

## Collective action for public goods provision in low-income groups: a model and evidence from Peru<sup>1</sup>

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### RESUMEN

¿Bajo qué circunstancias aparece la acción colectiva? ¿Cuáles son los factores que le dan mayores posibilidades de éxito? ¿En qué medida las comunidades pobres tienen capacidad para organizarse con el objetivo de mejorar sus condiciones de vida? Estas preguntas no son nuevas y se han hecho muchas investigaciones, pero usualmente para el mundo rural. La investigación sobre la acción colectiva en el mundo urbano parece estar más desarrollada en la ciencia política que en la economía. La pregunta fundamental se mantiene: ¿cómo se producen y se mantienen los bienes públicos en comunidades urbanas pobres?

Este artículo presenta un conjunto de hipótesis sobre los determinantes de la acción colectiva. La acción colectiva en barrios urbanos pobres enfrentan tres restricciones básicas: el problema olsoniano, el problema de Maslow y el problema de la exclusión. La parte empírica del artículo utiliza datos recolectados en barrios marginales de Lima, Perú, en seis tipos de organizaciones comunales.

**Palabras clave:** acción colectiva, bienes públicos, pobreza urbana.

### ABSTRACT

Under what circumstances does collective action arise? What contributes to the likelihood that a particular collective initiative will succeed? To what extent are poor communities capable of organizing themselves to improve their quality of life? These questions are not new, and economic researchers have studied a number of models in rural settings. Yet the research on collective action in urban areas seems to be more in the political sciences, and an economic model is still lacking. The fundamental question remains: How are public goods produced and maintained by poor urban communities?

This paper presents a set of hypotheses on collective action determinants. Collective action in poor neighborhoods faces three key barriers to success: the Olsonian free-rider problem, the Maslowian problem, and the exclusion problem. The empirical portion of this paper uses data collected in poor urban and peri-urban areas of Lima, Peru, in six types of community organizations.

**Keywords:** collective action, public goods, urban poverty.

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## INTRODUCTION

Under what circumstances does collective action arise? What contributes to the likelihood that a particular collective initiative will succeed? To what extent are poor communities capable of organizing themselves to improve their quality of life? These questions are not new, and economic researchers have proposed a number of models in rural settings<sup>2</sup>. Yet the research on collective action in urban areas seems to be more in the political sciences<sup>3</sup>, and an economic model is still lacking. The fundamental question remains: How are public goods produced and maintained by poor urban communities?

The applied portion of this paper uses data collected in urban and peri-urban areas of Lima, Peru in six types of community organizations<sup>4</sup>. Lima, like many Latin American cities, has seen decades of rapid urbanization; as a result many areas of the city lack infrastructure and basic goods such as water and sewage lines. Approximately 20% of Peruvians live in shantytowns, and of those around half live in Lima. According to Ypeij (2000),

Lima's inhabitants, especially the poor, are forced to develop their own answers to [the crisis of the 1980s and 1990s]... Loyalty, solidarity, and communal work become increasingly important. Organized in grassroots organizations, they invade plots of land and construct houses and neighborhoods. (19)

The following paper attempts to define to what extent communal work has been a solution in poor urban areas, and what allows communal projects to succeed. It will be shown that collective action in such neighborhoods in fact faces three key barriers to success: the Olsonian free-rider problem, the Maslowian problem, and the exclusion problem.

This paper is divided into six sections. Following this introduction, Section 2, using existing literature, presents several of the theoretical issues surrounding collective action. Section 3 offers a model to explain the factors affecting collective action. Section 4 presents a first attempt at collecting data for an econometric application of this model, including qualitative observations. Section 5 includes a quantitative analysis of the data collected. Conclusions are given in Section 6.

## 1. LITERATURE REVIEW

According to Marshall (1988), collective action is «action taken by a group (either directly or on its behalf through an organization) in pursuit of members' perceived shared interests» (Meinzen-Dick, Di Gregorio, & McCarthy 2004: 4). Walton's study on urban collective

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<sup>2</sup> See for instance Berhanu, Pender, and Tesfay (2002), Cárdenas and Ostrom (2004), McCarthy, Dutilly-Diané, and Drabo (2004), Meinzen-Dick, Di Gregorio, and McCarthy (2004), Meinzen-Dick, Raj, and Gulati (2002), and White and Runge (1994).

<sup>3</sup> See for instance Walton (1998) and Joseph (1999).

<sup>4</sup> Note that this is not an assessment of these organizations, which can be found in the work of researchers such as Blondet and Montero (1995) and Gajate and Inurritegui (2003).

action uses the following definition: «mobilized efforts of large number of the urban population to represent their interests, redress grievances, or change policies through claims on the larger society (c.f. Tilly, 1978)» (462). This definition, while somewhat narrow, is useful in that it shows that collective action can be for a political right, as opposed to a capital good. For this study, collective action is considered any action taken by a group in an attempt to obtain or maintain a public good (of economic or political importance).

Collective action involves costs, both in time and money. Any group that attempts to obtain a public good must have the resources to cover these costs. It must also have mechanisms in place to extract payment from its members. Mancur Olson's (1971) classic work *The Logic of Collective Action* first proposed the free-rider problem, in which individuals will opt not to contribute to a common cause because they assume that other members of the group will cover the expense, allowing them to obtain the public good even though they did not contribute their fair share of the cost. Thus the question is not simply whether or not the individuals of a group collectively have enough resources to produce the public good, but whether or not they will in fact contribute to the group's collective cause. One important factor is group size; in smaller groups, enough individuals will be willing to cover the entire cost of the good to make the action succeed (34). This will not be the case in large groups, where the benefit to one individual is much less likely to outweigh the entire cost; «the larger the group, the less it will further its common interests» (36). In large groups, public goods will only be obtained where there are *individual* incentives or sanctions (133-134). In the case of public goods provided by a national government, there are negative sanctions associated with not contributing (i.e., paying taxes); one runs the risk of being fined or sent to jail. At an organizational level, sanctions or incentives may take other forms, including social incentives (60-61). Thus for an organization, coercion mechanisms may entail negative sanctions of either monetary value (fines) or social value (chastisement from other group members). They may also include positive, individual incentives of either monetary value (an individual good being offered along with the public good) or social value (recognition from other group members). Without coercion mechanisms of some sort, Olson argues that public goods will not be provided by large, voluntary organizations. Note that social coercion is much more effective in a small group, where all members know each other. Social incentives or sanctions are not particularly useful in groups where members do not know each other and do not have frequent contact with each other.

Lobo (1982) points to some evidence that a lack of sanctions can be a limiting factor in Lima's immigrant communities. Referring to a case study, she comments «the association did not have as much sanctioning power as an extended kin network to compel members to appear for work» (155). There does not appear to be, however, more complete evidence on the use of sanctions in community organizations in Lima's shantytowns. Social coercion will only be effective in a large group when that group is in actuality subdivided into small groups. In this «federated» scheme, social incentives

can be used to induce members of small groups to participate in an action, though that action is being carried out by the larger umbrella organization (Olson 1971: 62-63).

How small must a group be to allow members to monitor each other? As Runge (1986) points out «Sugden (1984) has argued that the more homogeneous a community, the more likely are optimal outcomes; the more heterogeneous, the more difficult coordination becomes» (630). Thus size and heterogeneity may both be important in explaining public goods provision. Lobo (1982) indicates that this may be a limiting factor in Lima, where shantytowns composed of immigrants are likely to be more heterogeneous than would be the case in the rural communities from which they emigrated. Lobo finds evidence of this in one case study:

Much of the enthusiasm and optimism initially exhibited was the result of not only the prospect of rapid house construction but also the pervasive belief found in much of Peru that individuals from the Andean highlands have a great deal of skill, almost an innate ability, to cooperate in communal projects (see Patch 1959). Because of the need to interact with individuals who were of only short acquaintance, were neither kin nor paisanos, and with whom trust had not been built up through years of reciprocal interaction, however, the collaboration was not as smooth as expected. (154)

Thus heterogeneity may be a barrier when urban communities seek public goods<sup>5</sup>.

The free-rider problem can, then, be overcome in small groups, through the use of coercion mechanisms, through a federated structure, and where heterogeneity is low. It is not, however, the only limiting factor. Figueroa (2002) argues that the free-rider problem is a barrier to public goods provision in poor communities; in addition he describes how real income restraints lead to the Maslowian problem:

Individuals choose public goods in an attempt to satisfy their needs, which are ordered hierarchically. If their first-order (physiological) needs are not satisfied, they will satisfy them by choosing the appropriate goods. If their secondary needs (security) are not satisfied, they will satisfy them by choosing the appropriate goods, subject to the restriction that these goods also satisfy their primary needs<sup>6</sup>. (77)

Just as an individual's demand for goods is determined by Maslow's hierarchical order of needs, a community's collective action is subject to the community's level of development. Some public goods will not be produced collectively even if the free-rider problem is absent because the action is not affordable, given the resources of the group.

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<sup>5</sup> This study, while taking into account the social sanctions mentioned, does not use the concept of social capital. Social capital, composed of the networks and relations in a group of people, is in itself a public good. It can be a product of collective action; as group members work together, their bonds or networks may be reinforced and trust may be built. Accordingly, Grootaert and van Bastelaer (2002) argue that «social capital is both an input into and an output of collective action» (p. 9). For that reason, this study acknowledges the importance of social sanctions for successful collective action but does not evaluate the concept of social capital.

<sup>6</sup> This and other quotations translated by author.

Collective action is costly for those who choose to cooperate (more so when there are free-riders), and thus demand for public goods will be limited by participants' income levels. That is, collective goods will be chosen according to their placement on the hierarchy of needs, beginning with the most basic of needs. Both the level and structure of demand for public goods depends on a community's income level; wealthier communities able to demand luxury goods will not cease to demand basic goods such as water and sewage lines. Figueroa (2003) thus argues that collective action will not be used to demand political or human rights in poor communities:

The reason is not so much in the Olsonian problem... rather, in the fact that the community is so poor it can't afford [collective action]. As such, it is not a problem of preferences, but a question of restrictions on real income. (307)

Some empirical studies have provided evidence that supports Figueroa's argument. Walton (1998), for instance, argues that in times of recession, «collective action, when it does take place, is more likely to occur in the form of collective consumption and less often in the forms of labor (e.g. strikes) or political rights (e.g. social movements) contests» (471). Dietz (1998) finds evidence in Peru that limited buying power plays a role in determining what actions the poor will carry out (12), showing that in times of economic crisis political demands become less common while communal activity remains important (231). Thus there is evidence that the «Maslowian problem» is indeed a limiting factor in collective action for public goods.

Another Peruvian researcher, Joseph (1999), finds evidence in case studies of this trend, yet erroneously attributes it to the *preferences* of community organizations: «Since organizations today tend to focus on immediate tasks associated with survival, and apparently there is no will to look for structural changes, their political power has been reduced almost to the point of disappearing» (114). It is important to remember that the Maslowian problem prevents us from determining a community's preferences; if that community does not engage in collective action to demand rights, the Maslowian problem tells us that, rather than assume that the community is disinterested in obtaining rights, we must first consider the possibility that the community is restricted by its income level.

Finally, Figueroa (2002) proposes a third barrier to successful collective action in poor communities, the exclusion problem, when arguing that «social groups that are considered second-class citizens, that do not have rights, that live in a society where the culture of inequality is highly developed, will not be able to carry out collective action» (76-77). These excluded groups are not able to fully participate in public decision-making processes because they have less access to information about those processes. Thus, participating for them would imply higher information costs than it would for upper-class citizens:

The cost of information refers to the cost of access to formal and informal means of communication. This cost refers not just to buying a newspaper, having a radio, a television, and the time to process that information; it also refers to access to all the information

that is not available through mass media. This is the cost of not belonging to the social networks where options are discussed and clarified. (78)

Thus groups that desire to carry out some collective action for the benefit of their community simply may not be able to (even if they have monetary resources and group members that are willing to contribute) if they are unable to access the necessary information (legal or political). The cost associated with attempting a collective initiative will be too great where there is the risk that no benefits will be obtained because the group believes it does not have a political voice.

The exclusion problem will be particularly acute if a group attempts a collective initiative outside of its own community. This distinction is important because of the nature of public goods in societies with a high degree of inequality. In developed economies with less inequality, public goods are more «pure» in the sense that everyone in the economy has access to those goods. This is not the case, however, in countries like Peru. When inequality is widespread and markets are highly segmented, not all members of society will have equal access to public goods. That is, public goods are not as purely public as they are in more equal societies (Figueroa 1993: 138-139). Thus a public good may benefit all members of society, or it may benefit only the community who demanded the good. There is evidence in rural Peru that collective action at the community level is common, but initiatives on a greater scale are nonexistent, because of the problem of exclusion (Figueroa 2002: 76-77).

In speaking of the type of public goods sought by poor urban communities, it is important to note that public goods must be *maintained* once they have been provided. That is, in addition to determining the Maslowian level of a collective action initiative, we must also consider whether that collective action seeks to provide a new public good or to maintain a previously provided public good. This maintenance may be associated with typical capital goods depreciation. It may also, however, be associated with protecting the public good from outside shocks. Most researchers agree that poverty is associated with a higher degree of risk. Runge (1986) maintains that «poverty, together with a dependence on low value-added outputs and relatively randomly distributed natural resources, results in a high degree of uncertainty with respect to income streams. Poverty eliminates the cushion against adversity represented by accumulated wealth» (625). Rural studies will naturally focus on external shocks associated with environmental uncertainty: «the random element in natural resource allocation introduces additional uncertainty for those whose income depends on the rain falling or the hunt succeeding» (Runge 1986: 625). In an urban context, the shock may not be environmental. It can be argued that urban collective action can occur as a response to shocks of an environmental, economic, or political nature. Examples include an earthquake, an epidemic, the opening of trade markets and its effect on urban production units, changes in land use laws, or changes in food transfer policy. The shocks adversely affect the urban poor who are excluded from protection mechanisms such as insurance (to protect against theft or a natural disaster)

or who are excluded from the political process (leading to policy changes that harm poor communities). Shocks can, however, also work to decrease free-riding behaviors. Sober and Wilson (1998), in their work on altruism, suggest that in times of crisis, humans may feel more compelled to work in groups (335-336). When a group of people experience a common crisis (such as an environmental, economic, or political shock), they will tend less towards individualistic free-riding behavior and more towards collective action.

There is a great deal of evidence in Peru pointing to the work of community organizations in the provision of new public works (see for instance Ypeij 2000; Lobo 1982); even De Soto (1989), well-known for his claims about the potential of the Peruvian poor to become productive entrepreneurs, writes about the acquisition of new goods (17-27). There has been, however, little work done on the need to maintain these public works, or the need to protect them from outside shocks.

In summary, three barriers are theorized to restrict the ability of low-income urban communities to work collectively: the free-rider problem, the Maslowian problem, and the exclusion problem. These barriers have appeared in some of the applied research done in Peru, but an economic model is lacking, as is wide-spread empirical evidence.

## 2. ANALYTICAL FRAMEWORK: DEVELOPING A MODEL FOR PUBLIC GOODS PRODUCTION

This study uses a regressive logit model where the endogenous variable *Collective\_Action* is a binary variable defined by whether an action had been met with success. As shown in the previous section, the variables that can affect the level and structure of collective action carried out in a community are: the Olsonian free-rider problem (including group size, coercion mechanisms, a federated versus non-federated structure, heterogeneity, and the presence of a shock that incites altruism), the Maslowian problem (including the cost of the good demanded relative to the community's income level, the Maslowian level of the good demanded), and the exclusion problem (including a lack of access to information, and a low cost/benefit ratio). Thus the proposed model can be described by the following equation:

$$\text{Collective\_Action} = f(\text{group size, coercion mechanisms, federation, homogeneity, shock, development, monetary cost, time cost, basic good, advanced good, educational level of leaders, exclusion by geographic origin, potential beneficiaries})$$

*Group size*, *monetary cost*, *time cost*, and *heterogeneity* are all interval variables expected to have a negative effect on the ability to carry out a collective action. *Coercion mechanisms* and *federation* are binary variables expected to have a positive effect on collective action. For the Peruvian case, *exclusion* is measured using two proxy variables: *educational level of leaders* (an ordinal variable expected to have a positive effect on collective action) and *exclusion by geographic origin* (an interval variable expected to have a negative

effect on collective action). *Potential beneficiaries* is a nominal variable (taking a value of 0 where beneficiaries are only the group members and 1 where the good would benefit people outside the organization) expected to have a negative effect on collective action. *Shock* is a nominal variable expected to have a positive effect on collective action, while *development* is a nominal variable expected to have a negative effect on collective action. *Maslowian level* was broken into three categories: *basic good*, *security good*, and *advanced good*; the two dummies used were *basic good* (expected to have a positive effect on collective action) and *advanced good* (expected to have a negative effect on collective action).

**Table 1. Determining Factors**

Determining Factors	Theoretical Origin	Form of Measurement
Group size	Olsonian problem	Number of registered members in a group
Monetary cost	Olsonian problem, Maslowian problem	Amount of Nuevos Soles <sup>7</sup> paid to obtain the public good
Time cost	Olsonian problem, Maslowian problem	Number of participant hours needed to obtain the public good
Heterogeneity	Olsonian problem	Diversity of group members' geographic origins (coast, mountains, jungle)
Coercion mechanisms	Olsonian problem	Existence or lack thereof of individual sanctions or incentives to participation in collective action
Federation	Olsonian problem	Existence or lack thereof of a federated group structure
Educational level of leaders	Exclusion problem	Average educational level of leaders (ranging from no education to advanced degrees)
Exclusion by geographic origin	Exclusion problem	Average geographic origin of group members (from more 'excluded' areas such as the mountains and the jungle or from less 'excluded' areas such as the coast or the capital city)
Potential beneficiaries	Exclusion problem	Those expected to benefit from the provision of the public good (community members versus a wider public)
Shock	Olsonian problem	Existence or lack thereof of a crisis or emergency
Development	Maslowian problem	Existence or lack thereof of an attempt to develop a new good (as opposed to maintenance of a previously obtained good)
Basic good	Maslowian problem	Lowest-level good on the Maslowian pyramid (including food, water, shelter)
Advanced good	Maslowian problem	Highest-level good on the Maslowian pyramid (including intellectual advancement, spiritual enlightenment)

<sup>7</sup> Peruvian currency.



### 3. FIELDWORK IN LIMA

Recent macroeconomic gains in Peru have not alleviated the country's pervasive poverty. According to data from a national household survey, 57% of Peru's population was in poverty and 27% was in extreme poverty in 1991. By 2001, GDP had grown by 21%, but 55% of the population was still in poverty and 24% in extreme poverty (Aramburú and Portocarrero 2002). Much of this poverty is found in rural areas, especially in the Andean mountains and the Amazon jungle. Metropolitan Lima, however, is still home to poor families and poor communities.

The first shantytowns in Lima were constructed in the 1930s along the Rimac River, between downtown and the port of Callao (Driant 1991: 40). Sporadic construction continued to occur for several decades, although it was not until the 1950s that massive migration began to change metropolitan Lima's landscape. Through the 1950s, 1960s and 1970s the city's barriers expanded rapidly as entire districts were established by settlers, such as Independencia to the north (Driant 1991: 50) and Villa El Salvador to the south (61)<sup>8</sup>. Lima's population grew from 520 000 in 1940 (45) to 3 303 000 in 1972 (60), with much of this new growth in shantytowns. By 1981 it was estimated that almost 1.5 million people lived in Lima's shantytowns, representing 13,7% of the city's population (ibid: 68). The residents of today's shantytowns are no longer solely rural migrants: «the new generation of poor families is Limeñan and their culture is urban, from the shantytowns. [This generation] knows all about the fight for housing» (191). Shantytowns have become an inseparable part of Lima's landscape and of the lives of many Limeñans.

While these shantytowns have been targets for aid from NGOs and governmental programs, they have also been frequently left to fend for themselves when obtaining basic services, such as water, electricity, and paved streets (Ypeij 2000: 19; Riofrio 1987: 135; Dietz 1998: 232). The following sections explore how shantytown organizations have worked to obtain these services.

#### 3.1. SAMPLE AND DATA COLLECTION

According to the model developed in the previous section, interviews were designed and carried out in shantytowns across Lima. The districts represented were Cercado de Lima,<sup>9</sup> San Juan de Miraflores, San Martín de Porras, Villa El Salvador, and Villa María

<sup>8</sup> The initial occupation of a shantytown frequently occurs overnight and is organized in advance. In some cases tens of thousands of people have settled a single area in a single night (although some settlements, notably Villa El Salvador, have been organized and supported by the government). Land that may be targeted includes unused or underused state or agricultural lands in the deserts surrounding Lima, over a garbage dump, next to a railroad, or on the unstable banks of a river. Settlers bring straw mats (*esteras*) and blankets to set up their temporary homes. The settlers then must defend their land against other settlers and against the police.

<sup>9</sup> The author lived in this area from September 2004 to January 2005.

del Perpetuo Socorro. The communities selected represented different ages, locations, and levels of economic development. As Driant (1991) aptly points out, the shantytowns of Lima do not represent a homogeneous reality (125). The oldest settlement interviewed for this study had first been occupied in 1940, the youngest in 2000. They had built on state lands, agricultural lands, garbage dumps, hillsides, and the unstable banks of the Rimac River. Their inhabitants were second or third-generation Limeñans and immigrants from diverse provinces, representing the coast, the mountains, and the jungle. Finally, the community leaders (*dirigentes*) interviewed represented different types of organizations:

- *Asociaciones de pobladores*: neighborhood organizations<sup>10</sup>
- *Comedores populares*: communal kitchens<sup>11</sup>
- *Comités de Vaso de Leche*: Glass of Milk committees<sup>12</sup>
- *APAFA*s: parents' associations at public schools<sup>13</sup>
- *Cooperativas de mercados*: market vendor cooperatives and associations<sup>14</sup>
- *Mesas de Concertación*: anti-poverty forums<sup>15</sup>

Note that the central question was not what differed a *comedor popular* from an *asociación de pobladores*, or what differed settlements in Cercado de Lima from those in Villa María del Perpetuo Socorro. Distinctions were made based solely on the variables discussed in the previous section.

Twenty-four organizations were studied, typically with three interviews per organization. During the preliminary interview basic data was obtained from a group leader on recent collective actions (any actions occurring before 1990 were dropped from the data set because of incomplete information). Two subsequent interviews (with the group leader from the preliminary interview and then with a second group leader) allowed for data collection on the details of each collective action. Two organizations were dropped

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<sup>10</sup> These are typically begun when a settlement is first invaded. The initial purpose is to organize settlers to prevent intimidation and/or removal by police forces or other groups of settlers. Later it serves to organize neighborhood inhabitants for communal projects.

<sup>11</sup> A group of approximately 20 to 30 women who cook low-cost lunches (lunch is the main meal of the day in Lima). Two or three women cook each day, and they receive lunches for themselves and their family for free. Lunches are sold to community members (at the time of this writing, for \$0.30 to \$0.50) and given at no cost to disabled people and those in extreme poverty.

<sup>12</sup> A committee of women who prepare low-cost breakfasts for neighborhood children.

<sup>13</sup> This group functions at the level of the school but is eligible to receive consulting assistance from the government. At most public schools, the APAFA is responsible for maintenance of the school grounds and other school expenses.

<sup>14</sup> An organization of vendors at a market. May hold fundraisers or require membership fees to maintain the physical infrastructure of the market.

<sup>15</sup> Anti-poverty forums, designed to bring together representatives from the government, NGOs and other charitable organizations, hospitals and clinics, schools, churches, and community organizations to plan projects to reduce poverty in shantytowns.

from the study due to incomplete information. Each organization offered information on approximately ten collective actions, and the final sample size was 121 instances of collective action.

Note that these twenty-four organizations did not represent a random sample. No database of community organizations in metropolitan Lima exists from which to draw a random selection. The organizations were not chosen because they were particularly rich or particularly poor, or because they were especially successful or especially unsuccessful. As such they should represent a fairly unbiased (though not statistically random) sample of Lima's organizations.

Initial interviews were conducted in Cercado de Lima with various residents and community leaders. A lack of trust was frequently a barrier to obtaining information. Finding connections to the neighborhood proved to be the key to conducting quality interviews with community leaders. For some shantytowns this meant first meeting with church leadership, for another, making contacts through a nonprofit cultural group for at-risk youth. In most cases initial distrust dissipated over time; leaders that were unwilling to be tape-recorded at the first interview were willing to be recorded during subsequent interviews. In general, however, organizations were eager to be interviewed and eager to share their organizational history, including both its successes and its failures. At one *asociación de pobladores*, interviews ran well over the allotted time because of the informant's eagerness to share information on all of the work that her group had done.

### 3.2. QUALITATIVE RESULTS

The following section presents qualitative observations, gathered from almost a year of site visits and interviews. The cases presented offer support to the economic model given above; they also, it is hoped, give a picture of how development occurs in the context of an urban shantytown. Again, the three barriers proposed are the free-rider problem, the resource constraint problem, and the exclusion problem. The qualitative data collected during field work gives preliminary support to all three hypotheses made in this paper.

The first barrier observed was the free-rider problem, in which members were unwilling to take individual risks for a group's collective gain. This was worsened where group members had built up an expectation that risks and costs would be assumed by an outside charity. The problem was lessened when individual incentives were used. The presence of a «shock,» or emergency, also reduced the number of free-riders. Some groups utilized a federated structure to prevent free-riding.

Free-riding was observed in many of the instances of collective action. Informants were not asked directly about a lack of participation in their projects, but many informants complained that this was a problem. When asked what projects had been attempted but not completed, one informant (from a *Vaso de Leche* committee) responded «we couldn't

hold [the fundraiser] because sometimes [the members] don't support you. Five or six people do it, and the rest don't help out. Everyone's off on their own; it doesn't seem to interest them. And that disheartens you.» In this instance the cost of the project was relatively minimal, but the group leaders were unable to obtain donations from other members. It should be noted that this relates also to the resource constraint problem; even a relatively minimal contribution may be a large part of a family's daily budget in poor neighborhoods.

In another instance of free-riding, a vendors' association at a market had been formed to buy the land the market was on. When the market had been built five years prior, individual vendors (who didn't then know each other) bought plots from a real estate company. That company had bought the land with a bank loan, which was still being paid off. As the real estate company was unable to sell out all the spaces in the market, they were also unable to make their mortgage payments. As a result, some of the vendors decided to form an association which would make payments (for their individual plots) directly to the bank, instead of to the real estate company, in an effort to not have their plots repossessed by the bank. Their eventual goal was to buy the plot of land where the market is located (and the physical infrastructure of the market space) and make all payments directly to the bank. Of the approximately 160 vendors in the market, around 55 had joined the association. The other 115 vendors did not want to join the association until they could be assured of the association's success. If the association were indeed successful in purchasing the market, all 160 vendors would receive the same benefit, namely, reducing the risk of repossession. In this instance, then, there is a rate of free-riding of approximately 66%. These 115 vendors were unwilling to take a personal financial risk when the success of the project depended on the entire group.

A number of other organizations also complained about a lack of participation in their projects, saying that leaders invested a great deal of time and money in the organizations' initiatives, whereas members (who would indeed reap any of the benefits of public goods obtained by the leaders) were reluctant to contribute. Free-riding appeared to be worsened in some cases by a belief by group members that certain public goods could be obtained without any financial contributions by the group itself, either through a government donation or a non-governmental organization (like a charitable group). A few leaders reported finding it more difficult to encourage participation for this reason.

Some organizations used individual incentives and individual sanctions to reduce the number of free-riders. Group members were more likely to assume individual costs or individual risks when participating would benefit them as individuals. Many groups used a simple fines system: any member that didn't attend a meeting or event was fined five or ten soles (approximately \$1.50 to \$3.00). Other organizations used more complicated methods of sanctioning nonparticipation. These appeared to be particularly important during a neighborhood's initial occupation. One informant described how

the distribution of plots of land in a new occupation was determined by how much different members had participated in collective initiatives:

Say that I had built my shanty, from one, two, three straw mats, the door and the roof. A week goes by, and you've got to tear down your shanty. Why? Because it was your turn in some other place. They relocated you; that's what it was, relocation. Why was there relocation? Because you needed to occupy your plots 24 hours a day<sup>16</sup>... Besides that, you needed to be up to date with your quota payments. So what happened then? That there were days when you didn't work. So then, where you could get the money [to pay your quota]? You got behind, and they started marking you down as a debtor. Then as a debtor, you went to one plot, and the people who paid on time went to the better plots.

In other words, not helping the group out would mean that a person or a family would be forced by the group's leaders to move their straw-mat shanty. This informant also said the families that participated less were given the worst plots when the final distribution was decided. This was an extremely strong incentive for an individual to participate in the group's activities.

The presence of a shock also appeared to reduce the number of free-riders in many instances, as predicted by the theory that under crisis conditions altruistic behavior will prevail over self interest (Sober and Wilson 1998: 335-336). This was especially apparent in the case of a recyclers' association<sup>17</sup>. Each recycler gathered materials independently, then sold them to middlemen for cash. They operated without regulations; they also operated without the protection that a formal business provides (sick pay, a retirement pension, etc.). The organization was first formed when the city's mayor decided to eliminate informal recycling activity. City policemen had begun to harass the recyclers; the president reported

They started to take away our carts; they hit us... «No, no, no,» I said. «We're going to get all the recyclers we can, let's see how many we are...» So one recycler passes the word on to another... and that recycler passes the word on to another and another: such and such day we're going to have a meeting, just of recyclers. The leaders were chosen, and that leadership team started talking to an NGO.

The recyclers knew that if they didn't work together to win recognition from the city, they were in danger of losing their jobs. This was an emergency that warranted acting as a group; the association would have more clout than any individual.

<sup>16</sup> This requirement, imposed by the occupation's organizers, was termed *vivencia*.

<sup>17</sup> *Recicladores* is the term used to describe the scavenging, recycling and reusing of solid waste material. The informal workers who engage in this activity are also known *recaladores*, *pepenadores* or *cartoneros*). They collect metal, plastic, rubber, paper, electronics, and other discarded goods, sort them, and sell them to middlemen, who in turn sell the waste to recycling companies. The job is hazardous to the workers' health, and can lead to harassment from municipal authorities, yet the workers represent a complex, growing informal sector in many developing countries.

The recyclers' association had been in existence for a number of years when the recyclers' livelihood was again threatened. Membership was limited to approximately seventy informal recycler «scavengers» (out of an estimated tens of thousands of recyclers in metropolitan Lima). Their activity was now technically illegal; a national law prohibited informal recycling. This law had not been enforced before, but the city was threatening to enforce it. City policemen had resumed harassing the recyclers. The association started holding public meetings, and it began to attract new members (at the time of this writing, approximately two hundred). When asked how he planned to get more people to join the association, the president replied «that's no problem. When there's trouble, the people come and sign themselves right up.» In a crisis, the informal workers were much more willing to act collectively.

There were many other instances of increased activity following a shock for a number of different organizations. These efforts, like those of the recyclers, also appeared to be more successful. For instance:

- A neighborhood association received contributions from 100% of its members when their possession of the land was threatened. Not acting as a group in this instance could have meant the members would lose their homes. For the development of new public goods projects (not following a shock), participation was about 50%.
- A communal kitchen received rice donations on a regular basis from the government. The government stopped sending rice (considered a staple of the lunch they cook), sending *morón*, a wheat product, instead. The communal kitchens considered this product to be inferior and unacceptable; they felt they could not provide adequate lunches to community members using the wheat product as a base, so they organized a protest. Following the communal kitchens' protest outside government buildings, the government switched back to rice donations. This scenario was played out in communal kitchens and Glass of Milk committees whenever there were changes in government policy, like a threatened reduction in subsidies, a reduction in the quantity or quality of supplies sent out, or a cut in health insurance coverage for members of communal kitchens or Glass of Milk committees.
- Some problems arose on a regular basis, but are considered here to be shocks because they affected the ability of an organization to perform its basic functions. For instance, communal kitchens frequently experienced malfunctions of their stovetops. While this could happen several times a year, it is considered a shock because it disrupted the work of the organization; if collective action were not organized to fix the stove, the communal kitchen could not function at all. Some communal kitchens solved the problem by using their group's savings to hire a technician to make repairs. Others, once the stove ceased to function all together, applied for a new donated stovetop. Only one kitchen

interviewed chose instead to perform regular preventative maintenance work on the stovetop. Another reoccurring problem for many kitchens and Glass of Milk committees was theft of food supplies or of cooking equipment. All of these instances represented emergencies that needed to be addressed immediately by the entire group.

- In some neighborhoods, residents owed municipal taxes dating back several years (which had accrued an impressive amount of fines and interest). After those residents began to receive notices that the municipality would soon repossess their homes, community leaders were able to mobilize enough members to put pressure on the municipality to reduce the fines and interest and to coordinate repayment plans.

In all of these instances, group leaders found it much easier to obtain participation and financial contributions following some shock that severely affected the individual members. In an emergency, free-riding becomes less common and individual incentives or sanctions become less necessary. As one neighborhood president stated, «when there are problems, absolutely everyone is mobilized... we were 400 or 500 people... that's the average for when there are problems... that's when people come to the meetings.»

Not surprisingly, in instances where a shock encouraged an organization to obtain a public good (and where the free-riding problem was temporarily reduced), the free-rider problem eventually returned. This made maintenance of the good obtained more difficult, and in some cases, impossible. As predicted by the model presented above, maintenance of previously won goods sometimes proved more difficult than the original provision of the goods themselves. For instance, one neighborhood was experiencing a level of street crime the residents felt was unacceptable. They saw their quality of life at risk, and in 2004 they decided to hire off-duty policemen to patrol. Each block contributed to the expense, even though no sanctions were in place, because they wanted to solve a specific, urgent problem. In 2005, the program no longer was functioning because there were no longer enough contributions from the neighborhood's blocks. Similarly, a parents' association at a public school wanted to remove street vendors from the stretch of road outside the school's main entrance because of fears of unsanitary conditions and food poisoning. With the help of the municipality and the local police force they succeeded in removing the vendors at a minimal cost. Enforcement was not continued, however, and the street vendors returned. It had been much easier to rally support for the initial solution to the problem than it was to obtain continuing support.

Free-riding is more difficult to avoid when there is no shock present. Maintenance of public goods is more difficult for community leaders to carry out than is provision of new public goods following an emergency. This is not to say that leaders prefer not to maintain goods or that they prefer to work after a shock. We must assume that preferences do not change in the presence or absence of a shock, since we cannot measure people's preferences. Rather, these observations seem to offer support to the argument

that participation of members is easier to obtain following a shock. Thus while free-riding is a barrier to collective action in low income communities, coercion mechanisms and the presence of a shock both work to reduce that barrier.

Observations from site visits and interviews also suggested that federation can reduce the free-riding problem. From the instances researched for this paper, communal kitchens and Glass of Milk committees made use of a federated structure particularly frequently. To organize a march of several thousand protesters, the umbrella organization would call for the support of the smaller organizations. The smaller organizations could then use the sanctions and incentives mechanisms they had in place (social sanctions, monetary fines, etc.) to encourage members to participate in a rally. This was the system used whenever the organizations wanted to protest a change in government policy that affected the work of their groups. There were also instances, in three of the five districts interviewed, of neighborhood associations using umbrella organizations to organize protests. A neighborhood's president would likely know members of every household, and could use these social relationships to encourage participation in the federated group's action. Whereas individuals might not participate in a group of several thousand (feeling that their own presence would have minimal impact), they would participate as members of a smaller group.

In summary, the free-riding problem was apparent in the groups interviewed, but groups had developed different techniques to combat this problem: offering incentives or enforcing sanctions, initiating collective action immediately after a shock, or joining with other groups to form a federated structure. These three methods allowed groups to obtain more participation and thus a greater likelihood of success.

The second barrier is the resource constraint problem, which states that organizations in low-income communities will first work to obtain the most basic goods. Since their income is limited, they will not be able to obtain every public good they wish to obtain. This has two implications. First, some goods will be completely unaffordable. Second, if a group has a choice between two affordable goods, the group will first work to obtain the more basic good. In addition, if the basic goods they have already obtained are threatened, they will need to protect those goods before they can make demands for more advanced goods (like political rights). This was supported by observations from the shantytowns visited. A number of organizations stated directly that they were not able to obtain the public goods they desired because they were unaffordable. Also, when residents were faced with the choice of using their income to fulfill basic needs (food, water, electricity) and using their income to contribute to a more «luxurious» collective cause (political rights, recreational goods), they first spent their income on the former.

Note that the limited income problem can restrict access to advanced goods in multiple ways, including in many cases the fact that advanced goods can also cost more. Not only will low income organizations have fewer resources available to devote to



advanced goods (because they must first spend their resources on basic goods), but advanced goods (like a lengthy fight for political rights) may cost more. The case of one neighborhood association in a relatively young shantytown «San Gabriel»<sup>18</sup> (founded in 2000) illustrates this well. San Gabriel had been built next to an older, unrelated shantytown, «El Cerro.» The residents of San Gabriel hoped to acquire property titles for the land they occupied. To do this, they needed to go to the government office that gives property titles to shantytowns and complete a number of forms. El Cerro had, however, already obtained the property titles to San Gabriel's land, by simply going to the same government office before San Gabriel's leaders went. San Gabriel now feared that they would have to pay rent to El Cerro, which had in effect become San Gabriel's landlord. San Gabriel's neighborhood association wanted to hire a lawyer to win back the property title, but simply could not afford to do so. As a result, they were at risk of losing their homes.

In a different, much older neighborhood, the communal building (typically used for assemblies, community events, workshops, childcare, etc.) had become structurally unsound. This neighborhood had been built decades before on top of a garbage dump. As the garbage settled, all of the shantytown's buildings had become structurally unsound. Large cracks were visible in exterior walls, and some houses had sunk at odd angles. Residents constantly repaired their homes; the neighborhood was perpetually in construction. When asked why the communal building had not yet been repaired, the neighborhood association cited a lack of funds. A number of attempts had been made to bring services to the site, including daycare, a job resource center and a low-cost medical clinic, but all had failed because of the building's high level of disrepair. At the time of the interviews, the building was empty except for a communal kitchen occupying a side room. Patching up the building was beyond the organization's budget; having engineers provide a permanent solution for the entire neighborhood was clearly even more unlikely. A number of other organizations cited limited income as a barrier to successfully completing collective initiatives.

The resource constraint problem also states that collective goods will be chosen according to their placement on the Maslowian hierarchy of needs, beginning with the most basic of needs. One informant, a past president of a neighborhood association, reported that collective initiatives had been completed in the following order in her shantytown:

- Occupying the land, 1980
- Forming a leadership team, 1981
- Organizing neighborhood security patrols (by residents), 1982
- Flattening out the land, 1983
- Obtaining a communal land title, 1984

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<sup>18</sup> Not the actual name; no real shantytown names are given.

- Hiring a security guard, 1984
- Building water lines, 1985
- Getting legal recognition of the neighborhood, 1986
- Installing electricity, 1988
- Paving the streets, 1992
- Building a library, 1997
- Putting in steps to the main road, 2000
- Constructing a second wall along soccer court, 2001
- Planting a communal garden, 2004

Note that the first projects completed were related to basic needs: of the first nine initiatives, six are related to occupying the site and then maintaining possession and the other three are related to making the area habitable. Only then were «luxury» goods, like paved streets and a library and garden, obtained.

The informant further explained that the later projects had been more difficult to organize:

What did we have to do? Organize. Of course much earlier, when we founded this place, we were organized. But once there were electricity, water, property titles, and sidewalks, people didn't want to do anything. So I started to organize, block by block.

Several neighborhood associations reported similar processes; as the neighborhood obtained basic goods and began to organize for more advanced «luxury» goods, collective action became less common. Some neighborhoods, even after decades of self-improvement, were unable to obtain advanced goods or significantly reduce poverty. This was attributed to two factors: first, that educated families had moved to wealthier neighborhoods and been replaced by poor immigrants from rural areas, and second, that factory closings had left many residents unemployed or underemployed. Note that this would make advanced public goods more difficult to obtain; residents in poverty would still spend their income on basic individual goods (food, cooking fuel, etc.), leaving little to no funds available for advanced public goods.

This also appeared to be related to the level of individual incentives used. When neighborhoods were first occupied, failing to contribute to a collective cause could lead to losing one's home. Sanctions became more difficult to impose as households took possession of plots of land. One neighborhood president, when asked if any public works projects had recently been completed, replied

No. Let me explain. For example, we have the communal building, which was built by the community and with the [financial] support of all the members. So what did they do? At that time, in the beginning of every neighborhood, when there was an occupation and that kind of thing, everyone paid attention because they wanted to be registered [on their plot]; otherwise, they didn't get registered, it wouldn't happen. So since there was that pressure, to not be left hanging, to [keep their homes], then it was a lot easier. For example pretty much everyone came to the assemblies.

The president furthermore reported that individual sanctions were no longer being used. In other words, older neighborhood associations were less likely to be successful in their initiatives because effective sanctions couldn't be imposed and because advanced «luxury» goods were more difficult to obtain.

Communal kitchens also reported more success in basic initiatives. One *comedor popular* reported having success in at least four initiatives that related directly to the preparation of meals. They had not, however, in their almost 20 years of activity, been able to purchase tables and benches to allow customers to eat in the communal kitchen, although they had «always wanted them.» In other words, even tables and benches could be considered unnecessary «luxury» goods, secondary to more pressing needs, as long as customers could take their meals home.

Note that even after basic public goods are obtained, the maintenance of these goods will take priority over more advanced goods. For instance, a communal kitchen must first purchase a stove or find a donated stove, but then it must make repairs as the stove is used<sup>19</sup>. Approximately 20% of the 184 cases studied involved maintenance of a previously obtained good. Examples of physical maintenance include repairs to stoves, communal buildings, and sewage lines; other actions were for maintenance of government subsidies, or to maintain occupation of an area. For this reason, basic goods continued to take priority over luxury goods even as an area became more developed.

In conclusion, observations showed that collective action could be used to get such basic goods as water lines, or to maintain occupation of a neighborhood. Collective action was much less likely to succeed when a «luxury» good, like a garden, was desired, because of the limited income of the residents. Collective action was also less likely to succeed when a good was particularly expensive.

Observations also supported the idea that exclusion is the third barrier to success in collective action. Social and economic exclusion make collective action more costly and more risky for low income groups by limiting their access to information. This incomplete action may mean that a group does not know the necessary steps that must be taken to obtain a good. Furthermore, if an organization believes that it will not be heard by a country's leaders, it may decide not to invest its resources in an initiative it deems likely to fail.

For instance, let us consider the case of the neighborhoods that believed the municipal tax rate was unfair, particularly in its use of fines and interest rates. At a rally for residents of those neighborhoods, comments could be heard such as «to them [the municipality], we don't exist,» and «we're marginalized.» Some residents felt that the municipal authorities would not listen to them, and at least one person remarked «we

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<sup>19</sup> The stoves observed in different *comedores populares* during interviews were not industrial-sized stoves, but they were used five or six days a week to cook for a hundred or more people; it is not surprising that constant repairs were needed.

won't get anywhere negotiating; this has to be done by force.» In a separate instance, one neighborhood president felt that municipal authorities were disconnected from the reality of poor areas:

Unfortunately, the professionals, the politicians that come to power (in this case we're talking about the municipality, okay?) The majors. They have their advisors; they have their working groups, in urban issues and in other areas. And those people just get data and start creating projects... but unfortunately they're not from the place [where they're implementing the project], they don't know the reality; so then they just limit themselves to the data they have and they that's what they base their projects on.

This belief was voiced by the president of a communal kitchen as well; she thought that policy makers would pay more attention to survey data than to the needs of the poor as voiced by the poor themselves. Other organizations were unaware of their legal rights and unable to afford a lawyer to represent them in things like land disputes.

Organizations appeared to distrust not only politicians but also lawyers and non-governmental organizations. Multiple groups expressed concern that not only was a lawyer expensive, but that they would not know whether the information they were being given by the lawyer was valid. One organization reported an unwillingness to work with Peruvian-run non-governmental organizations because of a belief that the NGO would use them to obtain international aid contributions and then disappear without fulfilling their promises to the community. In summary, several of the organizations interviewed reported either a lack of access to information, a feeling of marginalization or exclusion, a distrust of authorities, a distrust of sources of information (like lawyers and NGOs), or a combination thereof. Some groups also reported a direct connection between these problems and their ability to act collectively.

Organizations did suggest ways this exclusion could be overcome to obtain public goods. One neighborhood did not have any water lines, but observed that an adjacent neighborhood had been able to obtain several communal water faucets with financial assistance from an NGO<sup>20</sup>. The first neighborhood presumed that the NGO could therefore be trusted, and they sought help from that organization. Using funds from the NGO and manual labor from the community, communal water faucets were installed. Similarly, women from one neighborhood observed that nearby neighborhoods had government-subsidized communal kitchens, and they then successfully applied to the same government program so they could build a *comedor popular*. Thus organizations that could observe successful actions in nearby areas then knew what steps needed to be taken, so they could replicate those actions.

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<sup>20</sup> These *piletas* are the second step in obtaining an adequate water supply. The first step is to get the municipal water truck to drive through the neighborhood, selling water that is often heavily polluted. The second step is to install communal faucets; the final step is to install pipes in each house. Each step may take several years to accomplish.

Another method for bypassing a sense of exclusion or marginalization was using vertical social networks. In other words, a community leader with ties to governmental authorities could more easily obtain governmental aid for a communal project. When one community wanted electricity, the neighborhood president was able to establish connections with an electrical company through a family relative, an engineer. A Glass of Milk committee that needed a new stove was able to obtain a donated stove from a political party during an elections campaign, because one of the kitchen's members was active in that party. (Other neighborhoods reported an increase in donations during election years from political parties hoping to win votes; savvy organizations knew to solicit donations at this time). Organizations that had vertical connections were able to avoid the exclusion problem by obtaining information from a reliable source and by being assured that the same source would help them meet their goals. They could trust the politician because they had a personal relationship.

The exclusion problem also predicts that collective action will occur at a community level, but that the exclusion problem will prevent initiatives on a greater scale. Organizations are able to win local goods, such as new sewage lines for their neighborhood, but not more «global» goods, like legislation to provide sewage lines for all shantytowns. A previous study in rural Peru has indicated similar results; Figueroa (2002) found no evidence of collective action on a greater «global» scale (76-77). There was some evidence found in this study in urban Peru of successful greater actions, but they were very limited. Of the 184 collective initiatives used in the final data analysis, only six had intended beneficiaries outside the sponsoring organization or federation<sup>21</sup>. Four of these initiatives were related to lowering municipal taxes; those three organizations had been working together and with other organizations in a loose federation, but the potential benefits extended to other neighborhoods not in the federation. If they could win lower tax rates for their own neighborhoods, the lower rates would be applied to all neighborhoods in that district of Lima. Another of the initiatives was to clear an occupation of a major road; one shantytown had set up a new settlement on a major road adjacent to a different shantytown. This initiative benefited the adjacent neighborhoods by improving access to the road but also benefited the general public in Lima that used that road. Finally, one neighborhood association had joined other organizations to support a law that they believed favored shantytowns; according to them, the law benefited all shantytowns (not just those initiating the collective action). The negotiations over municipal taxes were successful, as was the road dispute, but the case involving supporting the national law did not appear to be successful. In summary, these observations seem to suggest that exclusion or an inferior level of citizenship is a barrier and that low-income

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<sup>21</sup> Note that there were many actions that benefited all the members of a federation, that is, not just the members of one organization. These were still considered localized, however, because benefits would not extend to the public outside of the federation. The six «globalized» initiatives did indeed benefit the greater public.

areas have incomplete information and a low lobbying capacity. This leads to an inability on the part of grassroots organizations to win broader government policies benefiting the poor. The example of a fight for political rights demonstrates how all three barriers can come into play: lobbying typically requires a large group (leading to the possibility of a free-rider problem), is expensive (and may not be considered as necessary for survival as a basic good like food or water), and requires a level of political and social inclusion that the poor likely will not have in highly unequal countries. These observations provide some examples of how the three restrictive mechanisms may play out in a neighborhood's attempts to obtain a public good. They should be taken as qualitative, first-hand evidence only. The relationships are further explored in the following section, using statistical analysis.

## 4. QUANTITATIVE RESULTS

### 4.1. MEASUREMENT

Again, the variables measured were: group size, coercion mechanisms, federation, homogeneity, presence of a shock, presence of development, monetary cost, time cost, basic good, advanced good, educational level of leaders, exclusion by geographic origin, and potential beneficiaries.

For group size the relevant measurement is number of members, not the number of beneficiaries. For instance, in a *comedor popular* to which 22 women belong but which serves meals to an average of 110 people each day, the relevant quantity for group size is 22 since this is the number of people expected to carry out the group's activities.

Note that federation refers to the structure of each action, not to the general structure of the group. For instance, *comedores populares* have a federated organizational structure (Blondet and Montero 1995: 131) because individual kitchens report back to umbrella organizations; the same is true for *comites de Vaso de Leche*. Yet their collective initiatives may or may not be the work of the entire federation; for demands against the government the umbrella organization typically mobilizes the individual kitchens, but an action such as replacing a stolen stove would happen solely at the level of the individual kitchens. For this study the first case is considered federated while the second is not. Similar classifications were made for other types of groups.

For the presence of development the relevant distinction is whether a collective action was being undertaken to either obtain a new public good or maintain a previously won public good. The maintenance of a good can be further subdivided into two categories. Goods could require maintenance because of typical capital stock depreciation, or because an exogenous shock threatened the good. For instance, if a community that had never had sewage lines was trying to obtain them, that initiative would be considered «development.» If a community needed work done on cracked or antiquated sewage

lines, then the action is considered «maintenance.» If a flood destroyed part of a sewage system, which then needed replacing, the action is considered a «response to a shock.» Note that the nature of the shocks observed will depend on whether the study takes place in a rural context (in which environmental shocks such as floods will be more common) or an urban context (in which political or legal shocks such as a neighboring shantytown threatening to invade a community's land will be more common).

Three problems arose during collective action data collection: selection bias, measurement bias and multicollinearity. The selection bias likely favored successful initiatives; collective actions that were never begun could be considered failures (in the sense that the corresponding public good was never obtained), but such instances are not represented in this data set. It should be noted that where a collective initiative had failed, variables such as cost were measured by what the informants believed they would have needed to invest for the action to be successful, not what they in reality were able to invest. Similarly, a strong measurement bias favored actions where potential beneficiaries included only the members the organization. As Figueroa's (2002) rural study found (see section 2), actions outside a community were almost nonexistent. Actions that had never been attempted outside a community (though the public good may have been desired) are conceptually considered failures, but they are absent from the dataset. This variable was therefore dropped.

The measurement bias arose in such variables as exclusion; exclusion is generally a difficult variable to measure, in that it can refer to political, cultural or economic processes (or a combination thereof). Ruggeri Laderchi, Saith and Stewart (2003) document the wide range of measurements used in economic development studies. The appropriate measurement must always be determined within the context of the communities studied. For this study, indices were built to represent educational and geographic exclusion of community members. The data was collected, however, from informant interviews, not from a community-wide survey and thus may suffer from measurement bias. Educational level of leaders was also problematic as a proxy for exclusion because it gave an indication of quantitative exclusion but not qualitative exclusion; inequality in the quality of instruction was not measured, yet presumably there would be differences between the quality of a school in a poor area and the quality of a school in a wealthy neighborhood.

Measurement bias may be present for the coercion mechanisms variable; data was only collected on explicit coercion mechanisms (like fines or warnings), because of the difficulties associated with identifying implicit mechanisms (like shunning). Measurement bias may also be present in for the two costs variables. It became clear that accurate measures for costs and participants would only be possible within the period that the informant had been a group leader. Yet some actions stretched across several periods, or were temporarily abandoned and then renewed when a new set of leaders entered the organization. Thus a binary variable *renewed* was introduced to show whether an action

had been renewed when new group leaders entered. It was hypothesized that renewed actions would lead to a higher degree of failure, because for such cases the costs reported were much lower than the total cost.

Finally, as the analysis below shows, a high number of explanatory variables were correlated with one another. In future studies, a larger data set may alleviate this problem.

#### 4.2. DESCRIPTIVE STATISTICS

All variable descriptions are listed in Table A.1 (in the appendix) and descriptive statistics are given in Table A.2. After removing observations with incomplete data, a total of 121 observations remained, of which 96 (79%) were classified as successes and 25 (21%) as failures.

#### 4.3. T-TESTS AND $X^2$ TESTS FOR EXOGENOUS VARIABLES OVER ENDOGENOUS VARIABLE

A variance ratio test was first used to test the hypothesis that the variables had equal variance for collective action successes and failures. The hypothesis was rejected for group size, monetary cost and time cost. Next the two-tailed t-test was used to test hypotheses that variable means (for group size, heterogeneity, monetary cost, time cost, and geographic exclusion) are the same between collective action successes and failures. The test assumed equal variance for heterogeneity and geographic exclusion, but not for group size, monetary cost, and time cost. Variable means are given in Table 2:

Table 2. Variable means

Variable	Mean for coll_actcoll_act success	Mean for Matches failure	Statistically hypothesis?	Significant?
Group size	233.9	186.7	No	No
Heterogeneity	25.1	22.1	No	No
Monetary cost	0.024	0.665	Yes	No
Time cost	1.29	2.98	Yes	No
Geographic exclusion	54.5	48.4	No	No

The null hypothesis was not rejected for any of the variables.

The  $\chi^2$  test was used to test hypotheses that variable proportions are the same for the categorical data over the endogenous variable. The null hypothesis was rejected for multiple attempts and advanced good. The null hypothesis was not rejected for coercion mechanisms, federation, shock, development, basic good, or educational level, as Table 3 shows:



**Table 3. Variable proportions**

Variable	Hypothesis	Pr	Result of $\chi^2$ test
Coercion	Variable proportions are the same	0.909	Not rejected
Federation	Variable proportions are the same	0.066	Not rejected
Shock	Variable proportions are the same	0.485	Not rejected
Development	Variable proportions are the same	0.117	Not rejected
Multiple attempts	Variable proportions are the same	0.007	Rejected
Basic good	Variable proportions are the same	0.129	Not rejected
Advanced good	Variable proportions are the same	0.001	Rejected
Educational level	Variable proportions are the same	0.237	Not rejected

**4.4. T-TESTS AND  $X^2$  TESTS FOR PAIRS OF EXOGENOUS VARIABLES**

In this section tests were run on pairs of exogenous variables to look for relationships between these variables. The two-tailed t-test, the  $\chi^2$  test, and piecewise correlations were used, and twenty-nine pairs were found to have statistically significant relationships. The two-tailed t-test was used to test hypotheses that means are the same between different categories of the categorical data (after using a variance ratio test). The null hypothesis was rejected for 10 of 35 pairs of explanatory variables:

**Table 4. Pairs of explanatory variables for which the null hypothesis that variable means are the same was rejected**

Heterogeneity	Multiple attempts
Heterogeneity	Coercion mechanisms
Geographic exclusion	Coercion mechanisms
Group size	Coercion mechanisms
Time cost	Coercion mechanisms
Group size	Basic good
Time cost	Basic good
Geographic exclusion	Advanced good
Group size	Advanced good
Time cost	Federation

The  $\chi^2$  test was used to test hypotheses that variable proportions are the same between different categories of the categorical data; the null hypothesis was rejected for 15 of 28 pairs of explanatory variables:

**Table 5. Pairs of explanatory variables for which the null hypothesis that variable proportions are the same was rejected**

Coercion mechanisms	Educational level
Federation	Shock
Federation	Development
Federation	Basic good
Federation	Advanced good
Federation	Educational level
Shock	Development
Shock	Basic good
Shock	Advanced good
Shock	Educational level
Development	Basic good
Development	Advanced good
Development	Educational level
Basic good	Advanced good
Advanced good	Educational level

Finally, piecewise correlations were used for interval explanatory variables, and three pairs were found to be correlated (pairs are listed below in Table 6).

**Table 6. Pairs of explanatory variables with significant correlations**

Heterogeneity	Group size
Time cost	Group size
Geographic exclusion	Group size
Geographic exclusion	Heterogeneity

#### 4.5. THE LOGIT MODEL

The model chosen was a regressive logit model with binary outcomes. Various logit models were tested using different combinations of the thirteen explanatory variables. Models with P-values greater than 0.05 (using the Hosmer-Lemeshow  $\chi^2$ -statistic) were dropped, as were the models with the highest Akaike Information Criteria (AIC).

The model that included the variables heterogeneity, group size, cost in time, and the dummy variable for advanced goods provided the best fit. The final model chosen, as Table 7 shows, was

$$Collective\_Action=f(\textit{group size, homogeneity, time cost, advanced good})$$

**Table 7. Logit model**

Logit estimates		Number of obs = 121				
Log likelihood = -52.010442		LR chi2(4) = 19.26				
		Prob > chi2 = 0.0007				
		Pseudo R2 = 0.1562				
coll_act	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
hete	.0374608	.0267483	1.40	0.161	-.0149648	.0898865
grou_size	.0021075	.0010198	2.07	0.039	.0001088	.0041062
time_cost	-.1034391	.0497003	-2.08	0.037	-.2008499	-.0060284
adva_good	-1.915528	.5494585	-3.49	0.000	-2.992447	-.8386088
_cons	.882833	.7169153	1.23	0.218	-.5222951	2.287961

As Table 7 shows, the best regression model chosen stated that collective action is a function of group size, heterogeneity, time cost, and the Maslowian level of the good sought: group size had a statistically significant positive effect, time cost had a statistically significant negative effect, and the Maslowian level (advanced) had a statistically significant negative effect. Heterogeneity had no statistically significant effect.

## 5. CONCLUSIONS

The principal question this paper aimed to address was how poor urban communities produce and maintain public goods. Theoretical issues were first explored, such as the Olsonian free-rider problem, pointing also to factors that may mitigate the effect of this problem. In general individuals will tend to opt not to contribute to collective causes because of the individual costs involved, but this will occur less frequently in small groups, in federated groups, in homogenous groups, where individual incentives or sanctions are imposed, and where shocks encourage altruistic behavior. The Maslowian problem was also considered; poor communities will be restricted in their ability to produce public goods by their resource endowments whenever the desired public goods do not satisfy primary needs. Finally the role of exclusion was analyzed; exclusion can hinder the ability of poor communities to complete collective actions by hampering access to information and to political participation. Exclusion was also theorized to play a role by constricting the beneficiaries of any particular action to the group conducting the action, thus limiting the ability of poor communities to fight for more global goods such as political rights. Preliminary evidence was given from past researchers in support of these three barriers.

Next an economic model was constructed for public goods production based on the given theoretical framework. This model proposed that collective action is a function of group size, the existence of coercion mechanisms, the existence of a federated structure, the group's degree of homogeneity, the presence of a shock, the presence of an attempt

at development, the monetary cost of the good, the time cost of the good, the Maslowian level of the good (basic or advanced), the educational level of the group leaders, the geographic origin of the group members (rural areas versus the capital city), and the potential beneficiaries of the action (the last three being measurements of exclusion). It was hypothesized that larger groups, higher monetary costs, higher time costs, higher degrees of heterogeneity, rural geographic origins, potential beneficiaries from outside the group, attempts at new development, and attempts at advanced goods would all have a negative effect on collective action, whereas the presence of coercion mechanisms, a federated structure, higher educational levels, the presence of a shock, and attempts at basic goods would all have a positive effect on collective action.

Empirical evidence was shown from Lima, Peru; community leaders in various shantytowns were interviewed. Direct observations from the fieldwork were recorded and presented. This qualitative set of data provided preliminary consistency with the predictions of the theories. The qualitative information presented is not intended to test the model, rather to show how the model might play out in poor urban communities. For the quantitative analysis, each of 22 groups gave information on approximately 10 collective actions, resulting in a sample size of 121. Some variables were dropped because of measurement problems including selection bias, measurement bias, and multicollinearity. After various logit regression models were tried, the best regression model was chosen. While the statistical results did not offer strong evidence either for or against the model, it is important to remember that they represented a first attempt at a quantitative analysis. Data collection proved particularly challenging, which resulted in some measurement error. It is the author's hope that future investigations will be able to make use of the model and expand on the quantitative analysis.

In the study of economic development in poorer countries, the question will inevitably arise of who has the power and the will to create opportunities for economic development. It is important to recognize to what extent poor communities are able to create their own collective initiatives, and to what extent they are limited by economic barriers. Only then can realistic expectations for locally initiated economic development be formulated. A particularly important result given in the qualitative section was the way in which all three economic barriers will work to prevent grassroots organizations in poor communities from inciting broader economic or political change. While it may be possible for small community groups to build water lines, to obtain stoves for communal kitchens, etc, farther-reaching changes will prove to be limited when poor urban areas are left to plan their own development.

**APPENDIX A**

## Variable descriptions and summary statistics

**Table A.1. Description of variables**

variable name	variable label
coll_act	collective action success
grou_size	group size
coer_mech	coercion mechanisms
fede	federation
hete	heterogeneity
shoc	shock
deve	development
mone_cost	monetary cost
time_cost	time cost
mult_att	multiple attempts
basi_good	basic good
adva_good	advanced good
educ_leve	educational level
geog_excl	geographic exclusion

**Table A.2. Summary statistics**

variable	N	sum	mean	sd	min	max	median
BINARY VARIABLES							
coll_act	121	96					
coer_mech	121	35					
fede	121	32					
shoc	121	51					
deve	121	42					
mult_att	121	9					
basi_good	121	55					
adva_good	121	31					
ORDERED VARIABLES							
educ_leve	121	3.752066	1.27985		2	6	4
NOMINAL VARIABLES							
grou_size	121	224.1818	314.5085		15	1175	
hete	121	24.47394	9.776323		12.37696	37.42326	
mone_cost	121	.1568467	1.113924		0	11.62506	
time_cost	121	1.640598	4.411165		0	26.28	
geog_excl	121	53.26302	23.88124		10	85.5	

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