hat{y}}^{\infty}\left[\int_{\underline{\varepsilon}}^{\bar{\varepsilon}}\left[v_j(y)+\varepsilon_i\right]dH(\varepsilon)\right]dG_j(y)\right| = \left|\Delta\int_0^{\tilde{y}}\left[\int_{\underline{\varepsilon}}^{\bar{\varepsilon}}\left[v_j(y)+\varepsilon_i\right]dH(\varepsilon)\right]dG_j(y)+\Delta\int_{\tilde{y}}^{\hat{y}}\left[\int_{\underline{\varepsilon}}^{\bar{\varepsilon}}\left[v_j(y)+\varepsilon_i\right]dH(\varepsilon)\right]dG_j(y)\right|$$

The requirement that this gain at the top is not financed exclusively by the non-poor simply requires that both terms on the right-hand side be negative. If that is the case, $\int_0^{\tilde{y}}\left[\int_{\underline{\varepsilon}}^{\bar{\varepsilon}}\left[v_j(y)+\varepsilon_i\right]dH(\varepsilon)\right]dG_j(y)$ must fall with the increase in concentration at the top, and so must the probability that $y^* \le \tilde{y}$.

Proof of Proposition 4:

Under Case I, the original assumption that a public good project was universally preferred, namely $U(c,1,g_j)-U(c,0,g_j)\le U(c,0,g_j+\Delta g_j)-U(c,0,g_j),\forall c\le \tilde{y}$, should now refer to both g^a and g^b. However, in the case of g^b, c_i must be replaced with $c_i-\tau(y)$, s.t. $\int_0^{\infty}\tau(y)dG(y)=C$. Given that U (c, x, g) is concave in all arguments , there must exist some villages such that $U(c,1,g_j)-U(c,0,g_j)\le U(c,0,g_j+\Delta g_j^a)-U(c,0,g_j^a),\forall c\le \tilde{y}$, but $U(c,1,g_j)-U(c,0,g_j)> U(c-\tau,0,g_j^b+\Delta g_j^b)-U(c-\tau,0,g_j^b),\forall c\le \tilde{y}$. Those villages therefore choose g^a if all project types are available, but revert to π_1 if the choice is between x or g^b.

Under Case II, $U(c,1,g_j)-U(c,0,g_j)> U(c,0,g_j+\Delta g_j)-U(c,0,g_j),\forall c\le \tilde{y}$. This implies that $U(c,1,g_j)-U(c,0,g_j)> U(c-\tau,0,g_j^b+\Delta g_j^b)-U(c-\tau,0,g_j^b),\forall c\le \tilde{\tilde{y}}$, where $\tilde{y}<\tilde{\tilde{y}}$. In poor villages, where the probability of selecting a public good project was the probability that $y^*>\tilde{y}$, this falls to the probability that $y^*>\tilde{\tilde{y}}$. This makes it less likely that one observes public good projects with counterpart funding in poor villages.

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Table 1: Distribution of Projects by Type

Type of project	Number of Projects	Share of projects
School (infrastructure)	920	32
School (equipment and materials)	977	34
Latrines	377	13
Sewerage	132	5
Water Supply	129	5
Health	115	4
Other	226	7
TOTAL	2876	100

* Other projects include road works, agroindustry, irrigation, and erosion, crafts, adult training centers, statues, murals and public laundries.

Table 2: Access to toilets and latrines by quintiles of per capita household consumption

quintile	**toilet**	**latrine**	**none**
Poorest quintile	44.5%	12.0%	43.4%
2nd	45.8%	15.4%	38.7%
3rd	51.1%	18.4%	30.5%
4th	56.7%	17.4%	25.9%
Richest quintile	73.9%	9.7%	16.4%
Richest 1%	98.1%	1.9%	0.0%

Table 3: Determinants of receiving at least one Latrine Project (*Probit with Selection*)

Variable	**1st-stage**	**2nd-stage**
1990 Province population	0.04 (0.01)***	0.02 (0.01)
1990 parroquia population	12.42 (1.79)***	2.45 (1.84)
Distance from Quito in km	0.00 (0.00)	0.00 (0.00)
Canton capital	0.32 (0.20)	-0.19 (0.19)
% speaking an indigenous language at home	0.41 (0.31)	0.15 (0.33)
% with access to a piped sewerage network	0.20 (0.58)	-1.31 (0.70)*
% with access to modern toilet facilities	-0.11 (0.46)	-0.61 (0.51)
% with access to piped water supply	0.62 (0.26)**	-0.15 (0.31)
% of children 5-12 enrolled in school	-0.30 (0.52)	-0.56 (0.62)
Headcount Index	1.21 (0.60)**	-0.86 (0.75)
Income share of top 1%	-5.07 (3.03)*	-4.53 (5.13)
% who voted for the incumbent in 1992	1.21 (0.70)*	
Non-marginality index in1992	-2.25 (1.10)**	
Constant	-1.21 (0.71)*	1.26 (0.83)
Observations	835	835

Results are obtained using the "heckprob" command in Stata to implement a probit model with selection. 1st-stage refers to the selection model (of whether a community receives any Social Fund project or not) and 2nd-stage refers to the receipt of at least one latrine project by the community. The null hypothesis of the two equations being independent is rejected at the 5% statistical significance level. Two political variables (% who voted for the incumbent in 1992, and non-narginality index) are used as exclusion restrictions in the selection model. Standard errors are in parentheses. *** denotes statistical significance at 1%, ** at 5%, and * at 10% levels.

Table 4: Determinants of receiving at least one Latrine Project (*Multinomial Probit*)

Variable	At least one **latrine** project	No **latrine** project, but **other** projects
1990 Province population	0.08 (0.02)***	0.03 (0.02)
1990 parroquia population	21.68 (2.68)***	12.73 (2.47)***
Distance from Quito in km	0.00 (0.00)	0.00 (0.00)
Canton capital	0.32 (0.33)	0.53 (0.28)*
% speaking an indigenous language at home	1.19 (0.54)**	0.39 (0.45)
% who voted for the incumbent in 1992	0.71 (1.20)	2.81 (1.08)***
Non-marginality index in1992	-4.18 (2.17)*	-1.73 (1.83)
% with access to a piped sewerage network	-1.09 (1.11)	-0.02 (0.83)
% with access to modern toilet facilities	-1.00 (0.84)	0.66 (0.68)
% with access to piped water supply	1.24 (0.47)***	0.71 (0.37)*
% of children 5-12 enrolled in school	-0.84 (0.94)	-0.14 (0.76)
Headcount Index	1.57 (1.12)	1.74 (0.87)**
Income share of top 1%	-21.36 (7.79)***	-4.33 (4.20)
Constant	-1.10 (1.36)	-2.87 (1.04)***
Observations	835	835

Results are obtained using the "mprobit" command in Stata to implement a multinomial probit. Having received 'no project' is the base outcome. Standard errors are in parentheses. *** denotes statistical significance at 1%, ** at 5%, and * at 10% levels.

Table 5: Determinants of receiving at least one Latrine or School Equipment Project

(*Probit with Selection*)

Variable	**1st-stage**	**2nd-stage**
1990 Province population	0.02 (0.01)	0.02 (0.01)*
1990 parroquia population	11.70 (1.66)***	10.37 (1.48)***
Distance from Quito in km	0.00 (0.00)	0.00 (0.00)
Canton capital	0.39 (0.20)*	0.12 (0.18)
% speaking an indigenous language at home	0.47 (0.31)	0.51 (0.30)*
% with access to a piped sewerage network	-0.37 (0.58)	-0.14 (0.59)
% with access to modern toilet facilities	0.33 (0.47)	0.13 (0.45)
% with access to piped water supply	0.57 (0.26)**	-0.05 (0.26)
% of children 5-12 enrolled in school	-0.36 (0.54)	0.60 (0.56)
Headcount Index	1.30 (0.60)**	1.45 (0.65)**
Income share of top 1%	-5.66 (3.04)*	-8.34 (3.73)**
% who voted for the incumbent in 1992	1.41 (0.54)***	
Non-marginality index in1992	0.24 (0.87)	
Constant	-1.40 (0.69)**	-1.60 (0.73)**
Observations	835	835

Results are obtained using the "heckprob" command in Stata to implement a probit model with selection. 1st-stage refers to the selection model (of whether a community receives any Social Fund project or not) and 2nd-stage refers to the receipt of at least one latrine or school equipment project by the community. The null hypothesis of the two equations being independent is rejected at the 5% statistical significance level. Two political variables (% who voted for the incumbent in 1992, and non-narginality index) are used as exclusion restrictions in the selection model. Standard errors are in parentheses. *** denotes statistical significance at 1%, ** at 5%, and * at 10% levels.

Table 6: Determinants of receiving at least one Latrine or School Equipment Project

(*Multinomial Probit*)

Variable	At least one **latrine or school equipment** project	No **latrine or school equipment** project, but **other** projects
1990 Province population	0.06 (0.02)***	0.02 (0.02)
1990 parroquia population	19.81 (2.55)***	11.23 (2.71)***
Distance from Quito in km	0.00 (0.00)	0.00 (0.00)
Canton capital	0.40 (0.29)	0.53 (0.30)*
% speaking an indigenous language at home	0.95 (0.47)**	0.23 (0.49)
% who voted for the incumbent in 1992	1.72 (1.10)	3.04 (1.21)**
Non-marginality index in1992	-4.37 (1.88)**	0.08 (2.00)
% with access to a piped sewerage network	0.19 (0.89)	-0.51 (0.90)
% with access to modern toilet facilities	-0.17 (0.71)	0.53 (0.75)
% with access to piped water supply	0.49 (0.39)	1.13 (0.40)***
% of children 5-12 enrolled in school	0.35 (0.80)	-1.16 (0.83)
Headcount Index	2.09 (0.92)**	1.12 (0.95)
Income share of top 1%	-13.03 (5.54)**	-2.34 (4.44)
Constant	-2.48 (1.12)**	-2.68 (1.14)**
Observations	835	835

Results are obtained using the "mprobit" command in Stata to implement a multinomial probit. Having received 'no project' is the base outcome. Standard errors are in parentheses. *** denotes statistical significance at 1%, ** at 5%, and * at 10% levels.